The Impact of Home Visitor Relationship Quality on Parenting and Child Outcomes:

Does Maternal Age Matter?

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Acceptance of Senior Honors Thesis

This Senior Honors Thesis is accepted in partial fulfillment of the requirements for graduation from the Honors Program of Liberty University.

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Abstract

Early Head Start (EHS) is an early intervention program that seeks to mitigate the effects of risk for those families with young children. Consistent with attachment theory, the home visiting component of EHS targets parent-child relationships in order to combat negative child outcomes. Research indicates that children of adolescent mothers are susceptible to poor outcomes both in childhood and adulthood. The current study utilized EHS data from 1198 parent-child dyads to assess the indirect relationship of home visitor quality on child aggression through parent quality, as moderated by maternal age.

Findings indicated that home visitor quality may have a greater impact on children of adolescent mothers as compared to children of older mothers. Contrary to hypotheses, a trend suggested that higher home visitor quality may be directly related to lower child aggression instead of indirectly through parent quality. Findings may be attributed to home visitor turnover or the home visitor satisfaction measure selected for use. Results have implications for tailoring early intervention services, particularly for families of adolescent mothers.
The Impact of Home Visitor Relationship Quality on Parenting and Child Outcomes:

Does Maternal Age Matter?

Early Head Start (EHS) is a national and federally-funded program that works with at-risk families with children three and under to provide attachment-based early intervention. EHS provides three different program options for qualifying families, including home-based, center-based, and mixed home- and center-based (Administration on Children, 2002). Most participants receive at least one home visit, regardless of program, but home visitors must provide services at least forty-eight times per year for those in the home-based program. National program evaluation indicated that eighty-six percent of families enrolled in the EHS home visiting program received the intended weekly visits within the first follow-up period, and about half received monthly visits throughout all follow-up periods (Administration on Children, 2002).

The home visiting component of Early Head Start (EHS) is a strengths-based approach that seeks to create a secure relationship between mother and home visitor in order that the secure relationship will be transferred from mother to child. A close relationship with an at-risk mother seems to be the most effective way that home visitors can improve child-parent relations. Staff members are brought into the home in order to encourage, support, and teach mothers who qualify as at-risk. As EHS incorporates home visiting and works with a large number of teen mothers, data will be used from this program in order to study the effectiveness of home visiting, particularly on teen mothers (Wechsler, 2004).
Attachment Theory

Research has indicated that low quality of parent-child relationship correlates with adverse child outcomes. Lamb, Hopps, and Elster (1987) conducted a study with adolescent mothers in order to compare their parent-infant attachments to those of adult mothers. Using adult data from a previously-conducted study by Ainsworth (as cited in Lamb et al., 1987), the distribution of infant-parent attachments in adolescent mothers significantly differed from those of adult mothers. Results showed a disproportionate number of avoidant attachments within the adolescent sample, which was attributed to previously-observed parent-child interactions, specifically lower quality maternal behavior (i.e., less caregiving, less contingent responding, and lower levels of dyadic engagement) (Lamb et al., 1987).

According to the Transmission Model, parent-child attachment can be attributed both to parenting behaviors and parent internal working models (Berlin et al., 2005). Parent internal working models will guide parents’ interpretation of the child’s needs (i.e., an insensitive or less supportive parent may misinterpret or inconsistently respond to her child). Ideally, a mother will be sensitive and supportive, having had secure attachments herself, and will act as a secure base for her child, guiding behavior and encouraging exploration. Although the Transmission Model was not well supported, findings indicated important aspects of the parent-child relationship. A strong association was found between both parent internal working models and child-parent attachment and parent internal working models and parenting behaviors. However, only a moderately strong correlation was found between parenting behaviors and parent-child attachment,
suggesting that factors other than parenting behaviors affect attachment (Berlin et al., 2005).

As a result, the three tasks of attachment-based intervention consider these findings and attempt to focus first and foremost on parent internal working models as a means of improving parent-child attachment. The second and third tasks of intervention include targeting parenting behavior and establishing the intervener as a secure base and corrective attachment figure (Berlin et al., 2005). Research has shown that a corrective attachment figure, such as a therapist or home visitor, will allow the parent to form a secure attachment and promote change in the parent-child relationship (Berlin et al., 2005; Bowlby, 1988).

