Economically Disadvantaged Rural Multigenerational Families Raising Infants

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ABSTRACT

Melissa A. Barnett: Economically Disadvantaged Rural Multigenerational Families Raising Infants (Under the Direction of Lorraine C. Taylor)

This study explores psychological distress, parenting behaviors and infant temperamental/behavioral risk among rural economically disadvantaged families in which mothers and grandmothers are raising an infant together. Traditional components of family stress frameworks that model the influence of economic disadvantage on child outcomes via parenting were expanded to include factors that may be particularly relevant to these multigenerational families of varying maternal age. This study also simultaneously considers the relationship between observed mother and grandmother parenting and early child risk. The findings suggest that despite the unique risks to psychological well-being faced by grandmothers, the grandmothers display higher levels of sensitive parenting. This sensitive parenting is related to infant temperamental/behavioral risk in the presence of high levels of maternal negative parenting, but only for white families. Mothers and grandmothers display similar levels of negative intrusive parenting, but different factors are linked to the observed parenting of each generation. These findings contribute to understanding the adaptive benefits and risks of three-generation households.
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CHAPTER 1
INTRODUCTION

Multigenerational households in which mothers and grandmothers are raising children together are an increasingly common family structure. In 2005, for example, over 3.7 million children lived in households with grandparents and parents, with children under 6 years of age the most likely to live in three-generation households (United States Census Bureau, 2006). According to the 2000 census, the first year in which grandparent co-residence was measured, almost 4% of all households in the United States consisted of three-generations, and almost 19% of these households were living in poverty (United States Census Bureau, 2001; 2003). Grandparent co-residence is more common among ethnic minority groups, as only 2% of non-Hispanic white adults over age 30 live with grandchildren as compared to 8% of African American adults over age 30 (United States Census Bureau, 2003). Although there may be sociocultural roots to multigenerational household patterns, the rising prevalence of this family structure is linked to increases in female-headed households due to out-of-wedlock births and divorce (George & Dickerson, 2000). Housing, employment and educational limitations in non-urban environments may also directly or indirectly influence family formation patterns that give rise to multigenerational households. Despite this growing trend, there has been little systematic investigation of family relations in three-generation households.

Intergenerational family strategies, especially the formation of grandmother-mother-child households and caregiving triads, have been considered to be adaptive family responses
to poverty, single motherhood and/or to early childbearing. Grandmothers are conceptualized as buffering mothers from the adverse influences of poverty and single-parenthood. This risk-resilience perspective on mother-grandmother families, however, ignores the complexity and diversity of relationships within these families. The influence of grandmother co-residence on children likely depends on maternal, child and grandmother characteristics. Studying multigenerational families, especially those living in disadvantaged rural communities, necessitates examining and situating caregiver-child interactions within the larger family and community contexts. Research should account for the transactions that occur among individual family members and between families and the larger sociocultural environment.

Extant research on multigenerational families has focused on adolescent mothers, who may comprise a particularly vulnerable group. Much research in this area has also focused on African American families, many of whom reside in low-income urban communities. The research base includes very limited insight into family processes that influence parenting and child development within these family structures (Black et al., 2002; Black & Nitz, 1996; Chase-Lansdale et al., 1997; East & Felice, 1996; Kali, Spencer, Speaker & Gilchrist, 1998; Rosman & Yoshikawa, 2001). Moreover, the grandmother perspective is often missing from research on multigenerational families, as little research has focused on grandmother-grandchild relationships (Caldwell, Antonucci & Jackson, 1998; Goodman & Silverstein, 2002; Sadler & Clemmens, 2004). Studying exclusively mother-child dyads or individuals in three-generation households provides a limited perspective on family functioning and processes because development often occurs as a result of interactions within and across organized family systems (Cox & Paley, 1997). If the grandmothers are
serving as secondary caregivers, then considerably more knowledge must be gained regarding their individual characteristics and their relationships with others in the family that ultimately directly and indirectly impact child development.

In all families, the impact of the transition to parenthood on other family members, and ultimately on the child, depends on the interactions that occur between each relevant individual in the family, and the perceptions of the individual regarding the transition or turning point (Cox & Paley, 1997; Feinberg, 2002). There is a paucity of research exploring the changes to the family system set in motion by the birth of child within an intergenerational context (Moore & Brooks-Gunn, 2002), despite recognition of the importance of studying transition points in development (Cox & Paley, 1997; Elder, 1996). The introduction of a new child to the family is a normative transition with subsequent rearrangements of relationships. Adaptations do not always introduce long-term stability, they may have unintended negative consequences for the individuals (i.e., grandmothers) embedded within the subsystems, and they may introduce new vulnerabilities to the system (Cox & Paley, 1997). Moreover, the long-term adaptability of these family formation patterns is questionable as early co-residence may be beneficial for children and teenage mothers, but pro-longed co-residence or co-residence of grandmothers and young adult mothers may carry negative influences (Black & Nitz, 1996; Chase-Lansdale et al., 1994; SmithBattle, 1996).

Despite the pivotal parenting roles many grandmothers fulfill, studies examining grandmother parenting behaviors are strikingly absent from the existing child and gerontology literatures. The dynamics of intergenerational relationships, individual characteristics and contextual factors may have differential impacts on the parenting of
mothers and grandmothers (Chase-Lansdale et al., 1999; Howard et al., 1998; Kalil et al., 1998; Krishnakumar & Black, 2003; Schweingruber & Kalil, 2000). Few studies have systematically applied ecologically-grounded family stress process models to ethnically diverse economically disadvantaged multi-generational families, in particular to those families living in non-urban environments. The present study aims to address this research gap. Before describing the specific goals of the study, the relevant literature is reviewed. The introduction begins with a review of family stress models to describe family processes among low-income families, with a particular emphasis on relevant mother and grandmother populations. Next, the applicability of those models to multigenerational family structures is discussed. This discussion is followed by examination of existing research concerning timing and age, role overload and grandmother parenting, topics that may be particularly relevant to the present investigation. Finally, implications of the characteristics of the racial/ethnic and rural contexts in which the families in the present study interact are discussed.

1.1 Family Stress Models

Poor parents are exposed to chronic stress stemming from financial strain associated with providing for children with meager resources in a potentially dangerous environment, and the related greater propensity for experiencing negative life events (Dyk, 2004; Magnuson & Duncan, 2002; McLoyd, 1990). Forming multi-generational households may be a response to financially difficult situations, as families pool economic and caregiving resources. Accordingly, these family formation patterns may represent an adaptive pathway to protect parenting and child outcomes. Alternatively, living in multigenerational households may present different sources of stress, as the addition of another child to an
economically disadvantaged household may increase the financial pressure. In addition, the child’s birth may bring about realignments in family relationships that could result in greater conflict or stress (Moore & Brooks-Gunn, 2002; Schweingruber & Kalil, 2000).

Family stress models describing the processes through which poverty influences child outcomes have gained wide acceptance (see Figure 1). The primary tenet of family stress models holds that economic disadvantage triggers feelings of economic strain, which in turn lead to psychological distress in parents that ultimately negatively impacts child development directly through the provision of less adequate parenting, and/or indirectly through increased risk for marital/caregiver conflict. The proposed study focuses on the direct relationships between economic strain, psychological distress and parenting. In fact, much of the recent work applying family stress models to families consisting of single mothers and young children has focused exclusively on the role of psychological distress as a mediator between economic hardship and parenting. Many of the mothers in these studies may have technically been classified as single due to marital status or lack of a co-habiting romantic partner, but family members, in particular grandmothers, may have been playing significant roles in the lives of the mothers and children. Hence, failure to include the parenting of these other adults would result in an incomplete picture of family processes in these families.

Although there may be minor differences in magnitudes of effects and specific pathways, the major processes and links between income, parental psychological functioning, parenting behavior and child outcomes have stood up across samples. These models have been tested with white (Conger et al., 1992; Conger et al., 1993.), African American (Brody & Flor, 1997; Conger et al., 2002; Nievar & Luster, 2006), Mexican American (Parke et al., 2004) and multi-ethnic (Linver et al, 2002; Mistry et al., 2004) families living in urban (Elder
et al., 1995; Jackson et al, 2000) and rural (Conger et al., 1994; Body & Flor, 1997) locales. Initial studies examined these processes in two-parent married families (Elder, Nguyen & Caspi, 1985; Conger et al, 1992), although the models have been expanded and supported in single parent families as well (Conger et al., 2002; Brody & Flor, 1997). Application of these models to multigenerational families is limited. The discussion of the extant research regarding family stress process models that follows will draw from adolescent parent, grandparent and general family process literatures in order to inform the models developed in the preset study for multigenerational families.

1.1.1 Parenting

Research has demonstrated consistently that economic disadvantage is associated with less positive parenting and more negative parenting ranging from less sensitive and responsive parenting, higher rates of insecure attachment, harsher discipline and the use of fewer-child-oriented approaches or parenting beliefs (Bradley & Corwin, 2002; Hoff, Laursen & Tardiff, 2001, Magnuson & Duncan, 2002; McLeod & Shanahan, 1993; McLoyd, 1998). These parenting behaviors in turn are linked to less positive cognitive and social outcomes for children of all ages. Many parents living in poverty, however, exhibit effective, sensitive parenting behaviors. This positive parenting can serve as an important resource or protective factor for children facing the other risks associated with poverty (i.e., risky neighborhoods, failing schools). In fact, poor children may benefit more from effective parenting than their wealthier peers (Hanson, McLanahan & Thomson, 1997). Identifying the processes through which poverty compromises parenting while simultaneously identifying the mechanisms that preserve effective parenting in the face of economic adversity are critical goals for researchers (Florsheim, Tolan & Gorman-Smith, 1996; Klein
1.1.2 Economic Strain

In general, family stress models portray stress stemming from financial pressure as negatively impacting parental mental health, which in turn is associated with problematic parent-child interactions. Most models using this framework do not hypothesize a direct relationship between income and psychological distress. This relationship is mediated by perception of economic strain, which in turn has been associated with poor mental health. In other words, the subjective experience of economic disadvantage is proposed to have a greater influence on parenting and child outcomes than the objective experience of being poor (Conger & Elder, 1994; Conger et al., 1992; McLoyd et al., 1994; Mistry et al., 2004). Measures of economic strain introduce an individual level variable by tapping the caregivers’ perceptions of financial problems. Accordingly, there should be considerable individual variability of economic strain levels within a single income bracket that is likely to be influenced by other family and individual factors, including social support and parental mental health.

Grandmothers and mothers within the same households may perceive different levels of economic strain that in turn differentially impact their functioning. Grandmother parenting behaviors may be more sensitive to the economic context than adolescent mother parenting (Schweingruber & Kalil, 2000). A grandmother with an adolescent daughter may need to juggle the additional costs of a child in the family. If the mother is still in school, she may feel little economic pressure as long as she remains a financial dependent in the parental home. Economic strain has been related to parenting stress for adolescent mothers.
of toddlers (Spencer et al., 2002), but not for adolescent mothers of pre-schoolers (Larson, 2004). Young adult mothers who are employed, however, may be sensitive to economic strain because of their direct experiences of trying to provide financially. There has been little empirical investigation of the influences of maternal age and generational status on economic strain during infancy and subsequent psychological distress and/or parenting.

1.1.3 Psychological Distress

Psychological distress is a key mediator in family stress models, as economic strain is linked to elevated levels of psychological distress. A large body of research has demonstrated the robust relationship between psychological distress and less sensitive, nurturing and responsive parenting (Aber, Jones & Cohen, 2000; Magnuson & Duncan, 2002; McLeod & Shanahan, 1993; McLoyd, 1998; Petterson & Albers, 2001).

Low-income parents face elevated risks for depression, and parental depression may be most harmful for low-income children given the constellation of other risks these families face (Magnuson & Duncan, 2002; Petterson & Albers, 2001). In their analysis of a national data set, Petterson & Albers (2001) demonstrated that severe maternal depression was linked to poor developmental outcomes for all young (28-50 months) children regardless of family income. Family income, however, served as a buffer for the children of moderately depressed mothers, as those living in homes with an income to needs ratio of 3 and above showed no developmental delays in comparison to other affluent children with non-depressed mothers. These findings point to the cumulative nature of risks faced by low-income children and parents.

The research linking psychological distress to parenting has focused on mothers, many of whom are not adolescent mothers. Research on adolescent mothers indicates that
these mothers face greater risks of experiencing depressive symptoms than older mothers, even when controlling for socioeconomic status (Caldwell et al., 1998; Leadbeater & Linares, 1992; Schweingruber & Kalil, 2000). The roots of depression among adolescent mothers are multiply determined, as they may be tied to mother-grandmother conflict, parenting stress, normative adolescent development, and the stresses of parenting as an adolescent, in particular if this is an off-time event that separates the mother from her peers (Apfel & Seitz, 1996; Caldwell et al., 1998). In addition, adolescence is a developmental period featuring normative increases in depression rates among females (Nolen-Hoeksma & Gergus, 1994; Petersen, Compas, Brooks-Gunn, Stamler & Grant, 1993). Understanding the processes through which adolescent mothers experience psychological distress that in turn is linked to parenting and child outcomes is paramount to the development of effective family support programs. Identifying these processes requires examining the interaction of maternal and contextual characteristics. Comparing the influences of maternal psychological distress among adolescent and similarly economically disadvantaged young adult mothers all of whom reside in similarly structured households has the potential to illuminate differential predictors and outcomes associated with depressive symptoms.