In order to effectively target parent internal working models, interventionists must raise parent awareness of the concept, help the parent understand child needs, and modify parent internal working models; following this, one must then teach proper responses to child needs through instruction and modeling. Children with a secure relationship to at least one parent exhibit higher confidence and competence, and attachments formed in childhood affect the remainder of one’s life (Bowlby, 1988).

**The Role of Intervention**

Children of adolescent mothers may be exposed to an environment that can lead to mental health problems, but early intervention can combat these risks. Intervention can teach empathy to self-focused adolescent mothers, which will improve parent-child relationships and promote a secure attachment between mother and child (Osofsky & Thompson, 2000). A study conducted among students of an alternative school for pregnant teens and teens with children showed that those mothers who completed a
parenting intervention program showed higher responsiveness and lower directiveness which was associated with higher developmental scores in the children (Deutscher et al., 2006). Other research has shown that the support of a school-based childcare center can benefit young mothers (National Institute, 1999). A case study of an adolescent mother suggested that home intervention can lead to a lower Parenting Stress Index (PSI) score and feelings of greater support in the adolescent (Stiles, 2010). Grandmother support may also be a means of positive parenting support, however, findings are mixed—showing that children with failure-to-thrive (FTT) develop better without a grandmother presence (Black, 1996). In a study of responsiveness in mothers who gave birth as teenagers, grandparent support was not found to be a moderating factor between maternal age and responsiveness levels (Riggs, Holmbeck, Paikoff, & Bryant, 2004). Unlike other research, such findings present evidence contrary to the notion that the effects of adolescent parenthood are long term. Continued research will provide greater insight into the lives of these families.

Home visiting has been shown in many studies to be a positive means of support for at-risk mothers, though the research is mixed. Although only few studies have been conducted about the effect of home visiting on teen mothers, research suggests that those receiving greater levels of support overall will display more positive parenting behaviors (Riggs, 2004). The effectiveness of a home visitor is likely dependent upon the quality of the visit and whether program goals are met (i.e., number of visits, amount of time spent coaching parent-child interactions), and research has indicated high turnover for home visitors (Gomby, 2007; Peterson, Luze, Eshbaugh, Jeon, & Kantz, 2007). Particularly, the connection between mother’s and home visitor’s personality may predict intervention
quality. An effective home visitor may be able to intervene in poor parent-child relations, acting as both a support system for the teen mother and as an intermediary between parent and child. A study of Early Head Start participants concluded that high stress levels and vulnerability in mothers were positive predictors of participation in home visiting (Sharp, Ispa, Thornburg, & Lane, 2003).

Spieker and colleagues (2005) conducted a study in order to see the effects of home visiting on at-risk mothers and their children, specifically using the Parent-Child Communication Coaching Program (PCCCP). The PCCCP approach was consistent with Early Head Start goals and focused on activities in 10 areas, each associated with a crucial developmental stage (i.e., baby kicks and wiggles, attachment, and imitation). Although no significant differences were found between the control and program groups in regard to parental sensitivity or infant attachment, results indicated that there was a greater effect on depressed mothers than non-depressed mothers. Control group results showed that higher levels of depression correlated with lower warmth; however the PCCCP program group results indicated a positive correlation between depression and warmth levels (Spieker et al., 2005). These findings indicate a higher level of program effectiveness among depressed mothers, perhaps due to the greater apparent need of the mother (Spieker et al., 2005). Due to higher levels of depression and more apparent need in teenage mothers, it is possible that a home visitor-parent relationship may be more effective with adolescent mothers than with adult mothers (Stiles, 2010).

Teenage Mothers

Like other at-risk groups, teen mothers and their children are particularly susceptible to adverse outcomes and poor parent-child interactions (Brooks-Gunn &
Duncan, 1997). The daily stresses of being an adolescent mother can affect both the health and mood of the parent, which may lead to maladaptive interactions between mother and child (DeLongis, 1988). Research has shown that teenage mothers exhibit lower sensitivity, less responsiveness, and more unrealistic developmental expectations than older mothers (Deutscher, Fewell, & Gross, 2006; Riggs, Holmbeck, Paikoff, & Bryant, 2004). In addition, adolescent motherhood is associated with multiple risk factors, specifically lower maternal education and lower socioeconomic status (SES), which have been identified as disadvantageous to child cognitive and social abilities (Osofsky & Thompson, 2000; Oxford & Spieker, 2006). Research has repeatedly identified poverty as a salient risk factor in predicting poor child outcomes, and the rate of pregnancy within poor teenagers is nearly three times the rate of those teenagers with higher SES (Brooks-Gunn & Duncan, 1997). In a study of adolescent mothers, 55% of participants indicated that welfare was their main source of income three or more times between 6- and 36-months postpartum (Oxford & Spieker, 2006). In addition, 30% of mothers had neither a GED nor high school education (Oxford & Spieker, 2006).