Little research has focused on grandmother mental health and parenting behaviors (Caldwell et al., 1998; Sadler & Clemmons, 2004; Schweingruber & Kalil, 2000). Caputo’s (2001) analysis of national survey data revealed that grandmother-grandchild co-residence in three-generation homes was associated with elevated levels of depressive symptoms among grandmothers in comparison to non-co-resident grandmothers. Previous levels of depressive symptoms, however, were most predictive of elevated depressive symptoms following grandchild co-residence, suggesting that co-residence among grandmothers already
vulnerable to depression may be especially problematic. This finding is particularly important given the susceptibility of low-income adults to psychological distress, including depression (Magnuson & Duncan, 2002; McLoyd, 1998).

Perceptions of role strain or off-time events may play a role in grandparent psychological distress. Caputo (2001) found the depression effects to be strongest among younger (43-53 years of age versus 63-74 years of age) grandmothers. Likewise, See, Bowles and Darlington (1998) suggest that younger grandmothers whose daughters become adolescent mothers may face elevated risks for depression because the rapid transition to grandmotherhood takes place at a time when grandmothers are focused on their own life tasks (i.e., employment, raising their own children). Grandmothers of adolescent mothers may experience depression due to disappointment over the daughter’s early motherhood, although this state of depression may simply represent a short-lived phase for many grandmothers. Those grandmothers, however, who have a history of depression or who may face considerable burdens tied to caring for a new unplanned grandchild, may experience more intense and lasting depressive symptoms (See et al., 1998). The primary caregiving grandmother literature suggests that many grandmothers are able to disassociate the anger and hurt they feel regarding their own children from the grandchild (Goodman & Silverstein, 2002; Hayslip & Kaminski, 2005).

Grandmothers who are primary caregivers and those who are caregivers in three-generation households generally face elevated risks to physical and mental health in comparison to less-involved non-residential grandmothers (Jendrek, 1994; Musil, 1998; 2000 Musil & Ahmad, 2006). In Musil’s (1998) community sample, grandmothers with primary and supplemental caregiving responsibilities reported equally poor mental and physical
health, suggesting the importance of considering the mental health needs of grandmother caregivers across the responsibility spectrum (Musil, 1998). The associations between grandmother depression and interactions with the grandchild, however, remain unexplored.

The influence of psychological distress on parenting and ultimately on child outcomes should be studied from a dynamic family systems perspective. Rosman & Yoshikawa's (2001) analysis of a subset of families from a welfare demonstration program in which the mothers were adolescents did not measure parenting directly, but did report that grandmother co-residence moderated the relationship between maternal depression and positive behavior of children 3.5-6 years of age. When mothers reported high levels of depressive symptoms, grandmother co-residence was associated with more positive behavior, but when mothers reported low levels of depression, grandmother co-residence was associated with fewer positive behaviors and lower cognitive outcomes. These findings may suggest that grandmother presence is protective when maternal parenting is impaired, but grandmother presence becomes interference when maternal parenting is not impaired (Rosman & Yoshikawa, 2001). Alternatively, grandmother parenting may simply be more effective such that when mothers are highly depressed, grandmothers are more involved in caregiving, and caregiving by grandmothers is more beneficial to children. More precise process-focused research that includes parenting behaviors by both generations is needed to explore these relationships.

Maternal and grandmother mental health should be considered simultaneously. If the mothers in the present sample face an elevated risk of experiencing psychological distress, then the mental health of the grandmother who is serving as the secondary caregiver becomes highly relevant, as grandmother behavior may serve as a buffer or as an additional stressor if
the grandmother is also experiencing psychological distress. Of course the genetic aspects of psychological distress cannot be ignored as mothers and daughters may face similar genetic risks for experiencing psychological distress, placing the child in double jeopardy of being cared for by distressed caregivers.

The large body of literature demonstrating that parental psychological distress mediates the relationship between economic disadvantage and negative child outcomes is pivotal in the development of family-based intervention and strengthening policies. This research suggests that parental psychological distress must be remediated in order to improve parenting, and ultimately to protect children from the deleterious effects of poverty. Identifying moderators and mediators of the relationship between economic pressure and parental psychological distress and/or of the relationship between parental psychological distress and parenting becomes a key goal for researchers.

1.1.4 Social Support

Social support has emerged as a critical moderator in the relationship between poverty, and stress more broadly, and parenting practices. Social support in the presence of financial strain may protect mothers from elevated psychological distress that in turn impacts parenting practices. Higher levels of social support have been associated independently with reduced financial strain, depressive symptoms, and punitive parenting practices (Jackson et al., 2000; McLoyd et al., 1994; Orthner et al., 2004). In their analysis of a national data set of mothers with children under 5 years of age, Hasihma & Amato (1994) demonstrated that perceived social support was related to parenting only for low-income mothers. The authors suggest that perhaps perceived social support, the measure of social support employed in the present study, may moderate the impact of financial pressure on psychological distress that in
turn is associated in other studies with less positive parenting. Social support has also been identified as promoting positive family relationships among low-income families (Orthner et al., 2004). Although social support is an important resource for all parents, it may be especially important for parents living in poverty because they may face more stress and lack financial resources to purchase support (i.e., child care) (Brown, Brody & Stoneman, 2000; Hashima & Amato, 1994; McLoyd, 1998; Orthner, Jones-Sanpei & Williamson, 2004).

The transactional nature of social support suggests that characteristics of the stressor, the individual, the environment and the types of social support available shape the processes through which social support is related to parenting and child outcomes (Antonucci & Jackson, 1990; Armstrong et al., 2005). Conceptualizing social support in multigenerational families is complex because the nature and effectiveness of social support most likely varies according to the caregiver’s own characteristics, as well the characteristics of the child, of other members of the support network and of the broader ecological context.

Considerable research on adolescent parenting has explored social support in various forms and from various sources. Adolescent mothers, and perhaps older mothers living in multigenerational households, may rely on family sources of support. Mothers living in rural areas may also be more dependent on familial social support given the limited availability of community resources (Blalock et al., 2004; Cochran et al., 2002; Weed, Keough & Borkowski, 2000). Grandmother co-residence is not synonymous with grandmother support, and hence family social support and co-residence should be examined separately (Apfel & Seitz, 1996; Gee & Rhodes, 1999; Nath et al., 1991; Rosman & Yoshikawa, 2001; Spieker & Bensley, 1994). Across samples of adolescent mothers, family support has been demonstrated to be an important buffer of parenting behaviors and attitudes when mothers
face other risks to parenting, including youth, psychological distress and stress (Apfel & Seitz, 1996; Moore & Brooks-Gunn, 2002).

Although the provision of adequate social support may be related to positive parent and child outcomes across populations, determining the appropriate level of social support may be a challenge in adolescent families, and perhaps in other multigenerational households. The birth of the child likely brings the adolescent mother closer to her own mother at a time when normative development indicates a weakening in the parent-child bond in favor of the peer group. This departure from the normative pattern may cause stress for the mother and the grandmother. At the same time, there may be a fine line between grandmother support and assistance with childcare and grandmother interference that limits the adolescent’s autonomy both in her role as an adult and in her role as a mother (Apfel & Seitz, 1996; SmithBattle, 1996; Schweingruber & Kalil, 2000). For example, Oyserman et al.’s (1993) study of teenage mothers from working class families revealed that high levels of teen perceived grandmother support were related to higher levels of grandmother involvement in childcare and less nurturing parenting behavior by the teen mothers, perhaps indicating that high levels of social support in this sample was truly a proxy for maternal abdication of the parental role and grandmother assumption of this role. Mother-grandmother relationships marked by grandmother support for mother autonomy and individuation, normative adolescent developmental tasks, have been associated with better child outcomes (Chase-Lansdale et al., 1994; Apfel & Seitz, 1996).

Few studies of multigenerational families have included grandmother perceptions of social support. In a rare exception, Sadler, Anderson and Sabatelli (2001) report that grandmother, but not adolescent mother, self-reported perception of family support was
directly related to parenting competence by the young mothers. Grandmother parenting competence was not measured. The authors suggest that grandmothers who feel more supported are able in turn to serve as more beneficial parenting resources for their children. This finding underscores the complexity of family systems in these households and the importance of considering multiple factors from various family members.

The literature on caregiving grandmothers suggests that social support is strongly linked to better physical and mental health, although parenting and grandchild outcomes are generally not measured in these studies (Hayslip & Kaminski, 2005; Musil & Ahmad, 2002). For example, Musil and Ahmad (2002) demonstrated that perceived social support among primary and supplemental caregiving grandmothers was negatively related to depression, and supplemental caregiving grandmothers reported family members as the chief source of support.

1.2 Child Outcomes

Research applying family stress process models to families with young children seems noticeably missing from much of the literature on family processes and income, despite research suggesting that young children may be particularly vulnerable to poverty (Brooks-Gunn & Duncan, 1997), and at the same time may be especially influenced by family processes (Aber et al., 2000; Linver et al., 2002). The handful of studies that do apply family stress model perspectives to families with young children strongly suggest that parental psychological distress and parenting mediate the pathways from low-income to negative child socioemotional outcomes (Jackson et al., 2000; Linver et al., 2002; Mistry et al., 2004). For example, in their analysis of a subset of data from the Infant Health and Development Project Linver and colleagues (2002) noted that the family process mediated
influence of poverty on child socioemotional development was of a greater magnitude than the effects found in studies with adolescents.

1.2.1 Infant Outcomes

Higher rates of psychosocial morbidity for children from low-income families tend to emerge in the early school years (Bradley & Corwyn, 2002). These emotional and behavioral problems, however, probably develop over time as a result of processes that begin early in a child’s life. Understanding the early processes that may give rise to later disadvantages or deficits, therefore, is a crucial research goal in order to inform the development of effective early intervention programs and policies. It remains unclear whether these deficits manifest in the early school years as a result of long-term impacts of early developmental processes or whether these negative outcomes reflect cumulative exposure to developmental risk that ultimately manifests for biological or contextual reasons in the early school years. Identifying early processes and indicators that may place some poor children at risk for the later development of behavior problems is a worthy research aim.

The present study addresses this issue by examining links between parenting by mothers and grandmothers and the development of temperamental or behavioral risk in infancy. An emerging body of research underscores the early malleability of temperamental characteristic, as the childrearing environment, including the parenting behaviors of caregivers, likely shapes infant and toddler temperament. Lemery and colleagues (1999) report that their analysis of maternal reports of temperament from 3-48 months reveals lack of stability across the infancy period with shifts to relative stability from 24-48 months. Early sensitive and warm parenting has been linked to decreased emotional negativity and reactivity and increased sociability (Ipsa et al., 2004; Van den Boom, 1994). In contrast,
early harsh and negative parenting has been linked to increased distress reactivity and emotional negativity (Ipsa et al., 2004; Scaramella et al, in press). Analyses with the larger sample from which the current sample is drawn have suggested that sensitive and responsive parenting at 15-months is positively associated with temperamental responsiveness at 15-months, although the direction of effects is unclear (Burchinal et al., 2007).

Early temperamental characteristics, including high levels of irritability and negative affect, may be risk factors for the development of behavior problems. Infant reactivity may be a risk factor for the development of poor emotional regulation (Stifter & Corey, 2001). Early distress reactivity and emotional negativity may represent one early pathway for the development of externalizing behaviors (Scaramella et al., in press). Understanding the links between parenting and early temperamental/behavioral risk, therefore, has the potential to illuminate early pre-cursors or risks for the development of behavior problems.

1.2.2 Child Outcomes in Three-Generation Families

As discussed previously, few studies have measured directly the relationship between grandmother parenting and child outcomes. There is some evidence to suggest, however, that grandmothers may play an important buffering role. Patterson’s (1997) small sample of adolescent mother families revealed an important protective role for grandmothers in the development of secure attachment relationships. The amount of awake time that three-year-olds spent with grandmothers, but not with mothers, was positively correlated with attachment status with grandmothers. Children who were insecurely attached to their mothers were approximately 4.5 times more likely to be securely attached to their grandmothers. These findings suggest that grandmother-grandchild relationships may serve a compensatory role when the mother-child relationship is compromised.
Accumulating evidence gathered from studies of adolescent mothers living with their mothers suggests that residence in three-generation households is not related to child outcomes. In a rare study that included measures of grandparent parenting (self-report), Oyserman and colleagues (1993) found that there was no direct or indirect (via support for maternal parenting) relationship between grandmother parenting and toddler compliance, affect or cognitive development. Similarly, Black and colleagues (2002) reported that there was no difference in externalizing or internalizing behaviors for pre-school aged children born to adolescent mothers who lived in three-generation homes versus those pre-school children who lived in single mother or mother and romantic partner homes. Luster and colleagues (2000) compared the household and maternal characteristics of 54-month old children born to adolescent mothers who composed high and low verbal score groups. They found that there was no difference in grandmother co-residence for the high and low achieving groups at 54-months or earlier in development. There were some relationships between grandmother characteristics and high verbal scores, as those in the higher group, independent of maternal education, were more likely to have grandmothers with more education (high school or beyond) and the grandmothers were older at the birth of their own first child than the grandmothers of children in the lowest performing group. Grandmother parenting behavior was not measured in this study.

There may be racial/ethnic differences in the processes linking grandmother parenting to child outcomes in three-generation homes. East and Felice (1996) reported that grandmother co-residence and maternal report of grandmother involvement in child care was positively associated with child adjustment, as measured by maternal reports of social withdrawal during early childhood for African American families only. In contrast,
grandmother co-residence was related to higher levels of social withdrawal among white families. This relationship was not mediated by maternal parenting. These findings were based on maternal report of quantity of care, as opposed to independent observations of grandmother-grandchild interactions, which may provide a more accurate measure of grandmother influence on child behaviors.

Many of these studies may confound maternal characteristics that are linked to the likelihood of residing in three-generation homes because these studies compared the children of mothers who continued to live with their mothers to the children of mothers who moved to independent households. Moreover, these findings are based largely on adolescent mother samples. This sampling bias is problematic because adolescent motherhood itself may be a risk factor for less optimal child development (Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002). The present study, therefore, seeks to advance the field by testing for potential direct effects between observations of grandmother-grandchild interactions and infant outcomes in Black and White three-generation families with diverse maternal ages. Furthermore, the potential interactive influence of mother and grandmother parenting will be explored to determine if grandmother parenting is particularly promotive of early outcomes when mother parenting behaviors are less optimal.

1.3 Family Structures and Processes

The processes through which economic hardship impacts child outcomes may vary by family structure. The specific pathways linking economic strain, psychological distress, parenting and child outcomes may vary for caregivers within the same families (Conger et al, 1992; Parke et al., 2005), but very limited research has examined these variations for non-married or non-romantically involved caregivers. Conger and colleagues (2002) replication
of the family stress model in a sample of African Americans included non-parental secondary
caregivers. In these families, maternal depressive symptoms were not associated with
relationship conflict, but these depressive symptoms were directly related to less-involved
parenting behaviors. Mothers’ relationships with their children may operate more
independently of their co-parent relationships when the other adult is not the father. In
addition, elevated depressive symptoms among secondary caregivers were directly associated
with reduced caregiver relationship quality, less nurturing parenting behaviors and poor child
outcomes (Conger et al., 2002). These findings suggest that transactions across levels of
family-systems may vary in non-parental families.

The factors that influence psychological distress and secondary caregiver-child
dynamics warrant further investigation. The inclusion of mothers’ partners in addition to
grandmothers and other family members as secondary caregivers in Conger and colleagues
(2002) study may complicate the interpretation of processes and pathways, for these various
secondary caregivers are likely to have differential investments in and expectations for the
relationship with the child. By limiting the secondary caregivers to grandmothers in the
present study, the family stress perspective can be tested to model explicitly potentially
different associations with parenting behaviors for mothers and grandmothers.

The intergenerational aspects of parenting are also important to consider, although
this perspective has received little direct investigation. Given the intergenerational
transmission of poverty and disadvantage, in particular in the rural areas in which the
proposed study is conducted, the mothers were likely to grow up in families facing adverse
economic circumstances. The influences of poverty on the young mothers may have been
mediated by the grandmother’s parenting. In other words, the mothers, in particular the
adolescent mothers, may be experiencing the negative outcomes (i.e., internalizing and externalizing symptoms, poor academic achievement) that have been demonstrated in studies testing family stress models for adolescents. These experiences may place the parent at risk for elevated psychological distress that in turn is linked with her own less positive parenting, above and beyond the direct effect of current economic strain. Moreover, if the grandmother's parenting of the mother was influenced by these processes, then her parenting behaviors with the grandchild may be influenced by years of experience, in addition to the current experience of economic strain and psychological distress. Alternatively, as research has demonstrated with primary caregiving grandmothers (Hayslip & Kaminski, 2005), the grandmother's perception of the grandmother-grandchild relationship may differ from her perception of the mother-child relationship in ways that foster more positive parenting.

Potential intergenerational role modeling of parenting behaviors further complicates understanding parenting in these families. The mother may have learned many of her own parenting techniques from her experiences with the grandmother, although these parenting behaviors may have been compromised by economic disadvantage. Even more directly, the grandmother may be teaching the mother these same behaviors with the grandchild, perhaps especially in the case of adolescent mothers who may rely more on their own mothers for caregiving advice and assistance. In a rare study that measured mother and grandmother parenting behaviors with the grandchild, Chase-Lansdale and colleagues (1994) reported that negative, but not positive parenting, by mothers and grandmothers of 36-month olds was correlated. In addition to understanding the pathways through which economic disadvantage may compromise the caregiving behaviors of mothers and grandmothers, it is important to
identify generational trends in parenting so that interventions may focus on ending cycles of negative parenting.

1.4 Timing and Age

According to life course theory, timing shapes developmental trajectories for individuals and communities. Timing of lives, a central principle of life course theory, suggests that the life course trajectory is influenced by the timing and sequence of normative and non-normative transitions (Elder, 1998). Attributions about timing are shaped by family, cultural and societal norms. Extensive grandmother involvement may be associated with teenage motherhood, and thus a disruption in normative expectations for the timing of motherhood and grandmotherhood and the normative tasks associated with adolescence and middle age. Studying the transition to parenthood within multigenerational families requires accounting for the timing of family transitions and the interactions among life course trajectories of mothers and grandmothers (Burton, 1996).

1.4.1 Mother Age

Much of the research on teenage mother parenting behaviors has focused on the disadvantages stemming from parenting at a young age. Adolescent mothers have been shown to be less sensitive and responsive, less stimulating and less warm than adult mothers (Berlin, Smith & Brooks-Gunn, 2002; Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002). In addition, within all adolescent samples, younger mothers are often less responsive than older teen mothers (Black & Nitz, 1996; Shapiro & Mangelsdorf, 1994). These conclusions regarding the disadvantages associated with early childbearing, however, may in part stem from the lack of adequate comparison groups for teenage mothers (Berlin et al., 2002; Coley & Chase-Lansdale, 1998; East & Felice, 1999; Moore & Brooks-Gunn,
Adolescent mothers may be at risk for negative outcomes and parenting due to the same factors that placed them at risk for early pregnancy in the first place (Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002).

In one of the few large-scale studies with adequate comparison groups, Berlin and colleagues (2002) reported maternal age effects on parenting in a sample of 1,702 low-income Early Head Start mothers of 14-month olds, among which approximately one-third were classified as teenage mothers (19 or younger). Younger maternal age was associated with more intrusive, less supportive and more detached parenting independent of the influences of income and education. Further examination revealed interactions between maternal age and race/ethnicity. Younger African American, but not white or Latina mothers, were more detached than their older counterparts. When analyses were run separately for each ethnic group, the influence of maternal age on intrusiveness and less supportive parenting disappeared for white mothers, as sociodemographic risk (education, income) predicted parenting. A similar relationship was observed for Latina mothers, although English proficiency moderated the relationship between demographics and parenting for this subsample. Within group analyses of the African American mothers revealed that sociodemographic risk, operationalized in terms of education and income, reduced the strength of the relationship between maternal age and intrusive and less supportive parenting, but the main effect of age persisted. The authors caution that these racial differences may stem from the uniformity of socioeconomic disadvantage among the African American subsample and the younger mean age of the African American mothers.

Perhaps failure to account for family system dynamics may also be at play, as given greater general reliance on extended family and grandmother caregiving among African
Americans, perhaps the children of younger African American mothers in that sample experienced considerable grandmother care, such that the mothers were less experienced and therefore less sensitive to their infants. As Unger and Cooley (1992) suggest, perhaps African American families emphasize the importance of the adolescent mothers’ school responsibilities over parenting responsibilities. These potential interactions among family processes within different racial/ethnic contexts warrant investigation and further highlight the need to include grandmother parenting in studies of adolescent mothers.

Maternal age by itself may not always be related directly to parenting, as only in the presence of other risks to early parenting and in certain contexts does age appear to confer a disadvantage. The lack of process-oriented research among adolescent mother families further leads to lack of clarity regarding the contexts in which maternal age is linked to impaired parenting (East & Felice, 1999; Shapiro & Mangelsdorf, 1994; Whitman et al., 2001). Particularly relevant to the current study, co-residence with the grandmother has been demonstrated to be related to positive parenting behaviors for young adolescent mothers in comparison to older adolescent mothers. Chase-Lansdale and colleagues (1994), for example, found that maternal age alone did not predict differences in parenting behaviors observed during a structured observation with three-year old children, but younger adolescents who lived with their own mothers were more supportive and positive than younger adolescents living alone and older adolescents living with their mothers.

Young adolescent mothers may be particularly dependent on the social support provided by family members. Shapiro & Mangelsdorf (1994) examined the role of family support on the parenting of adolescent mothers above and below 17 years of age. Family support was positively related to interpretation of infant emotion for mothers in the younger
group, and negatively related for mothers in the older group. In addition, family support was positively related to parental facilitation during a teaching task for younger mothers only. These results may provide further support for the suggestion that there is a fine line between family support and interference. Younger adolescent mothers may rely on this support, but older adolescent mothers may interpret this support as interference. Alternatively, considerable family support among older adolescent mothers may be indicative of less maternal involvement in parenting. Mounting evidence suggests that grandmother co-residence, high levels of familial social support and high levels of grandmother assistance with child care may be most advantageous to young mothers.

Delineating the influences of maternal age on parenting and child outcomes must also account for the family systems in which the child and mother are functioning. As Moore and Brooks-Gunn (2002) note in their review of adolescent parenthood, research on teenage mothers often overlooks the complexity of family life for these mothers. The proposed study provides the opportunity to tease apart the influence of maternal age by including families with similar household structures (three-generation without the mother's partner), similar community and economic contexts (high poverty, rural settings), and diverse maternal ages and race/ethnicities (African American and European American).

1.4.2 Grandmother Age

The role of grandmaternal age remains largely unexplored. Grandmother age seems quite relevant to parenting and child outcomes, especially in families in which grandmothers assume considerable childrearing responsibilities. Becoming a grandmother with significant childcare responsibilities may contribute to role overload among younger grandmothers who were not expecting to assume the responsibility for an infant at a stage in life when they are
balancing other responsibilities. Alternatively, assuming a secondary caregiving role may be more stressful for older grandmothers who may be physically unable to meet the demands of caring for an infant, especially given the health risks associated with poverty. There is little consensus regarding age in the primary caregiver grandmother literature (Goodman & Silverstein, 2002; Hayslip & Kaminski, 2005).

1.4.3 Age Gap

The interactive effects of maternal and grandmother age may be important to consider, although this approach has received very little attention in the literature. Middle-aged mothers and adolescents may both be entering phases in their lives in which they anticipated greater independence from family and family responsibilities, but the birth of a grandchild may make the mother more reliant on family support and the grandmother more responsible for providing family support. Kaplan (1996) suggests that the age gap between the mother and the grandmother may be more important in understanding family dynamics than the age of either family member. Perceptions of off-time events such as unexpected adolescent motherhood and subsequent early grandmotherhood may create stress for all family members (Burton 1996; Elder, 1998). Conflict between mothers and grandmothers may be heightened when the mother and grandmother are close together in age, and hence more like peers than mothers and daughters. If the grandmother was a teenage mother herself, she may still be recovering from the disadvantages she experienced as a result of early parenthood, and hence she may be unprepared psychologically or financially to assume the responsibilities of a grandchild (Coley & Chase-Lansdale, 1998; George & Dickerson, 1995). At the same time, grandmothers who were once teenage mothers may be more understanding of their daughters' circumstances, and hence be particularly supportive of the
daughters (Kaplan, 1996). Notions of the timing of parenthood and the potential role of grandmother-mother generational gaps on parenting within multigenerational families remain largely unexplored in the extant quantitative research. The influences of grandmother age and the potential interactions between grandmother and maternal age on well-being and parenting warrant further investigation.

Beyond age itself, the ecological niche in which these families function may be an important moderator of the influence of age on parenting and well-being. As Burton (1990; 1996) has demonstrated in economically disadvantaged African American multigenerational families, the normativeness of timing of first birth within these families is related to caregiver stress and well-being across generations. When adolescent childbearing with subsequent grandmother involvement in childrearing is the community norm, then these events are not “off time”, and hence may be associated with fewer adjustment difficulties. Burton’s (1990) research, for example, in an African American community in which compressed generation families, those families in which there is typically little space between generations, such that the grandmother typically raises the grandchild, who in turn typically helps with elder care for her grandmother, were the norm, suggests that the influences of maternal or grandmaternal age on parenting may be irrelevant to parenting or child outcomes. Moreover, African American families in general may rely more on extended kinship networks for childcare and support, and rural families of all races, especially poor rural families, may also rely more extensively on extended families. Understanding the grandmother-child dynamic in these families becomes particularly important as grandmother behaviors are likely to influence child outcomes.

1.5 Role Overload and Household Composition
Role strain or overload may be a particular risk for psychological distress and less optimal parenting for the grandmothers in the present sample. Feelings of role overload may stem from the psychosocial dimensions of becoming a grandmother, and/or they may stem from the instrumental demands placed on the grandmother. From a life course perspective, early grandmotherhood may exert adverse influences on grandmother mental health, and in turn influence her interactions with the grandchild, as she may resent the “off time” event of grandparenthood, a life role transition she did not choose at a time when she expected to be entering middle age and becoming freer of childcare responsibilities. In Burton & Bengston’s (1985) study of “early” and “on time” grandparenthood among African American grandmothers, the negative reactions of the young or “early” grandmothers stemmed from their unanticipated transition to the grandmother role, not from the circumstances of their own daughter’s early motherhood. Ultimately, this early transition may inhibit the grandmothers’ own development, and thus lead to role strain and depression (Burton, 1996; Burton & Bengston, 1985; See et al., 1998).

Younger grandmothers may experience considerable role overload as they try to juggle multiple roles. These grandmothers may be caring for their own young children, and among the predominantly single low-income grandmothers in this sample, they may also be struggling to provide economic resources for the expanded family (Dallas, 2004; See at al., 1996). In a small sample of grandmothers of African American adolescent mothers, Voran & Philips (1993) reported that grandmother satisfaction with her childcare role was negatively related to the number of pre-school children in the household. Qualitative interviews with young grandmothers of adolescent mothers reveals the conflict many grandmothers feel in dividing their time between grandchildren and their own children, and the stress of
simultaneously parenting an infant, an adolescent and potentially children of other ages (Paskiewicz, 2001; Sadler & Clemmens, 2004). In addition, middle age grandmothers in this “sandwich” generation may also be caring for their own elderly parents, and hence feel pressure from generations on both sides (Burton & Bengston, 1985).