Not only do teen mothers lack the formal education of their non-parent peers, but teenagers overall may not be developmentally prepared for parenthood (Sadler & Cowlin, 2003). Jaffee and colleagues (2001) suggested that social-selection effects or social-influence effects may account for adverse outcomes in the children of teenage mothers. In other words, poor parenting may be attributed to an adolescent mother’s proclivity towards risky behavior rather than the age at which she bore her child. Adolescent mothers may not have reached the formal operational stage of thinking, which suggests higher levels of egocentrism and an inability to properly plan for the future (Sadler &
These teenagers, although parents, may still be uncomfortable with themselves as a developing person (e.g., sexually, physically); however, they must cope with their own identity issues, independence and individuation, cognitive development, and sexual development while simultaneously raising a child (Sadler & Cowlin, 2003). As maturing adolescents, teen mothers have a more difficult time showing empathy for their infants than adult mothers, which, in combination with the stress of being both a developing person and mother, contribute to a low rate of maternal sensitivity in teenage mothers (Secco & Moffatt, 2003; Stiles, 2005). As teenagers, these mothers may also struggle between being dependent on their own parents and attaining independence. The process of becoming independent of one’s parents is often a factor in increased stress levels, and, as a result, many adolescent mothers prefer to seek help from peers rather than from their parents (Stiles, 2010). However, support from peers has not been shown to combat the stresses of adolescent motherhood (Bogat, Caldwell, Guzman, Galasso, & Davidson, 1998).

**Maternal depression.** Higher levels of depression in adolescent mothers as compared to older mothers put children of teenage parents at a higher risk for disruptive behavior. Gross and colleagues (2009) found that child noncompliance was associated with higher levels of maternal depression. Consistent with a transactional relationship, these findings suggest that an interaction between maternal depression and child noncompliance may perpetuate one another and also facilitate poor parent-child interactions (Gross, Shaw, Burwell, & Nagin, 2009). Higher levels of depression overall may affect both maternal sensitivity and child behavior (i.e., internalizing and externalizing) (Stiles, 2010). With depressed mothers having difficulty with affect
regulation, adolescent mothers with depressive symptomology are likely to have poor parent-child interactions (Osofsky & Thompson, 2000). Overall, teenage mothers demonstrate lower quality of mother-child interaction and are more likely to use inconsistent or harsh discipline more than older mothers (Jaffee et al., 2001).

**Maternal stress.** As research shows that higher levels of maternal stress are associated with higher internalizing symptomology (i.e., depression, anxiety) in children, stress levels may account for negative outcomes in offspring of adolescent mothers (Rodriguez, 2010). Consistent with past research, Molborn and Morningstar (2009) found that teen mothers were significantly more distressed than both those mothers who were adults at childbearing and those adolescents without children. However, the data suggest that teenage mothers were more distressed than their childless peers because they were already distressed before becoming pregnant, and thus the experience of teenage motherhood itself is not the primary producer of the psychological distress. Selection bias may occur with teenagers at higher levels of risk for adolescent motherhood, even before they become pregnant, being more distressed on average than their peers. The data indicate a strong association between distress and teenage pregnancy in that each unit increase on the psychological distress scale doubles the odds for the girl to become a teenage mother. Thus, high levels of distress may be both a predictive factor and a negative outcome of teenage childbearing (Molborn & Morningstar, 2009).

**Child Outcomes**

Research has indicated that negative child outcomes can be accounted for by the age of the mother at her first childbirth, such that there is a 100-200% greater risk for poor outcomes in those children born to a current or previous adolescent mother (Jaffee et
A 20-year longitudinal study concluded that children of teenage mothers were two to three times more likely to engage in negative behavior in young adulthood as their peers (i.e., dropping out of school, unemployment, early parenthood, violent offending) (Jaffee, Caspi, Moffitt, Belksy, & Silva, 2001). In addition, adolescent mothers report more difficult infant temperament, which may be due to poor parent-child interaction or more punitive parent behavior (Secco & Moffatt, 2003). Furthermore, a higher prevalence of intrusiveness in adolescent mothers has been associated with unhealthy, avoidant parent-infant attachment (Lamb, Hopps, & Elster, 1987).