These findings suggest that grandmothers caring for multiple young children may experience role overload. Household composition, therefore, may be an important factor to consider in the present study. Multiple household members may entail greater caretaking responsibilities for the grandmother. If there are numerous other adults in the household, however, the grandmother may have support for caregiving. The number of children in the household or the adult-to-child ratio, therefore, may be associated with grandmother psychological distress and ultimately grandmother parenting behaviors, as these measures of household composition may be related to role overload.

1.6 Grandmother Parenting

Despite the frequency of three-generational households, little research has explored the processes of grandparent-grandchild relationships in families in which grandmothers are highly involved caregivers, but they do not bear the primary responsibilities of child care (George & Dickerson, 1995; Jendrek, 1994; Lee, Ensminger, & LaVeist, 2005; Musil, 1998). In their review of research on grandparenthood, Smith and Drew (2002) note the glaring lack of research attending to theory and processes shaping grandparenting behaviors. Moreover, observational studies of grandparent-infant relationships are missing from the literature. Grandmother behaviors may be quite variable across families given that the role of the grandmother in multigenerational families may be less-defined than the role of the mother, and accordingly may be influenced greatly by other factors in the grandmother’s life and by
the dynamics of the mother-grandmother relationship (Moore & Brooks-Gunn, 2002). Traditional research on grandparents has focused on the grandparent role from a life course or lifespan perspective by focusing on grandparents who play a supplemental and differentiated role from parents (Smith & Drew, 2002). Other studies have focused on patterns of contact between generations, examining factors such as parental divorce, proximity and gender. Only recently, however, have family systems perspectives been utilized to explore grandparenthood (King, Russell & Elder, 1998; Smith & Drew, 2002), although these studies still tend to focus on only one generation.

Recently, considerable research has focused on grandparents who are raising their grandchildren. These grandparents, primarily grandmothers, are generally the custodial or primary caregivers in households in which the middle generation (the parent) is missing. These grandmothers assume the primary role for a variety of reasons, including parental illness and death, incarceration and substance abuse. Much of the research on these grandmothers, however, has focused on grandmother mental and physical health. There has been very limited examination of parenting behaviors of primary caregiving grandmothers (Goodman & Silverstein, 2002; Hayslip & Kaminski, 2005; Smith & Drew, 2002). The current approaches to studying grandparents, therefore sit at two extremes of the caregiving continuum, and thus have overlooked to a large extent the vast number of grandmothers who serve as secondary or supplemental caregivers while living with grandchildren and parents. As a result, there is a paucity of insight into family processes in these three-generation households (Musil, 1998). The present study aims to address this research gap.
1.7 Racial/Ethnic Context

Much research on multigenerational households has focused on low-income African American families, perhaps because intergenerational relationships, and in particular grandmother involvement in childrearing, have long been seen as culturally accepted adaptive family forms to endure social and economic pressures (Garcia Coll, 1990; Hunter, 1997; Hunter & Taylor, 1998; McAdoo, 1999; Pearson et al., 1990). African American grandmothers are more likely to assume caregiving responsibilities, to reside with their grandchildren, and to be custodial caregivers (Fuller-Thomson & Minkler, Hunter & Taylor, 1998; Musil, 1998). Regardless of residence or marital status, African American parents may rely more on grandmothers for assistance (Hunter, 1997; Hunter & Taylor, 1998; Rudkin et al., 1995), especially among families residing in the rural south (Hunter, 1997). Hunter & Taylor (1998) suggest that African American grandparent role expectations may be more malleable and adaptive and less differentiated from the parent role than the subscribed roles of grandparents in other groups.

The processes influencing the roles family members play in multi-generational households, and more broadly speaking in black extended kinship networks, remain unclear (Hunter & Taylor, 1998; Pearson et al., 1990). Ethnic minority mothers may technically be classified as single parents, but they may rely more extensively on extended kinship networks (McAdoo, 1999; Garcia Coll & Magnuson, 1999; Garcia Coll et al., 1996; Harrison, Wilson, Pine, Chan & Buriel, 1990; Johnson, 2000). Reliance on extended kinship networks may stem in part from long-standing cultural patterns. These networks also represent an adaptive strategy to share resources and to cope with the challenges of life as a member of an ethnic minority group (Garcia Coll, 1990; Harrison et al., 1990). Extended family networks may
provide social support to buffer against the negative influences of poverty, but they may also carry additional burdens for families who are dispersing diminished psychological and economic resources among a number of family members. For example, Kivett’s (1993) comparison of support networks of rural African American and white grandmothers revealed that African American grandmothers both gave and received more instrumental support from family members than white grandmothers. As discussed previously, the grandmothers in the proposed study may be expected to provide support to their daughters’ children while also juggling the responsibilities of caring for other family members. Consistent with this familial orientation, African American adolescent mothers are more likely to live in their households of origin (East & Felice, 1996; Unger & Cooley, 1992; Moore & Brooks-Gunn, 2002) and to report closer relationships to their mothers and to other family members than white adolescent mothers (Elise, 1998). Reliance on intergenerational support, however, is not a solution to the disadvantages faced by African American children because multigenerational caregiving is only beneficial to children when social support is provided and extended family connections do not entail further sources of stress (McLoyd, 1990). Given the centrality of African American kinship networks, children are influenced by multiple adults and caregivers, so that studying family processes in these families may require complex models that move beyond the boundaries of nuclear families (Garcia Coll, 1990).

Evidence is mounting that family stress models may be applicable to diverse racial and ethnic groups (Conger et al., 2002; Elder et al., 1995; McLeod & Nonnemaker, 2000; McLeod & Shanahan, 1993; McLoyd et al., 2000; Mistry et al., 2002; Parke et al, 2004). Economic disadvantage appears to engender similar pathways to child socioemotional
development across racial/ethnic groups. Mistry and colleagues (2002) suggest that in high poverty samples, economic factors may be more influential on family processes and child outcomes than cultural factors. Emphasis on replicating family stress models among populations of color, however, may mask important cultural variations, and in doing so simultaneously fail to highlight social structural vulnerabilities and community or family-based strengths and resources.

African American parents may appear to be less vulnerable to psychological distress stemming from economic disadvantage, and their children may be less susceptible than white children to the negative influences of poverty on socioemotional development (Bolger et al., 1995; Johnson, 2000; McLeod & Nonnemaker, 2000). Some studies (Body & Flor, 1997; Elder et al., 1995) have reported a racial/ethnic difference in the influence of depression on parenting among economically disadvantaged families. For example, in Brody & Flor’s (1997) study of single-mother African American families in rural areas, maternal depression did not mediate the relationship between financial strain and parenting. It should be cautioned that these discrepancies might reflect the use of culturally inappropriate measures of psychological distress, as instruments are often developed and normed in white populations.

Equating or statistically controlling for income or dimensions of socioeconomic status (i.e., parental educational level, occupational prestige) misrepresents differences in sociocultural histories and family structures (Huston et al., 1994; Johnson, 2000; McLoyd & Ceballo, 1998;) and the subjective experiences of poverty (Beiser, Hou, Hyman & Tousignan, 2002; Bradley & Corwyn, 2002). Likewise, controlling for race/ethnicity without accounting for systematic differences in income and socioeconomic dynamics may artificially inflate race-based effects that are in fact a result of the complex intersections of
race/ethnicity, socioeconomics and discrimination (Johnson, 2000; McLoyd & Ceballo, 1998; Steinberg & Fletcher, 1998). Moreover, within similar income or SES brackets, African American families may face more unmeasured disadvantages than their white counterparts. The greater constellation of risk factors associated with poverty among families of color may attenuate the influences of psychological distress on parenting, and likewise the influences of parenting on child outcomes because parents and children in these families may be exposed more directly to the negative influences of poverty and its co-factors (McLoyd, 1998).

Lower rates of psychological distress among low-income African mothers and/or weaker relations between psychological distress and parenting among these families may reflect the omission of important sources of support for mothers and children that help buffer the influences of economic disadvantage (McLoyd et al., 2000). Grandmothers may represent one of these key sources of support, as many studies of single African American mothers do not include the extensive involvement of their own mothers in childrearing. This support for parents, however, may come at a cost to the grandmother's own well-being. In two separate studies of depressive symptoms among black and white adolescent mother families, Caldwell and colleagues (1998) and Schweingruber & Kalil (1998) found that while levels of depression did not vary by race among mothers, black grandmothers reported higher mean levels of depressive symptoms than white grandmothers. The implications of these findings for parenting behaviors and child development remain unexplored.

Evidence is accumulating that examining relationships between harsh or negative parenting and poor child outcomes among African American samples may be oversimplified approaches to studying parental influences on child functioning. Harsh or controlling
parenting may be culturally adaptive and normative, and hence not linked to negative outcomes (Deater-Deckard & Dodge, 1997; Garcia Coll et al., 1996). Alternatively, in African American families high levels of negative and positive parenting may not be distinct such that high levels of sensitive parenting in conjunction with high levels of negative parenting are not unusual, and more importantly, may explain the lack of a strong relationship between negative parenting and child outcomes (Deater-Deckard & Dodge, 1997; Ipsa et al., 2004), particularly since many studies do not incorporate measures of positive and negative parenting into the same model. Some studies have shown that among African American samples high parental control, in particular in conjunction with high parental warmth, is linked to neutral or positive child outcomes (Brody & Flor, 1998; Ipsa et al., 2004; McLoyd & Smith, 2002).

The present study presents an opportunity to move beyond race comparative paradigms to examine directly the processes that have been suggested to be critical to understanding parenting and child outcomes among economically disadvantaged African American families. Grandmother parenting is included in the models to test for a main effect on child outcomes, hence addressing the influence of at least one extended family member. The relation between child outcomes and negative parenting by the mother and sensitive parenting by the grandmother can also be examined simultaneously. Across racial/ethnic groups, a family systems perspective stresses the importance of considering the caregiving behaviors of all family members simultaneously.

1.8 Rural Context

Rural poverty is a growing and understudied phenomenon. In 2002, 14.2% of the non-metropolitan population was poor compared to 11.3% of the metropolitan population.
Poverty rates are also higher among rural children, as 22.7% of children residing in non-metropolitan counties lived in families earning less than the poverty threshold compared to 19.2% of their metropolitan counterparts (U.S. Census Bureau, 2000). Moreover, rural poverty is more likely than metropolitan poverty to be chronic and deep, the forms of poverty that are most detrimental to young children (Duncan & Brooks-Gunn, 1997; Economic Research Service, 2003). The chronic nature of rural poverty is highlighted by the existence of persistent pockets of concentrated poverty. The U.S. Department of Agriculture’s Economic Research Service (ERS) (2005) defines persistent poverty counties as counties with poverty rates of 20% or more that have remained stable over four decades (1970-2000). The sample in the present study is drawn from two regions consisting of persistent poverty counties - the Southeastern Black Belt and central Appalachia. The influence of poverty in these areas is tied to interacting layers of race, geography, history and culture amidst relative economic and geographic isolation. The vast majority of research on African American families has been conducted among low-income urban-dwelling families, creating a low-income, urban bias in the literature (Horton & Allen, 1995; Wiley, Warren & Montanelli, 2002). In Appalachia, the majority of the population and the poor are white, but the region is characterized by a distinct culture that has historically been isolated (Duncan et al., 1995; The Rural Appalachian Youth and Families Consortium, 1996).

The majority of research examining developmental perspectives on poverty has focused on urban populations. There is much less known about the family processes of poor families living in rural areas, despite the possibility that different social and economic contexts may influence the ways in which poverty influences child outcomes (Cochran,
Skillman, Rathge, Moore, Johnston & Lochmer, 2002; Evans & English, 2002). Applying results from urban populations to rural populations may omit important contextual variations (Huston et al., 1994). The family stress models proposed by Conger and colleagues were developed among white families living in the rural Midwest. The focus on the farm crisis as a source of economic adversity in these studies, however, may not be representative of the experiences of most poor rural families who experience persistent and chronic poverty. Brody and colleagues (Brody & Flor, 1997; Brody & Flor, 1998) have expanded family stress models to a population of African American families living in the rural South. The communities sampled by these research groups in many ways serve as notable exceptions. Rural families may be overlooked in poverty research due to the challenges of conducting studies in rural areas (Taylor, 2001; Rural Appalachian Youth and Families Consortium, 1996) and the relative invisibility of rural poverty to mainstream American (Wijnberg & Reding, 1999).

Three-generation households should be situated within the context of general shifts in rural household and economic structures. The number of female-headed households doubled during the 1980’s for rural white and black families with associated declines in married couple families (Horton & Allen). The rise in female-headed households is associated with child poverty rate increases in rural areas. Declines in manufacturing and agricultural jobs with accompanying shifts to a service-based economy have been linked with increased child poverty, possibly due to higher female employment rates and increases in female-headed households as men are less likely to be employed, and are more likely to migrate to communities with better employment opportunities (Porterfield, 2001; Weber & Jensen, 2004). The rise in female-headed households and maternal employment in rural areas may
be particularly stressful for parents and tied to negative child outcomes given the scarcity of quality, accessible childcare for infants and young children with flexible hours required by many of jobs mothers with low-education can attain (Blalock, Tiller & Monroe, 2004; Cochran et al., 2002; Katras, Zuiker & Bauer, 2004; Taylor, 2001). Living with a grandmother, therefore, may represent an important adaptation for child care.

Social support may be distinct in rural areas. Developing and maintaining supportive involved relationships may be particularly difficult for rural parents who must negotiate competing time and energy demands as well as possible geographic isolation (Brody & Flor, 1998). Social support networks may be closely tied to kinship networks in rural areas (Blalock et al., 2004; Cochran et al., 2002; Katras et al., 2004; The Rural Appalachian Youth and Families Consortium, 1996; Wijnberg & Reding, 1999). This strong reliance on kin may stem from a lack of formal support services (Blalock et al., 2004; Cochran et al., 2004) and/or from a distrust of formal service providers (The Rural Appalachian Youth and Families Consortium, 1996). These social networks can provide important services, but these networks may also become burdensome, as families are likely to experience poverty together. As Wijnberg & Reding (1999) note, these sometimes involuntary social support networks may require parents to remain tied to people who are not positive influences in their lives. Multigenerational household formation may represent a necessary adaptation to the lack of adequate housing and employment opportunities in rural areas as much as it represents a family structure preference.

Evidence is accumulating that poor non-metropolitan families are exposed to similar risks and stressors as the urban poor with similar influences on family functions and child outcomes in white and African American families (Brody et al., 1994; Brody & Flor, 1997;
Research applying family stress frameworks to non-metropolitan parents with young children, especially those living in multigenerational households, however, is missing from the existing research base. Similarly, there has been little exploration of grandparenthood in rural areas. Given greater reliance on kinship social networks, grandparents may play particularly important roles in the lives of rural grandchildren (King et al., 1998; Kivett, 1993; Elder, Rudkin & Conger, 1995). Intergenerational caregiving is likely an important adaptation to the economic disadvantages encountered in rural areas (King et al., 1998; Kivett, 1993).

1.9 The Proposed Study

1.9.1 Goals

The present study has the potential to address multiple gaps in the existing literature by applying an ecologically-grounded family stress framework to explore family processes in economically disadvantaged racially diverse rural multigenerational families with infants. The sample, which consists of families in which mothers have designated co-residential grandmothers as the secondary caregivers of their 6-month old infants, is drawn from a larger investigation of family processes among economically disadvantaged families in two distinct rural ecologies. The sample was naturally occurring, as multigenerational families were not a target of the larger study. In other studies, the mothers in the proposed investigation may have been classified as single mothers because they did not have a romantic partner living in the household. This study presents an opportunity to study within family processes by jointly considering the well-being and parenting of mothers and grandmothers functioning in the
same households, and the associations between parenting by both generations and early child outcomes.

The primary aim of the present study is to apply a family stress/process model to this multigenerational non-metropolitan sample in order to examine the processes linking caregiver psychological distress, parenting behavior and early temperamental/behavioral risk. Within this framework, the study has three general goals. The first goal is descriptive in nature. The general characteristics of these families were examined, as the individual and family level characteristics were unknown given that three-generational households were not a focus of the larger study and are overlooked in the literature. In particular, household composition and sociodemographic risk were explored.

This study employed a three-step strategy to apply family stress/process models to these multigenerational families by focusing first on psychological distress, then on the relationship between psychological distress and parenting, and finally on associations among parenting and child outcomes. Breaking down the model into these three stages provided an opportunity to explore in detail the factors that may be particularly relevant to this multigenerational population that have not been explored in other studies. As illustrated by Figure 2, the theoretical model represents an adaptation of the family/stress process model for this sample.

Despite the wealth of findings linking psychological distress to less optimal parenting, in particular among low-income families, there has been little exploration of characteristics related to psychological distress in multigenerational economically disadvantaged households. The adolescent mother literature suggests that adolescent mothers are at risk for experiencing elevated levels of psychological distress. Likewise, there
is some evidence that grandmother caregivers are also at risk for heightened levels of psychological distress. In addition, the economic disadvantage experienced by both generations suggests that psychological well-being may be compromised. Grandmother presence in the household has theoretically been considered to serve as a buffer of maternal psychological distress, but this perspective assumes that grandmothers are not simultaneously experiencing psychological distress. This study presents an opportunity to explore the role of individual, family and contextual factors in predicting psychological distress among both generations of caregivers.

The next goal of the study, drawing on family stress/process approaches, is to explore the relationship between psychological distress and parenting by grandmothers and mothers within these families. As described previously, very little is known about the processes shaping grandmother-grandchild relationships. In addition, maternal behaviors are rarely studied with explicit consideration of the multigenerational family context. The present study addresses these gaps by examining risks to parenting by both generations. In particular, given the pivotal role of psychological distress in the broader literature, this study will explore potential moderators in the relationship between psychological distress and parenting by both generations. An additional goal is to explore the relationship between maternal age and parenting in this sample of mothers of diverse ages living in three-generation households.

The final goal of the study is to examine the relationship between parenting behaviors of mothers and grandmothers and infant temperamental/behavioral risk. Given the absence of grandmothers from much of the existing child development research, this study seeks to examine the potential relationship between grandmother parenting and infant outcomes. In
addition, this study aims to examine the relationship between mother behavior and early infant outcomes in the context of multigenerational households, and more specifically in the context of grandmother parenting behaviors. In particular, the study addresses whether grandmother sensitive parenting behaviors are protective in the presence of negative mother parenting behaviors. Finally, this study also presents an opportunity to explore the potential role of race/ethnicity as a moderator of parenting and child outcomes. The extant literature suggests that the relationship between psychological distress and parenting, and in turn negative child outcomes may attenuated for African American families, perhaps given the importance of unmeasured familial support. This study provides an opportunity to explore the relationship between mother and grandmother parenting and child outcomes within African American and white low-income families.

1.9.2 Research Questions and Hypotheses

In line with the above-stated goals, there are four primary research questions shaping the present study.

**Descriptive**

1. What are the individual (age, education, employment status, age at first birth) and household (number of children, number of adults, adult-to-child ratio, age gap between mother and daughter, income to needs ratio) characteristics of the mothers and grandmothers in the sample?

**Psychological Distress**

2. What individual (generation, economic strain, role overload, perceived family social support) and family (maternal age, household composition, income-to-needs ratio,
race/ethnicity) factors are associated with grandmother and mother reports of psychological distress?

Some factors were expected to be related to the self-reported psychological distress of both caregivers. It was hypothesized that perceived social support would be negatively associated with psychological distress for mothers and grandmothers such that lower levels of social support would be related to higher levels of psychological distress. Likewise, early role transitions were hypothesized to pose a risk to mental health, such that maternal age was predicted to be negatively associated with psychological distress in both generations. Some generational differences were expected to emerge. Role overload, economic strain and household composition were predicted to be linked to grandmother psychological distress only, such that grandmothers reporting higher levels of role overload, higher levels of economic strain and more crowded households would report experiencing higher levels of psychological distress.

**Parenting by Mothers and Grandmothers**

3a. What is the relationship between grandmother and mother parenting behaviors?

It was hypothesized that grandmothers and mothers will display similar mean levels of negative intrusiveness and sensitivity. Negative intrusiveness and sensitivity by grandmothers and mothers were expected to be correlated moderately.

3b. What individual (perceived family social support) and family (maternal age, household composition, race/ethnicity) factors moderate the relationship between psychological distress and observed sensitive and negative intrusive parenting by mothers and grandmothers?
Perceived family social support was expected to be a buffer for parenting in the presence of elevated psychological distress. Accordingly, it was hypothesized that perceived family social support would moderate the relationship between psychological distress and sensitivity and negative intrusiveness for mothers and grandmothers, such that psychological distress would only predict parenting in the presence of low levels of reported social support. On the contrary, elevated levels of psychological distress were expected to be linked to less sensitive and more negative intrusive parenting in the presence of other stressors or risks to parenting. Accordingly, young maternal age in conjunction with higher levels of psychological distress was expected to be related to less sensitive and more negative observed parenting behaviors. Moreover, race is expected to moderate the relationship between psychological distress and observed parenting behaviors, such that higher levels of psychological distress will be associated with lower levels of observed sensitivity and higher levels of negative intrusiveness for white families only. Each of these hypothesized moderating effects was expected to be consistent for mothers and grandmothers.

3c. What is the relationship between maternal age and sensitive and negative intrusive parenting by mothers and grandmothers?

It was hypothesized that maternal age would pose a risk to parenting by mothers only, such that younger maternal age would be associated with less sensitive and more negative intrusive parenting by mothers.

*Infant Outcome*
4a. Do mother and grandmother observed sensitive and negative intrusive parenting behavior at 6 months independently predict 15-month temperamental/behavioral risk (controlling for 6-month temperamental/behavioral risk)?

It was hypothesized that mother and grandmother parenting would each exert a main effect on temperamental/behavioral risk such that sensitivity would be negatively related to infant behavior and negative intrusiveness would be positively related to infant behavior.

4b. Is grandmother parenting a protective factor for the development of temperamental/behavioral risk? Does high grandmother sensitivity buffer the relationship between high maternal negativity and temperamental risk?

It was hypothesized that maternal negative intrusiveness would only be related to elevated levels of temperamental/behavioral risk when grandmothers displayed low levels of sensitivity.

4c. Does the relationship between mother and grandmother parenting and infant temperamental/behavioral risk vary by race/ethnicity?

It was hypothesized that this relationship would exist for African American families only. This hypothesis was based on the extant literature suggesting the importance of examining negative parenting behaviors and child outcomes within the context of positive parenting behaviors for African American families, and the potential relevance of the parenting of other family members (besides mothers), in particular grandmothers, for African American child outcomes.
2.1 Participants

The sample in the proposed study is a subset drawn from the Family Life Project (FLP), a longitudinal investigation of how child, family and contextual characteristics in rural communities shape early child development. Families enrolled in the study reside in three counties in Eastern North Carolina and three counties in Central Pennsylvania selected to represent the Black South and Appalachia. The sample for the proposed study consists of families in which during the 6-month home visit mothers nominated the child’s grandmother as the secondary caregiver, indicating that next to the mother, the grandmother was the household member most responsible for the child. In order to be designated as a secondary caregiver, grandmothers were required to reside with the mother and infant. All grandmothers nominated as secondary caregivers were maternal grandmothers. From the original 1292 families, approximately 183 families met this requirement.

In order to be included in the present analyses, both the mother and grandmother participated in the dyadic freeplay interaction with the infant at a 6-month visit, reducing the sample to 105 families. The 105 families included in the present analyses did not differ from the 183 families in the sample in terms of mean scores for household size or composition, maternal age, grandmother age or psychological distress. The subset of families who were not included in the present analyses, however, had on average lower income-to-needs ratios
(0.69 versus 1.2, \( p < 0.001 \)), a greater percentage of African American families (73% versus 64%), a greater percentage of mothers (63% versus 50%) and grandmothers (81% versus 75%) with high school diplomas and a smaller percentage of mothers working (38% versus 45%).

2.2 Recruitment

The FLP used a developmental epidemiological sampling design to recruit a representative sample of families. Low-income families in both states and African American families in North Carolina were over-sampled. Family income was dichotomized (low vs. not low) for recruitment purposes. Families were considered low income if they reported household incomes of less than or equal to 200% of the federal poverty threshold for a given household size, use of social services requiring a similar income requirement (e.g., food stamps, WIC, Medicaid), or if the head(s) of the household had less than a high school education. All families in the proposed study were classified as low income. Slightly different recruitment procedures were used in each state. Families in Pennsylvania were recruited in person from three hospitals that represented a weighted probability sample of hospitals that delivered babies in the three target counties. Families were recruited in North Carolina in person and by phone. In-person recruitment took place in all three of the hospitals that delivered babies in the target counties, while phone recruitment targeted families who resided in the counties, but delivered in other county hospitals. Recruitment occurred for both sites over a 12-month recruitment period using a standardized script and screening protocol.

In total, 5471 (57% NC, 43% PA) women who gave birth to a child during the recruitment period were identified, and 72% of these women met the eligibility criteria, which included residency in the target counties, English as the primary language spoken in
the home, and plans to stay in the area for the next three years. Of the mothers deemed eligible, 68% agreed to be considered for the study. Of those willing to be considered, 58% were invited to participate based on income and race (in North Carolina only). Of those invited to participate, 82% (N = 1292) of the families completed the first home visit when the target child was approximately 2 months old, thus officially enrolling in the study.

2.3 Procedure

All data were collected by two trained Research Assistants in the participants’ homes. Most data used in the proposed study were collected during two home visits that took place when children were on average 6-8 months of age. The first visit generally took place close to the child’s 6-month birthday, and the second visit usually took place 2 to 4 weeks later. Each caregiver completed the KFAST literacy screener (Kaufman & Kaufman, 1994). Caregivers reading at the minimum of an 8th grade reading level completed questionnaires independently, while those who read below an 8th grade reading level had questionnaires read to them by home visitors.

The mother and grandmother were filmed separately in a semi-structured 10-minute dyadic freeplay interaction with the infant. The grandmother-child interaction generally took place during the first visit, while the mother-child interaction generally took place during the second visit. The order of interactions was not always consistent, as home visitors accommodated caregiver schedules. However, the freeplay interactions always took place on different days. The caregiver was given a standard set of toys (electronic busy board, shape sorter and blocks) to use in play with the infant, and she was instructed to play with the child as she normally would given some free time during the day.
A team of six coders scored the DVDs for caregiver behavior. All coders were blind to other information about the families, and different coders observed the primary and secondary caregiver interactions for each family. Two criterion coders trained all other coders until excellent reliability was maintained for each coder on each scale. Once reliability was met, non-criterion coders coded in pairs, while continuing to code at least 20% of cases with a criterion coder. A random selection of approximately 30% of all interactions was double-coded. For those double-coded cases, each coding pair met to reconcile scoring discrepancies, reaching a final consensus score for each scale.