Serbin and colleagues (2011) conducted a 30-year longitudinal study and determined a significant link between disadvantageous environmental conditions (i.e., low education, early parenthood, family poverty) and child problem behavior (Serbin et al., 2011). Child aggression was correlated with family socioeconomic status (SES), parental high school dropout, parental age at first child, and parental absence (Serbin et al., 2011). Results indicated a direct link from childhood aggression to future early parenting and lower school achievement in both girls and boys. Further still, parenting at an early age was predictive of parenting in poverty and parenting with one absent parent (Serbin et al., 2011).

Multiple studies have supported the continuity of aggression from childhood to adulthood. Kokko and colleagues (2009) found that early aggression explained later adult physical aggression in samples from both the United States and Finland, with three to four times the variance in adult aggression explained by early aggression in those participants from the United States (Kokko, Pulkkinen, Huesmann, Dubow, Boxer, 2009). Andreas and Watson (2009) identified similar trajectories from childhood to
adolescence, with aggressive beliefs as significant predictor of aggressive behavior; this aggression was moderated by family home environment, such that conflicted homes increased the risk of later aggression.

As supported by previous research, children of teen mothers are at risk not only for poor interactions in early childhood but also throughout the latter part of their lives. Children born to adolescent mothers have higher rates of teen pregnancy, lower academic achievement, and elevated behavior problems, such as delinquency (Jaffee, 2001). Adolescent motherhood is a prevalent issue within the United States, with nearly half a million teens giving birth every year—the highest rate in the industrialized world (Wechsler, 2004). The risks associated with teenage motherhood and the resulting parent-child interactions need to be considered and addressed, in order to ensure that children are able to successfully develop, thrive, and exhibit resilience. One way to combat negative child outcomes is to facilitate a mutually-satisfying relationship between parent and child, which has been associated with more positive child development (Osofsky & Thompson, 2000).

The Present Study

The aim of this study was to determine the effectiveness of the home visitor-parent relationship for adolescent mothers and their children. Utilizing Bowlby’s attachment theory as a framework, this study sought to understand the effects of home visiting on teenage mothers and their children, by way of a positive home visitor-parent relationship (Bowlby, 1988). As teenage motherhood presents a number of risks for child outcomes, it is necessary to determine the effects of a home visitor presence in the home, as some research suggests that it may buffer negative environmental risks. Specifically,
parent-child interactions of teenage mother-child dyads will be considered, as well as subsequent child behavior. Early aggression has been linked to later social and behavioral problems in children, which will likely perpetuate risk further.

Seeking to combat the negative outcomes of poor parenting practices and parent-child interactions, early intervention programs like Early Head Start offer hope to at-risk families. As such, this study will inform researchers and early interventionists and will provide suggestions for better tailoring services to the adolescent mother population.

Specific research questions are: (1) Will a strong home visitor-mother relationship lead to lower aggression levels in children of teenage mothers? (See Figure 1) (2) Will parenting quality mediate the relationship between home visitor quality and child aggression? (See Figure 1) (3) Does maternal age moderate the mediator model? It is predicted that parent quality will mediate the relationship between home visitor quality and child aggression, such that high home visitor quality will lead to better child outcomes via better parenting practices. In addition, it is predicted that this model will significantly fit the data for teenage mothers but not older mothers.

![Figure 1. Theoretical Mediation Model of Maternal Supportiveness](image-url)
Method

Participants

This study utilized data collected in the Early Head Start (EHS) Research and Evaluation Project. A total of 1198 children and families, those who received either home- or mixed- (home- and center-based) intervention services, were included in analyses. Of the total number of participants, 446 were classified as teen mothers and 723 were classified as older mothers. Twenty-nine participants did not indicate their age at the birth of the focus-child; these data were included in the overall mediation analysis but not moderated-mediation analyses. Of the total sample, 48.4% of the focus-children were female and 50.5% were male, with 1.1% of children not being identified as male or female. In the sample of those participating in the home visiting program, 42% were Caucasian, 29% were African American, 28% were Hispanic 28%, and 1% were of another ethnicity or unidentified.