2.4 Measures

**Caregiver Behavior.** Caregiver behavior during the caregiver-child freeplay interaction at 6 months was rated using seven 5 point global rating scales (Cox & Crnic, 2002), sensitivity/responsiveness, intrusiveness, detachment/disengagement, positive regard for the child, negative regard for the child, animation and stimulation of development, revised from scales developed in the NICHD Study of Early Child Care (Cox et al., 1999; NICHD Early Child Care Research Network, 1999). In order to inform compositing of variables and to characterize caregiver interactive behavior parsimoniously, an exploratory factor analysis was conducted separately for data from primary and secondary caregivers at 6 months. The orthogonal principal components factor analysis utilizing an oblique (promax) rotation suggested the presence of two distinct, relatively independent composites for the behavior of both caregivers, sensitivity and negative intrusiveness. Previous work (e.g., Egeland, Kalkoske, Gottesman, & Erickson, 1990) suggests that composites of global ratings of parent-child interaction often have better psychometric properties and demonstrate better validity than individual scales.
**Sensitivity.** The sensitivity composite (alpha = 0.88) consisted of the mean of the reverse score for detachment/disengagement, and scores for sensitivity/responsiveness, positive regard for child, animation and stimulation of development. The factor scores for the sensitivity factor were -0.84, 0.79, 0.86, 0.84 and 0.77, respectively. The sensitivity/responsiveness scale, which was adapted from Ainsworth et al. (1978), describes the degree to which the parent is aware of and responsive to the child’s bids and signals and achieves synchrony with the child. The detachment/disengagement scale describes the degree to which the parent is emotionally distant, uninvolved or unaware of the child’s signals or needs for appropriate facilitation or care. The positive regard scale rates the quantity and intensity of the parent’s verbal and physical expression of positive feelings towards the child and sense of enjoyment in interacting with the child. The animation scale rates the degree to which the parent displays vocal, physical and affective energy and animation during the interaction. Lower scores on animation reflect flat affect. The stimulation of development scale measures the degree to which the parent engages in age-appropriate development fostering behaviors with the child. Parents receiving high scores in stimulation make deliberate attempts to stimulate the child’s cognitive and physical development.

**Negative Intrusiveness.** The negative parenting composite (alpha = .64) represented the mean of scores for negative regard and intrusiveness. The factor loading scores for the negative intrusiveness factor were 0.77 for negative regard and 0.88 for intrusiveness. The negative regard scale rated the quantity and intensity of the caregiver’s expression of verbal and nonverbal negative feelings towards the child. The intrusiveness scale measured the degree to which the parent controlled the interaction in a parent-centered manner. Intrusive
behaviors include imposing parental agendas despite clear contrary signals from the child, overstimulation, inappropriately fast pace and physically manipulating the child in a way that fails to foster autonomy or to facilitate the child’s exploration. Higher scores on intrusiveness represent an overall pattern of parent-centered behavior that persists when the child averts gaze, turns away, expresses negative affect or consistently prefers another activity.

Inter-coder reliability, which was calculated as the intra-class correlation (Pearson’s R), was determined by comparing the scores of two coders on every double-coded interaction. Inter-coder reliabilities for the negative intrusiveness composite were 0.74 for mothers and 0.79 for grandmothers. Reliabilities for the sensitivity parenting composite were 0.88 for mothers and 0.91 for grandmothers.

**Demographic data.** Detailed information was gathered from the mother on household composition. This information included questions regarding the total number of adults (over 18 years), children (under 18 years) and young children (under 5) who currently lived in the home, and their relationship to the target child. Residential criteria included spending three or more nights per week in the target child’s household. Mothers also reported the number of children to whom they had given birth and their age at the time of birth of their first child. In addition, mothers reported parity and age at first birth for their own mothers.

**Income-needs ratio.** At each home visit, the mothers provided information about household income. Annual household total income represented the sum of income from all people in the household from all sources. Income-to-needs ratios were calculated by dividing the reported household income by the federally determined poverty threshold for 2004 for the number of individuals living in the household. Income to needs ratios above one indicate that
a family is able to provide for basic needs, while ratios below one indicate that the family is not earning a sufficient income to cover basic needs. Income to needs ratios are measures of a household’s standard of living and have been found to be more strongly related to child well-being than raw measures of family income (Hanson, McLanahan & Thomson, 1997).

**Economic Strain.** Mothers and grandmothers responded to the Economic Strain Questionnaire, a modified 6-item scale based on Conger and Elder’s (1994) economic pressure measure. The Economic Strain Questionnaire consists of three types of items. The first item asks respondents to rate “How difficult is it for you to pay your family’s bills each month?” on a 5-point scale ranging from “great deal of difficulty” (1) to “no difficulty at all” (2). The second item asks respondents to indicate, “Generally, at the end of the month do you end up with…” “not enough to make ends meet” (1), “almost enough to make ends meet” (2) “just enough to make ends meet” (3) “some money left over” (4) or “more than enough money left over” (5). The remaining 4 items requires respondents to indicate the degree to which they believe they have enough money to pay for the housing, clothing, food and medical care they need on a 4-point scale ranging from “strongly disagree” (1) to “strongly agree” (4). All items are reverse-scored. The original scale was broken down into two subscales, with the first 2 items composing the “can’t make ends meet” index and the remaining items composing the “not enough money” index. Exploratory factor analysis with FLP families, however, suggests the presence of 1 factor created by summing and averaging scores for the 6 items. This global measure of perceived economic strain will be employed in the proposed study, such that higher scores indicate higher levels of economic strain. This measure has achieved acceptable levels of internal consistency for primary (alpha = 0.81) and secondary (alpha = 0.84) caregivers in the FLP.
Psychological Distress. The Brief Symptom Inventory-18 (BSI) (Derogatis, 2000) was administered to mothers and grandmothers. The BSI-18 is an eighteen-item self-report symptom inventory designed to reflect the psychological symptom patterns of normative and psychiatric respondents (Derogatis & Spencer, 1982). Each item of the BSI is rated on a five-point scale ranging from “not at all” (0) to “extremely” (4). The BSI-18 is composed of 3 subscales, somatization, depression and anxiety. A composite score of Psychological Distress, the Global Severity Index (GSI), is calculated by summing the scores of each subscale. The BSI has been normed on clinical and non-clinical adult and adolescent populations. Internal consistency for the present study was alpha = 0.89 for primary caregivers and alpha = 0.90 for secondary caregivers.

Role Overload. Role overload was measured using a modified 6-item version of the Role Overload Scale (Reilly, 1982) designed to tap the respondent’s sense that he/she has too much to do and not enough time in which to accomplish it. Mothers and grandmothers responded to each item on a 5-point scale ranging from “strongly agree” (1) to “strongly disagree” (5). Sample items include, “There are too many demands on my time” and “I don’t ever seem to have time for myself.” All items are reverse scored and then averaged to compute a total role overload score. Higher scores indicate perceptions of greater role overload. The original 13-item version of this scale has demonstrated acceptable reliability and validity in samples of working mothers and fathers (Crouter et al., 1999; Crouter et al., 2001).

Social Support. Mothers and grandmothers responded to a short form of the Questionnaire of Social Support (QSS) (Crnic & Booth, 1991). This 16-item version of the original 37-item scale includes 4 subscales: community involvement, friendship, family and
intimate relationships. Only the family support scale, which is composed of 5-items, will be used in the proposed study. A sample item from the family subscale asks respondents, “How satisfied are you with the amount of help (as babysitters, sources of information, sympathetic ears) family members provide?” Respondents rated satisfaction on a 4-point scale ranging from “very dissatisfied (I wish things were different)” (1) to “very satisfied (I’m really pleased)” (4). Respondents rated an item as 5 if it was not applicable, and this item was not used to calculate the score. The mean of items from each subscale was calculated. Higher scores indicate higher levels of perceived social support. This measure has demonstrated acceptable levels of internal consistency in the present sample for primary (alpha = 0.74) and secondary (alpha = 0.82) caregivers.

Infant Behavior. Home visitors rated infant temperament and behavior using an adapted version of the Infant Behavior Record (IBR) (Bayley, 1969; Corey & Stifter, 2001)). The IBR is composed of 11 items rated on 5-point or 9-point scales that compose 6 subscales: social approach, affect, attention, gross movement, reactivity and irritability. At the 6-month time point, the mean of the scores given by each home visitor were calculated for both visits and then the mean of the two visits was calculated to yield a final score for each subscale. Inter-rater reliability across each visit ranged from $r = 0.32$ to $r = 0.57$ and across each rater ranged from $r = 0.45$ to $r = 0.68$. At 15-months, the mean of the ratings issued by each home visitor was calculated to represent the final score for each subscale. Inter-rater reliability for the 15-month home visits across each rater ranged from $r = 0.45$ to $r = 0.69$.

Principle components (PCA) factor analysis with an oblique rotation (promax) was conducted to inform the development of composite scores in order to construct a measure of
temperamental or behavioral risk for the present study. The factor analysis was conducted separately for 6 and 15-month ratings. Results for both time points revealed a two-factor structure. At 6 months, one factor consisted of affect (0.84) and irritability (-0.99). Attention cross-loaded on the same factor as affect and irritability (0.51) and the factor including social approach, reactivity and gross movement (0.54). The 15-month data also yielded a 2-factor solution. Once again, affect (0.85) and irritability (-0.92) loaded on the same factor. At the later time point, attention loaded strongly on that same factor (0.81) versus the factor with social approach, reactivity and gross movement (0.09). A decision was made, therefore, to include attention in the 6-month and 15-month composite measure. The composite measure at each time-point was constructed by taking the mean of the mean of each subscale, with attention and affect reverse scored. High scores for temperamental/behavioral risk (6-month \( \alpha = 0.80 \), 15-month \( \alpha = 0.78 \)) represent behavior that is low on positive affect, low on attention and high on irritability (negative affect).

2.5 Analytical Strategies

Several types of analyses were used to examine the data and to address the research questions. All statistical procedures were performed using SAS version 9.1 software. Bivariate correlations, frequencies, means and ranges of relevant variables were examined. T-tests to compare mean-levels were performed where appropriate.

Hierarchical linear models (HLMs) (Bryk & Raudenbush, 1992) were employed to explore factors predicting maternal and grandmaternal psychological distress. Specifically, random effects regression models using the PROC MIXED function in SAS 9.1 with Restricted Maximum Likelihood Estimates (REML) will be estimated. Multi-level modeling techniques (MLM) extend multiple regression models to account for the possible non-
independence of within-family data (Bryk & Raudenbush, 1992). In this case, maternal and grandmother psychological distress are nested within family. Failing to account for this nesting of data could lead to inflated standard errors, and thus inaccurate parameter and model fit estimates (Raudenbush & Bryk, 2002). Employing multi-level models allows for disaggregation of levels of analysis so that more complex relations among individual and family level characteristics can be tested. For example, the multi-level modeling techniques will allow for testing whether relations among independent and dependent variables vary within each level. In other words, the slopes and intercepts defining relationships between independent and dependent variables can be examined as a function of family membership. This level of analysis provides important insight into family processes in the multigenerational families in this study. Mothers and grandmothers share a family environment and certain family level characteristics. They also each contribute their own individual characteristics to the prediction of distress.

Accordingly, a model that partitions the variance in psychological distress into two levels was estimated. The individual (level-1) model includes person-specific predictors. The level-1 predictors of psychological distress and parenting include generation (coded 0 for grandmothers and 1 for mothers). The family (level-2) model includes predictors that mothers and grandmothers share. In order to test the hypotheses regarding generational differences in factors associated with psychological distress and parenting, interaction terms representing the product of generation and the individual and family level predictor will be tested. All significant interactions were probed using the pick-a-point procedure (Aiken & West, 1991; Preacher, Curran & Bauer, in press), which tests the relationship between the outcome and 1 predictor at different levels (2 for dichotomous variables, 3 for continuous) of
the proposed moderating variable. These techniques have been validated in multi-level models (Bauer & Curran, 2005). If the main effect of a predictor is statistically significant and the interaction effect is not statistically significant, then it can be concluded that the relationship between the independent and dependent variable is consistent for mothers and grandmothers.

Ordinary Least Squares (OLS) multiple regression was employed to model the relationship between infant 15-month temperamental/behavioral risk and family characteristics and mother and grandmother parenting. Interaction terms were created to test for the hypothesized moderating relationship between grandmother sensitivity and mother negative intrusiveness and the hypothesized 3-way interaction between grandmother sensitivity and mother negative intrusiveness and race/ethnicity. All models included 6-month infant temperamental/behavioral risk as a control variable so that the models predicted development of temperamental/behavioral risk from 6 to 15 months.
CHAPTER 3
RESULTS

3.1 Initial Data Examination

3.1.1 Child Gender

There is little support in the literature for child gender to be associated with parenting in multigenerational families. Before dismissing child gender as irrelevant, however, the correlations between child gender and all other independent and dependent variables were examined. There were no significant relationships between child gender and parenting. Examination of the means for temperamental/behavioral risk at 6 and 15-months also failed to reveal gender differences. Child gender was not included as a covariate in any of the models.