Measures

Home Visitor Quality. Parental satisfaction of home visitor was measured at 6 months using the Helper-Client Relationship Inventory (HRI), a 27-item parent-report measure previously used in reporting client satisfaction of nurses (Korfmanncher, Green, Spellmann, & Thornburg, 2007). Sample items include My case manager brings out the best in me, My case manager helps me to develop my role within my family, and The case manager respects my family’s way of doing things (Administration on Children, 2009). Scores range from zero to five with a higher score indicating higher home visitor satisfaction. Despite the desire to differentiate dimensions of the helping relationship (i.e., general program satisfaction, quality of mother-home visitor relationship), items
were loaded onto one factor and thus represent overall home visitor satisfaction. Previous research indicates the positive bias of this measure, which may be attributed to mothers’ satisfaction with any type of free services (Korfmacher et al., 2007).

**Parenting Quality.** Both supportiveness and intrusiveness were measured at 14 months using the Three Bag Procedure. The parent and child were given a bag with three different toys and were told to engage in play. Parent-child interactions were then recorded and coded by child development researchers. Parental supportiveness was measured on a seven-point scale, with higher scores indicating more supportive parenting behaviors. The composite measure of parental supportiveness includes parental sensitivity, cognitive stimulation, and positive regard subscales (ACYF, 2002). Parental intrusiveness was also measured on a seven-point scale, with higher scores indicating more negative behavior. Intrusive characteristics include excessive control of the child and failure to recognize and respect the perspective of the child (i.e. parent controls play agenda, parent grabs toys away from child, parent fails to take turns, parent does not allow child to influence play) (Administration on Children, 2002).

**Child Aggression.** Focus-child aggression levels were measured at 36 months using the Achenbach System of Empirically-Based Assessment (ASEBA), a subscale of the Child Behavior Checklist (CBCL). This maternal-report scale consisted of 19 items, measuring child behavioral and emotion problems related to aggression (i.e., *Child hits others, Child is easily frustrated*). Items were coded on a scale of one to three, ranging from “not true” to “very or often true” (Administration on Children, 2002).

**Maternal Depression.** The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure maternal depression at baseline. This self-report scale
consisted of 20 items with responses ranging from “rarely or none of the time” to “most or all of the time” to indicate the frequency of depressive symptomology in the past week (Radloff, 1977). The present study used maternal depression as a control variable.

**Results**

**Data Analysis**

This study utilized Mplus path analysis to assess model fit of overall mediation models (i.e., supportiveness, intrusiveness) and subsequent moderated-mediation models, in which maternal age was utilized as a moderator. Mplus uses a full information maximum likelihood (FIML) technique, which fits the data to the proposed models, allowing all available data to be used, despite missing values. Previous research has indicated less bias in analyses using this methodology in comparison to those using listwise data deletion (Enders & Bandalos, 2001). In subanalyses, maternal depression and child gender covariates were held equal across groups.

**Descriptive Statistics**

Analyses elicited slight variation in the levels of home visitor quality, parenting quality, and child aggression in the teen and older mother samples (See Table 1). Overall, means for all measures were similar in teen and older mother samples.
Table 1

Descriptive Statistics of EHS Sample by Maternal Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>Teen Mother (x̄)</th>
<th>SD</th>
<th>Older Mother (x̄)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Visitor Quality (6 Months)</td>
<td>4.48</td>
<td>0.77</td>
<td>4.53</td>
<td>0.67</td>
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<tr>
<td>Supportiveness (14 Months)</td>
<td>3.76</td>
<td>1.01</td>
<td>4.24</td>
<td>1</td>
</tr>
<tr>
<td>Intrusiveness (14 Months)</td>
<td>2.76</td>
<td>1.28</td>
<td>2.27</td>
<td>1.16</td>
</tr>
<tr>
<td>Child Aggression (24 Months)</td>
<td>12.53</td>
<td>6.87</td>
<td>12.52</td>
<td>6.87</td>
</tr>
</tbody>
</table>

**Overall Models.** The overall supportiveness model did not have a good fit to the data, (RMSEA= .02), and the model accounted for only 6% of the variance in child aggression, \( R^2 = .06 \) *(see Table 2; see Figure 2).* Only maternal depression and child gender covariates were significant (\( p < .001, p = .004 \), respectively). Similarly, the overall intrusiveness model had only moderate fit to the data and accounted for only 4% of the variance (RMSEA= .05, \( R^2 = .04 \)). Again, only covariates were significant, with both \( p \)-values at .001 *(See Table 3; see Figure 3).* Contrary to the hypothesis that parenting quality mediates the relationship between home visitor and child aggression, findings indicate that home visitor quality does not have a significant impact on this relationship.
Table 2