3.1.2 Other excluded variables

Given the limited sample size and the goal of parsimony, several potential covariates were eliminated from models. Grandmother age was not related in a bi-variate manner to any of the relevant independent or dependent variables, therefore it was not included in the inferential analyses. The number of children under age five appeared to be more related to other independent and dependent variables than the total number in the household or the adult to child ratio. Consequently, the measure of household composition employed in the models predicting psychological distress was the number of children in the household under five years of age when the target child was approximately 6-months old. In addition, income-to-needs ratios were not correlated with any household or caregiver characteristics or
outcomes. This lack of a relationship may reflect the lack of variability within this disadvantaged sample, while also providing support for the theoretical assertion that perceptions of economic strain versus objective measures of financial disadvantage may be more relevant to parental well-being and functioning. Income-to-needs ratios, therefore, were not included in any of the models.

3.2 Descriptives

The descriptive first goal of the study was addressed by examining the mean levels and ranges of household and family characteristics. The variables examined included household composition (number of children, adults and adult-to-child ratio), age (both generations), education, income-needs-ratios and employment. Key descriptive findings are presented in Table 1. Approximately 64% of the sample self-reported African American ethnicity, while the remaining 36% were listed as white. Approximately 75% of the sample was drawn from the North Carolina site. This sample includes a broad range of maternal age. The average mother was 21.2 (4.32), with approximately 25% of the mothers 18 or under, and approximately 51% of the mothers in their twenties. The mean age reported by grandmothers was 46.96 (7.90), yielding a mean generational age gap of 25.79 (6.52). In general, therefore, the majority of the mothers in the sample were young adults, while the majority of the grandmothers were in early-mid middle age. Interestingly, mothers reported that the mean age of their own mothers when they first gave birth was 24.76 (6.04), but there was considerable diversity with ages ranging from 15 to 42. Overall, this sample was economically disadvantaged, as the mean reported income-to-needs ratio was 1.20 (0.87) with a range of 0-3.21. The grandmothers were likely the primary wage earners in many households, as approximately 70% of the grandmothers reported working in comparison to
45% of the mothers. The majority of the grandmothers (75%) had earned at least a high school degree. Only 50% of the mothers reported earning a high school diploma, but of the 47% who reported currently being in school, some were probably still enrolled in high school. None of the mothers or grandmothers reported receiving a four-year college degree.

The sample represents considerable diversity in terms of household composition. The average household size was 4.91 (1.24) with a range of 3 (minimum requirement) to 8. The age and relationships of household members varied across households. The mean number of individuals in the household who were above (2.72 (0.84)) and below (2.19 (1.08)) 18 years of age was roughly equal, although many of those below 18 were likely young, as the average number of children below 5 years of age was 1.3 (0.58). On average there were 1.64 adults (defined as above 18) for every child in the household. Approximately 75% of the mothers reported that the 6-month-old target child was the first-born child. The remaining 25% of mothers had on average (including the target child) 2.46 children. There were no items to ascertain who was the head of the household. Only 9% of the mothers reported that they owned the home, while 51% reported that someone else in the household owned the home. The grandmother may have been the owner in many of these cases. Approximately 30% of the mothers reported that the home was rented for cash, but the individual responsible for paying the rent was not noted, and the final 10% reported that they occupied the home for free. Further, each caregiver reported the length of time that she had lived at the current residence. Non-inferential examination of these responses indicates that for most families the grandmothers had lived at the residence for longer or for the same number of years as the mother, therefore suggesting that perhaps the mothers were living in the grandmothers' homes (in many cases their own households of origin), as opposed to the
grandmothers moving into the mothers' residences. This information in conjunction with knowledge regarding grandmother age may suggest that for most families in the sample, co-residence was an adaptation for the care of the grandchild and/or the mother, as opposed to an adaptation to care for the grandmother. Finally, approximately 52% of the mothers reported that they were involved in a romantic relationship (which may or may not have been with the target child's father), but by definition for this sample, the partner was not living in the household with the mother and grandmother. Grandmother partner status is unknown, although none of the households included the target child's biological grandfather.

3.2.1 Correlations

Bi-variate correlations among the independent and dependent variables were examined. These correlations are presented in Table 2. The number of children in the household under five years of age appears to be a relevant variable for mothers and grandmothers, as it is positively correlated with economic strain for mothers and grandmothers and psychological distress for mothers, and it is negatively correlated with grandmother sensitivity. This household variable is also correlated with race, suggesting that African American households have more children under five than white households. Economic strain reported by mothers and grandmothers is highly correlated. Maternal age is correlated positively with maternal sensitivity, but not negative intrusiveness. Interestingly, 6-month and 15-month infant temperamental/behavioral risk ratings are not correlated.

3.3 Diagnostics

Prior to conducting regression analyses, the data were examined to ensure meeting the criteria for regression modeling techniques. Identical procedures were followed for each outcome (psychological distress, sensitive parenting, negative intrusive parenting and 15-
month temperamental/behavioral risk). Viewing a plot of the dependent variables and examining measures of skew and kurtosis tested the assumption of normality. There was no evidence of unacceptable levels of skew (above 7) or kurtosis (above 2) (Cohen et al., 2003). Next, the data were examined for evidence of significant outliers by observing plots and measures of influence and leverage. No evidence of outliers was observed. Prior to running the multi-level random effect regression analyses to predict psychological distress and parenting, all continuous predictors were grand mean centered in order to aid in interpretation of findings and the probing of potential interactions. Prior to running the OLS regression analyses to predict infant temperamental/behavioral risk, the continuous predictors were mean-centered.

3.4 Psychological Distress

As a descriptive first step to the analyses, within family and across generation relationships between mother and grandmother reports of psychological distress were examined. Looking within family, mother and grandmother reports of psychological distress were not correlated ($r = 0.17, p = 0.09$). Simple t-tests were calculated to compare mean levels of psychological distress reported by mothers and grandmothers. Across generation, there was no statistically significant difference between the mean scores of mothers (mean = 47.26(10.14)) and grandmothers (48.49 (9.81) ($t (104) = -1.23, p = 0.22$). These relations are depicted in Figure 3.

Random effects regression models using the PROC MIXED function in SAS 9.1 were estimated in order to model the relationship between individual and household characteristics and self-reports of mother and grandmother psychological distress. The level-1 predictors of psychological distress included generation (coded 1 for grandmothers and 0 for mothers),
economic strain, role overload and perceived family social support. The level-2 predictors of psychological distress included maternal age, generational age gap, number of children under 5, and race/ethnicity. The results from the final model only are presented in Figure 3.

First, in order to examine the relations between within family and individual mean levels of psychological distress an unconditional means or “empty” model was estimated. The random effects from this model reveal that the variability in intercepts between groups was marginally significantly different from 0 ($\tau_{00} = 16.62, z = 1.67, p = 0.04$), suggesting that there may be systematic nesting of psychological distress within families. The variability in psychological distress between individuals ($\sigma^2 = 82.87, z = 7.20, p < 0.001$) suggests that there is also considerable intra-individual variability in psychological distress that cannot be explained by family characteristics. The intraclass correlation demonstrated that approximately 16.72% of the total observed variability in psychological distress could be attributed to between family variability.

Next, level-2 variables were added to the model. Turning first to random effects, the introduction of these family-level characteristics eliminated between family variability in psychological distress ($\tau_{00} = 15.15, z = .86, p = 0.06$), however within family variance in psychological distress persisted ($\sigma^2 = 82.87, z = 7.21, p < 0.0001$). The number of children in the household under age 5 (beta = 2.92, se = 1.34, $p = 0.03$) emerged as the only significant fixed effect. Interpretation of the fixed effects coefficients indicated that the addition of one more child under age 5 was associated on average with a 2.92 increase in self-reported psychological distress.

Next, level-1 variables were added to the model. Random slopes were tested for each of the level-1 predictors. When random slopes for all three level-2 predictors were included
in the model, the boundary condition was met, resulting in a covariance of 0, suggesting that these random components should be removed from the model. The covariance structure supported the inclusion of a random slope component for economic strain; however, this slope was not significantly different from 0, indicating that the relationship between economic strain and psychological distress did not vary as a function of economic strain. Removing this random component did not lead to a decrement of model fit ($\chi^2 (1) = 1.33, p < 0.33$). Consequently, in order to preserve parsimony and power given the limited sample size, the random effect was removed from subsequent models. Unaccounted for within family variance in psychological distress persisted ($\sigma^2 = 72.91, z = 0.02, p < 0.001$).

Comparing the random intercepts from the initial unconditional model to this final model revealed that the final model accounts for 16% of the observed within family variance in psychological distress. Moreover, 83% of the total observed variance in psychological distress was within family. The fixed effects from this model suggested that the number of children under age 5 remained a significant positive predictor of psychological distress (beta = 2.44, se = 1.19, $p = 0.04$). In addition, role overload (beta = 2.56, se = 0.68, $p = 0.0003$) emerged as a positive predictor and perceived family social support (beta = -1.99, se = 0.94, $p = 0.04$) emerged as a negative predictor.

Finally, in order to test the hypotheses regarding generational differences in the factors predicting psychological distress a model was tested that included interaction terms representing the product of generation and number of children under 5, generation and economic strain, generation and role overload and generation and family social support. These results are detailed in Table 3. This model did not support the inclusion of random effects for any of the interaction terms, as the boundary conditions were met. The main
effects for children under 5 (beta = 2.45, se = 1.18, p = 0.04) and family social support (beta = -2.03, se = 0.93, p = 0.03) persisted, and an interaction between generation and role overload emerged as significant.

The interaction between generation and role overload was probed following the procedures outlined by Preacher and colleagues (2007). Simple slopes of the lines defining the relationship between role overload and psychological distress for mothers and grandmothers were tested. As shown in Figure 3, higher levels of role overload were associated with elevated levels of psychological distress for grandmothers only (beta = 3.69, se = 0.87, p = 0.001).

3.5 Sensitivity

Parenting behaviors were compared within family and across generation. As hypothesized, sensitivity (r = 0.21, p = 0.04) and negative intrusiveness (r = 0.21, p = 0.04) observed for mothers and grandmothers were moderately correlated. Simple t-tests were calculated to compare mean levels of observed sensitivity and negative intrusiveness of mothers and grandmothers. As shown in Figure 5, grandmothers (mean=2.89) were rated as more sensitive than mothers (mean=2.54) (t (98)= -4.45, p < 0.001). There was no mean difference across generations, however, in observed negative intrusiveness (t (98)= 0.44, p = 0.66).

The multi-level random effects regression techniques were employed to model the relationships between individual and family level characteristics and observed parenting. Two separate models were estimated to predict sensitivity and negative intrusiveness. The same predictors were used for each dimension of parenting.
The unconditional means model predicting sensitivity was estimated before testing any hypotheses. The random effects from this model suggested that there was no systematic nesting of sensitivity between families. In fact, none of the models tested to predict observed sensitive parenting suggested the nesting of sensitivity between families. There was, however, significant observed variation in sensitivity within families ($\sigma^2 = 0.54$, $z = 6.712$, $p < 0.0001$), indicating considerable variability in individual levels of sensitive parenting observed for mothers and grandmothers living within the same household.

3.5.1 Maternal Age

In order to address the first question pertaining to the relationship between maternal age and observed sensitive parenting behaviors a model was estimated that included fixed effects for race, maternal age, generation and an interaction between maternal age and generation. The boundary condition was met, hence the covariance as 0 when random effects for generation and the interaction between generation and maternal age were tested. These random effects were not included. The random effects results from this model suggest that significant within family variation persisted ($\sigma^2 = 0.07$, $z = 6.67$, $p < 0.001$). Turning to fixed effects, the interaction between generation and maternal age was not significant. However, the main effect for maternal age was significant ($\beta = 0.05$, $se = 0.02$, $p = 0.006$), as maternal age was positively related to sensitive parenting for both generations. In addition, there were significant observed effects for race ($\beta = -.50$, $se = 0.12$, $p < 0.001$) and generation ($\beta = 0.33$, $se = 0.09$, $p = 0.001$), indicating that African American identity was associated with lower levels of sensitivity and grandmother generational status was associated with higher levels of sensitivity. Post hoc analyses included grandmother and mother education in the model as covariates, however, the inclusion of these independent
predictors did not change the nature of the relationship between any of the other variables and parenting. Given the lack of a significant interaction between generation and maternal age, this term was dropped from the subsequent models.

3.5.2 Psychological Distress and Sensitivity

The next goal was to estimate a model that included potential moderators in the relationship between self-reported psychological distress and observed sensitive parenting. Detailed results from this final model are presented in Table 4. The model did not support the inclusion of any random slopes. Fixed effects in the model included race, maternal age, generation, and perceived family social support, psychological distress and interaction terms representing the product of psychological distress and maternal age, psychological distress and family social support and psychological distress and race. Significant within family variance remained in the final model ($\sigma^2 = 0.49, z = 6.59, p<0.001$). Comparison of this final model to the unconditional means model suggests that approximately 10% of the observed variance in sensitive parenting behaviors was accounted for by the independent variables. This final model yielded several significant fixed effects. Race ($\beta = -0.48, \text{se} = 0.12, p < 0.001$) and generation ($\beta = 0.37, \text{se} = 0.10, p = 0.0005$) continued to predict observed sensitivity. In addition, a significant interaction between maternal age and psychological distress emerged ($\beta = 0.003, \text{se} = 0.002, p = 0.04$). This cross-level interaction was probed by testing the simple slopes defining the relationship between psychological distress at levels of maternal age $1 SD$ below the mean, at the mean and $1 SD$ above the mean (Preacher et al., 2007). As presented in Figure 6, higher levels of self-reported psychological distress were associated with lower levels of observed sensitive parenting by mothers and grandmothers in families in which maternal age was $1 SD$ below the mean ($\beta = 0.03, \text{se} = 0.002, p = 0.04$).
0.14, p = 0.02). The mean age for mothers in this sample is 21.17 and the SD is 4.32, indicating that when mothers were 16.85 or younger, mean or higher levels of psychological distress are linked to less sensitive parenting by both generations. Post-hoc analyses did not reveal the presence of a 3-way interaction between generation, maternal age and psychological distress.