*Supportiveness Model Across Both Maternal Age Groups*

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>S.E.</th>
<th>Est./S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression (24 Months) ON</td>
<td></td>
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</tr>
<tr>
<td>Supportiveness (14 Months)</td>
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<td>.27</td>
<td>-.72</td>
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<tr>
<td>Home Visitor Quality (6 Months)</td>
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<td>.4</td>
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<tr>
<td>Child Gender</td>
<td>-1.34</td>
<td>.47</td>
<td>-2.86***</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>.13</td>
<td>.03</td>
<td>3.94***</td>
</tr>
</tbody>
</table>

Supportiveness (14 Months) ON

| Home Visitor Quality (6 Months)      | .01      | .06  | .19       |

*=p<.05, **=p<.01, ***=p<.001

Table 3

*Intrusiveness Model Across Both Maternal Age Groups*

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>S.E.</th>
<th>Est./S.E.</th>
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</thead>
<tbody>
<tr>
<td>Aggression (24 Months) ON</td>
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<td></td>
</tr>
<tr>
<td>Intrusiveness (14 Months)</td>
<td>-.1</td>
<td>.24</td>
<td>-.43</td>
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<tr>
<td>Home Visitor Quality (6 Months)</td>
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<tr>
<td>Child Gender</td>
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<td>.04</td>
<td>3.28***</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>.12</td>
<td>.04</td>
<td>3.28***</td>
</tr>
</tbody>
</table>

Intrusiveness (14 Months) ON

| Home Visitor Quality (6 Months)      | -.03     | .066 | -.41      |

*=p<.05, **=p<.01, ***=p<.001
Moderated-Mediation Analysis of Supportiveness Model. Like in overall models, data elicited no significant findings, and the model was not well supported for either maternal age (See Table 4; see Figures 4 and 5). However, in the supportiveness model, a trend ($p = .065$) was found between home visitor quality and child aggression in teen mothers, suggesting that home visitor quality may have directly impacted child aggression levels. Specifically, high home visitor quality was associated with low child
aggression levels. No significant associations or trends were found in the older mother data. $R$-squared values were low for both teen and older mother models, with only 6.2% of the variance accounted for in children of teen mothers ($R^2 = .062$) and 3.8% of the variance accounted for in children of older mothers ($R^2 = .038$).
Table 4

**Supportiveness Model By Maternal Age Group**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>S.E.</th>
<th>Est./S.E.</th>
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<tr>
<td><strong>Older Mothers</strong></td>
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<tr>
<td>Aggression (24 Months) ON</td>
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<td></td>
</tr>
<tr>
<td>Supportiveness (14 Months)</td>
<td>-0.12</td>
<td>0.36</td>
<td>-0.34</td>
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<tr>
<td>Home Visitor Quality (6 Months)</td>
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<td>-0.76</td>
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<tr>
<td>Child Gender</td>
<td>0.12</td>
<td>.04</td>
<td>3.37***</td>
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<tr>
<td>Maternal Depression</td>
<td>0.12</td>
<td>.04</td>
<td>3.2***</td>
</tr>
<tr>
<td>Supportiveness (14 Months) ON Home Visitor Quality (6 Months)</td>
<td>0.05</td>
<td>0.09</td>
<td>0.58</td>
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<tr>
<td><strong>Teen Mothers</strong></td>
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<tr>
<td>Aggression (24 Months) ON</td>
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<td></td>
</tr>
<tr>
<td>Supportiveness (14 Months)</td>
<td>-0.49</td>
<td>0.5</td>
<td>-0.99</td>
</tr>
<tr>
<td>Home Visitor Quality (6 Months)</td>
<td>-1.19</td>
<td>0.65</td>
<td>-1.84</td>
</tr>
<tr>
<td>Child Gender</td>
<td>0.12</td>
<td>0.04</td>
<td>3.27***</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>0.12</td>
<td>0.04</td>
<td>3.27***</td>
</tr>
<tr>
<td>Supportiveness (14 Months) ON Home Visitor Quality (6 Months)</td>
<td>-0.08</td>
<td>0.09</td>
<td>-0.86</td>
</tr>
</tbody>
</table>

\*\*p<.05, \*\*\*p<.01, \*\*\*\*p<.001
Figure 4. Supportiveness Model Results for Teen Mother Sample

Figure 5. Supportiveness Model Results for Older Mother Sample

Moderated-Mediation Analysis of Intrusiveness Model. There were no significant findings in the subanalysis of the intrusiveness model (See Table 5; see Figures 6 and 7). However, results indicated a trend ($p = .061$) between home visitor quality and child aggression in teen mothers, again suggesting a direct relationship between the home visitor presence and subsequent child behavior. In other words, high home visitor quality was associated with low levels of aggression in focus-children in the adolescent mother sample. No significant associations were found for children of older mothers. Similar to the supportiveness model, only 6% of the variance in child
aggression was accounted for in children of teen mothers ($R^2 = .06$) and only 3.9% of the variance was accounted for in children of older mothers ($R^2 = .039$).

Table 5

*Intrusiveness Model By Maternal Age Group*

<table>
<thead>
<tr>
<th></th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusiveness (14 Months)</td>
<td>-0.2</td>
<td>0.32</td>
<td>-0.47</td>
</tr>
<tr>
<td>Home Visitor Quality (6 Months)</td>
<td>-0.4</td>
<td>0.52</td>
<td>-0.77</td>
</tr>
<tr>
<td>Child Gender</td>
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<td>0.04</td>
<td>3.42***</td>
</tr>
<tr>
<td>Maternal Depression</td>
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<td>0.04</td>
<td>3.42***</td>
</tr>
<tr>
<td>Intrusiveness (14 Months) ON</td>
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<td></td>
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<tr>
<td>Home Visitor Quality (6 Months)</td>
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<td>Home Visitor Quality (6 Months)</td>
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* = p < .05, ** = p < .01, *** = p < .001
Discussion

Past research has repeatedly indicated the effects of environmental risk on child outcomes, such that high levels of risk are associated with poorer outcomes (Brooks-Gunn & Duncan, 1997). Adolescent motherhood is one risk factor that has been linked to negative child outcomes (i.e. negative child behaviors, lower child achievement), being associated with higher levels of maternal distress, depression, and poverty overall (Brooks-Gunn & Duncan, 1997; Jaffee et al., 2001; Oxford & Spieker, 2006). This study proposed that the existence of a strong home visitor-parent relationship would positively
affect children by way of better parenting practices, specifically high levels of supportiveness and low levels of intrusiveness. Additionally, it was hypothesized that maternal age would moderate this relationship, with a home visitor-parent relationship being more impactful for teenage mothers, who may not be developmentally prepared for motherhood, than older mothers.

Analyses indicated that the proposed model was not a good fit to the data and showed no significant mediation of parenting quality for either teenage or older mothers. Findings did not support the concept of a corrective attachment, as postulated within attachment theory (Bowlby, 1988). Contrary to hypotheses, high home visitor quality did not indirectly impact child aggression by way of parenting quality (i.e. supportiveness, intrusiveness), suggesting that home visitation may not be as effective as intended. This notion is consistent with previous research, which indicates that clients often fail to complete the number of intended home visits and that home visitors are often unable to effectively meet program goals (Gomby, 2007; Peterson et al., 2007).

Although non-significant, a trend in both intrusiveness \( (p=.06) \) and supportiveness \( (p=.06) \) models indicated that high home visitor quality was associated with low child aggression in children of teenage mothers but not models for children of older moms (See Figures 2 and 4). However, the indirect association between home visitor quality and child aggression through parenting quality was not supported. This relationship suggests that the presence of a home visitor may directly affect child behavior instead of indirectly affecting children through the facilitation of better parenting practices. That teenage mothers and their children may be more greatly impacted by a home visitor presence is consistent with literature on a grandmother
presence in the home, which links grandmother presence with better child development in normally developing children (Black, 1996). Those teenage mothers or mothers-to-be without parental support have higher levels of stress as compared to those without (Bogat et al., 1998).

Adolescent mothers tend to seek support from other sources, namely peers, but this support has not been shown to combat the stress of motherhood (Bogat et al., 1998). It is possible that a home visitor can serve as a supportive parental figure in the life of a teenage mother, thus mitigating the stress of pregnancy and motherhood. Spieker, Nelson, DeKlyen, and Staerkel (2005) found that, within a sample of Early Head Start (EHS) families, those mothers with higher levels of depression at baseline showed greater improvement after home visiting program involvement than mothers with lower levels of depression. While the mothers were more depressed prior to intervention, they exhibited higher levels of warmth even than those with lower baseline depression rates post-intervention. Results suggest that home visitors paired with more needy mothers were more effective than those paired with mothers who were not as needy (i.e., older mothers, mothers with lower levels of depression). Consistent with these findings, it is likely that teenage mothers are more outwardly in need of mentoring, indirectly leading the home visitor to better success (Spieker et al., 2005). In addition, maternal depression was a significant covariate in both older and adolescent mother samples, supporting the idea that maternal depression impacts child aggression levels.

Although findings were non-significant, the existence of a trend in the effectiveness of a home visitor on child outcomes in the adolescent sample as compared to the older mother sample may support our hypothesis that home visiting is more
beneficial for families of teenage mothers. The mentoring role of the home visitor may be particularly beneficial for those adolescent parents who are coping with both their own development and raising a child and may buffer the deleterious effects of adolescent motherhood. As some literature suggests that adolescent mothers are unable to plan properly for the future and show empathy toward their children, a home visitor may be an effective teacher and support for the mother (Sadler & Cowlin, 2003). One case study suggested that the intervention of a home visitor may also benefit adolescent mother-grandmother relationships, allowing the teenage mother to feel independent yet free to ask for advice from her parent (Stiles, 2010). Teenage mothers may be more impressionable than older mothers, as adolescent mothers are still developing in their identity and level of independence.

Overall, no significant association was found between parenting quality and child aggression, which is not consistent with attachment theory. Possible explanations for the lack of significance could be that home visitor sessions may be focused primarily on the child instead of the parent or that the number of proposed home visits was not completed, which has been a trend in recent literature on home visiting (Gomby, 2007; Peterson et al., 2007; Spieker et al., 2005). In one EHS study, participants in the home visiting program completed less than one quarter of planned home visits on average and stayed in the program for a shorter period of time than intended (Spieker et al., 2005). In addition, high levels of turnover in home visitors has been a trend in the literature; changes in the home visitor likely contribute to lower levels of intervention success, as relationship quality between the home visitor and parent is central to the early intervention process (Burrell, McFarlane, Tandon, Fuddy, & Duggan, 2009).
In addition, certain limitations may have contributed to the results. Initial screening of data distribution indicated that the Helper-Client Relationship Inventory (HRI), used to measure home visitor quality, was negatively skewed (see Figure 6). This measure has been criticized for its lack of discriminant validity in the past (Korfmacher et al., 2007). A ceiling effect indicates that, overall, clients in the home visiting program were extremely satisfied with the presence of a home visitor. As a result, the actual quality of one home visitor in comparison to another is unclear.

Figure 6. Histogram of Helper-Client Relationship Inventory (HRI) Scores

This study included child aggression as the only child outcome, and thus may not fully account for child behavior (i.e., internalizing behavior or other externalizing behaviors) and other achievement outcomes (i.e., cognitive ability). Data were collected at one time point, which may limit results as well. Future research should investigate the continuation of the trend found between home visitor quality and child aggression at
other time points, in order to see if the model may be a better fit at a later time, especially since it might take a longer time period to make significant changes in the teen mother’s internal working model, parenting behaviors, and ultimately the child’s outcomes. In addition, research should examine other contributing risk factors that may differ by maternal age, such as poverty level or maternal education, which may provide additional insight into parent-child interactions. Past research has examined the relationship between maternal education in adolescent mothers and subsequent child cognitive ability but has not explored the effects of maternal education on child behavioral outcomes (Oxford & Spieker, 2006). Research involving other types of intervention for at-risk children and families suggest that dialogic reading training may enhance parent-child verbal interaction at preschool (Brannon & Dauksas, 2012). Thus aspects of other types of intervention should be considered alongside aforementioned home visiting approaches, as they may provide additional insight into effective early intervention practices.

The present study has implications for the tailoring of early intervention services like Early Head Start (EHS). As in much home visiting literature, findings expose the need for further investigation into program structure and goal execution (Gomby, 2007; Peterson et al., 2007). Proper program implementation, including the number of home visits completed and the parent focus of intervention, should be measured and assessed. Although attachment theory suggests that a corrective attachment will effectively and positively influence child outcomes (Bowlby, 1988), services may need to be tailored to meet the needs of individual families, specifically those of adolescent mothers. The trend found between home visitor quality and child aggression levels in children of teenage mothers suggests that home visiting may be somewhat effective. Further study should
investigate the aspects of home visiting that most positively influence parent quality of adolescent mothers. In addition, programs featuring a home visiting component must evaluate program efficacy in regard to program goals. Although adolescent motherhood is a prevalent risk factor, early intervention may offer the education and support necessary to facilitate healthy parent-child relations and subsequent positive child outcomes.
References