3.6 Negative Intrusiveness

Similar techniques were utilized to model the relationship between maternal age and psychological distress and observed negative intrusive parenting behaviors. The unconditional means or empty model for negative intrusiveness suggested that there was significant between family (τ₀₀ = 0.13, z = 1.99, p = 0.02) and within family (σ² = 0.45, z = 6.59, p < 0.001) variance in negative intrusiveness. The intraclass correlation suggests that 22.53% of the observed variance in negative intrusiveness was accounted for by between family variance.

3.6.1 Maternal Age

The next model estimated included fixed effects for the level-2 predictors race and maternal age, the level-1 predictor generation and an interaction term representing a cross-level interaction between maternal age and generation. The random effects revealed that significant between family variance persisted (τ₀₀ = 0.10, z = 1.74, p = 0.04), but there was not a significant random slope for generation. Dropping this non-significant random slope from the model did not reduce the model fit (χ² (1) = 0.42, p = 0.60). Hence there were no random slope components included in the remaining models. The fixed effects indicate a main effect for race (beta = 0.41, se = 0.12, p = 0.001), as African American identity was associated with higher levels of observed negative intrusiveness. In addition, a significant
interaction between maternal age and generation emerged (beta = -0.06, se = 0.02, p = 0.01). The term representing this interaction was retained in the model. However, in order to ensure interpretability, it was not probed until the final model. In this final model, as described in detail below, the interaction between maternal age and generation remained significant (beta = -0.59, se = 0.02, p = 0.01). The nature of this cross-level interaction was determined by plotting the simple slopes of the lines defining the relationship between maternal age and negative intrusiveness for mothers and for grandmothers. As depicted in Figure 7, older maternal age was associated with lower levels of negative intrusiveness for grandmothers only (beta = -0.04, se = 0.02, p = 0.02). In other words, as maternal age increased, grandmothers displayed lower levels of observed negative intrusiveness.

3.6.2 Psychological Distress and Negative Intrusiveness

As detailed in Table 5, a model was built that included potential moderators in the relationship between self-reported psychological distress and observed sensitive parenting. Random effects for generation and psychological distress were included in the initial model, however, these random slopes were not significantly different from 0, indicating that the relationship between generation and negative intrusiveness and the relationship between psychological distress and negative intrusiveness does not vary as function of family membership. These random effects were dropped from subsequent models with no resulting decrements in model fit ($\chi^2 (2) = 3.62, p = 0.25$). Regardless of whether the model included random slope components, there continued to exist significant between family variation in observed negative intrusiveness ($\tau_{00} = 0.11, p < 0.03$). The final model accounts for approximately 13% of the observed between family variance, while the intraclass correlation suggests that overall 22% of the observed variance is between families. In addition, this final
model explains 7% of the observed within family variance, while overall 77% of the variance is within family.

The fixed effects from this final model yielded a significant interaction between race and psychological distress. The nature of this cross-level interaction was determined by plotting the slopes of the relationship between self-reported psychological distress and observed negative intrusiveness for African Americans and for whites (Preacher et al, 2007). As depicted in Figure 7, the line defining the relationship between psychological distress and negative intrusiveness was significantly different from 0 (beta = 0.43, p = 0.0008) for white families only, such that higher levels of psychological distress were associated with higher levels of observed negative intrusiveness. Post hoc analyses failed to reveal the presence of a 3-way interaction between race, psychological distress and generation, thus suggesting the relationship between psychological distress and negative intrusiveness varies as a function of race for both generations.

3.7 Infant Outcome
Hierarchical Ordinary Least Squares (OLS) multiple regression techniques were used to explore the relationship between observed parenting behavior by mothers and grandmothers at 6-months and infant temperamental/behavioral risk at 15-months. The results from these analyses are presented in Table 5. The initial model ($F(3, 95) = 6.03, p = 0.0008$), which included controls for 6-month temperamental/behavioral risk, race and maternal age, accounted for approximately 13% of the observed variance in 15-month temperamental/behavioral risk. Race emerged as the only significant predictor (beta = -1.57, se = 0.46, $p = 0.001$) indicating that white infants displayed higher levels of temperamental/behavioral risk. Next, main effects for parenting by mothers and
grandmothers were included in the model. It should be noted that observed negative
intrusiveness and observed sensitivity by mothers and grandmothers were tested separately
and jointly, without yielding different results. Hence, given the hypothesized theoretical
relevance of examining grandmother sensitivity as a potential protective factor in the
presence of maternal negative intrusiveness, the final reported models include only measure
of observed mother negative intrusiveness and grandmother sensitivity. The model including
these parenting measures in addition to 6-month IBR ratings, race and maternal age,
explained a significant portion of the variance in observed 15-month IBR ratings (F(5, 83) =
3.05, p = 0.01), accounting for approximately 11% of the observed variance in
temperamental/behavioral risk. Race, however, remained the only significant predictor of
temperamental/behavioral risk (beta = -1.94, se = 0.55, p = 0.0006).

Next, an interaction term representing the product of maternal negative intrusiveness
and grandmother sensitivity was introduced to the model (F(6, 83) = 3.64, p = 0.003,
adjusted $R^2 = 0.16$). This interaction improved the model ($\Delta R^2 = 0.05$, $p = 0.02$). Given the
research questions regarding the potential moderating role of race in the relationship between
mother and grandmother parenting and infant temperamental/behavioral risk, the interaction
between mother and grandmother parenting was not probed in this model. Instead, a third
model that included a 3-way interaction term representing the relationship between, race,
mother negative intrusiveness and grandmother sensitivity as well as the required two-way
interactions (race by maternal negative intrusiveness, race by grandmother sensitivity,
grandmother sensitivity by maternal negative intrusiveness) was estimated. This final model
accounted for approximately 27% (adjusted $R^2 = .27$) of the observed variance in infant
temperamental/behavioral risk, and the inclusion of the 3-way interaction significantly
improved the accounted for variance ($\Delta R^2 = 0.10, p = 0.001$). The highest order interaction was probed by testing the simple slopes of the lines defining the relationship between mother negative intrusiveness and grandmother sensitivity and infant temperamental/behavioral risk for African Americans and for whites (Aiken & West, 1991; Preacher et al., 2007). As depicted in Figure 9, the simple slope defining the relationship between mother negative intrusiveness and grandmother sensitivity was significantly different from 0 when grandmothers displayed sensitivity 1 SD above the mean for grandmothers (beta = -2.05, se = 0.72, $p = 0.01$). As maternal negative intrusiveness increased levels of infant/temperamental behavioral risk decreased when grandmothers displayed sensitivity above the mean. As depicted in Figure 10, the slope defining the relationship between mother negative intrusiveness and grandmother sensitivity was also significant when grandmothers displayed sensitive parenting 1 SD below the mean (beta = 2.85, se = 0.92, $p = 0.002$). In this case, the relationship is in the opposite direction, such that low levels of grandmother sensitivity in conjunction with increasing levels of maternal negative intrusiveness was associated with increases in infant temperamental/behavioral risk. These relationships only hold for white families.

Post hoc analyses examined potential variations in this relationship depending on the measure of parenting. These analyses suggested that the above reported observed relationships are unique to grandmother sensitivity and mother negative intrusiveness only. That is, there was not evidence to support the existence of a statistically significant 2-way or 3-way interaction (including race) between both dimensions of parenting by mothers, both dimensions of parenting by grandmothers, or mother sensitivity and grandmother negative intrusiveness.
CHAPTER 4
DISCUSSION

This study applied a step-by-step approach to the exploration of a modified family stress process model within a sample of rural economically disadvantaged families in which mothers and grandmothers are raising an infant together. This study addresses several gaps in the extant literature by studying rural families with young children, examining the role of maternal age in similar household structures, and exploring the psychological well-being and parenting of secondary caregiving grandmothers. Accordingly, this study represents an important initial exploration of family processes in three-generation non-urban households. Following a discussion of the results, the implications, limitations and suggestions for future research are examined.

4.1 Descriptive

Results stemming from the descriptive first goal of the study contribute to the knowledge regarding the ecology of rural multigenerational families. These households have rarely been studied in non-urban environments. The findings indicate that these families present multiple potential risks and assets. First of all, the diversity of maternal age across the sample suggests that these three-generation homes do not represent on average adolescent mother families, in contrast to much of the existing literature on multigenerational families. In this non-urban sample in which housing availability and affordability may be limited, these homes may represent the pooling of resources by working mothers and grandmothers, as approximately half of the mothers, and over two-thirds of the grandmothers in the sample
were employed. Nationally, the growing trend of three-generation households represents family adaptations to care for individuals at both ends of the lifespan – the elderly and children. In this sample, however, given the relatively young ages of the grandmothers, household formation may represent an adaptation for the benefit of the child. As family systems theories suggest, however, these adaptations to benefit one family member have the potential to cause disruptions in family systems, and may in fact be maladaptive for other family members. Studying the well-being and parenting of these household members as well as associated child outcomes should illuminate these potential benefits and liabilities.

Although some households consisted of only the grandmother-mother-infant caregiving triads, most of these homes included other household members. Approximately 75% of the target infants in this study were the mothers' first born children, yet the average number of children under 18 in these homes was 2.19, and the average number under five years of age was 1.3. The number of children under age five seems particularly relevant to caregiver mental health. These findings regarding complex households suggest that understanding the processes that shape caregiver psychological well-being, parenting and early child outcomes likely requires an even more fine-grained analysis to understand the roles that various household members are playing. As the literature on rural families suggests, it is important to note that the family ties that may shape these households are not always voluntary, as rural residents may face limited networks, resources and public sources of support (Blalock et al., 2004; Cochran et al., 2002; The Rural Appalachian Youth and Families Consortium, 1996; Wijnberg & Reding, 1999) These instrumental or material limitations likely exacerbate the ambivalence that generally shapes three-generation
households as mothers and grandmothers simultaneously play multiple, potentially contradictory roles.

4.2 Psychological Distress

The analyses predicting psychological distress indicated that there was considerable variability in psychological distress reported by mothers and grandmothers living in the same household, and hence it is important to study the well-being of each household member individually. There was no support for the hypothesis suggesting that younger maternal age would be a risk factor for elevated psychological distress for both generations, as there were no relationships between psychological distress and maternal age. This finding adds to the mixed literature regarding the role of maternal age and psychological well-being. The distribution of maternal age in this sample with its inclusion of adolescent and older mothers suggests that young maternal age itself is not a risk factor for distress. In addition, being the mother of an adolescent mother is also not a risk factor for elevated psychological distress in this sample, in contrast to other findings (Caldwell et al, 1998; Schweingruber & Kalil, 2000). This sample was drawn from a highly disadvantaged non-urban sample. Perhaps maternal age is a less relevant predictor of psychological distress given the other risks these families face.

There was mixed support for the hypotheses regarding generational differences in predictors of psychological distress. Contrary to the hypothesis, the number of children under five years of age in the household presented a risk to the psychological well-being of both generations, not just for the grandmothers. The relationship of the young children in the household to the mother and grandmother was not differentiated. Raising multiple young offspring may be a risk factor for elevated psychological distress among mothers, and the
birth of a second child for which the grandmothers must assume a large responsibility may be
distressing for the grandmothers. The six-month old infant, however, was the first-born child
for 75% of the mothers. The other children in the household may have been the
grandmothers’ additional children, the children of the mothers’ siblings or other relatives.
Perhaps similar associations between the number of young children and psychological
distress reported by mothers and grandmothers are related to different pathways either for
each generation or across households with different configurations. Grandmothers, as
hypothesized, may experience higher levels of distress when there are more young children
in the household because they may face the burden of providing for multiple dependents,
while also trying to divide attention and care across multiple children and grandchildren.
Primary caregiving grandmothers often report experiencing guilt or anxiety stemming from
providing more attention to some grandchildren versus other grandchildren and their own
children (Hayslip & Kaminski, 2005; Jendrek, 1994). Similar processes could be at play in
these multigenerational households. Links between the number of children in the household
and maternal reports of psychological distress may stem in part from competition for material
and emotional resources that are dispersed across multiple mothers and children. Mothers
may feel jealous when they or their own children are not the center of attention for the
grandmother. Future research that specifies the relations of the children in the household to
the mother and grandmother, the reasons for household composition, as well as qualitative
research to explore relations in these households would further contribute to knowledge
regarding the processes linking household composition and caregiver well-being.

It is interesting to note that the number of children under five in the household, and
not the total number of adults or the adult to child ratio, was related to mother and
grandmother functioning. This finding may suggest that in this sample, the needs of young children and the general stress related to the care of very young children is more related to caregiver wellbeing than crowding, the dimension of household composition that has traditionally been included in studies of parent and child well-being.

As far as individual caregiver characteristics that predicted psychological distress, the hypothesis suggesting that higher levels of self-reported family support would be linked to lower levels of psychological distress for both generations was supported. This finding adds to the growing literature demonstrating the importance of studying family support as distinct from mother-grandmother co-residence. The nature of the measure of family social support did not distinguish who provided the perceived support. In some cases, mothers and grandmothers may have been referring to the support of each other. They could also have been referring to perceptions of support from other family members. Moreover, these other family members could also be fictive kin that compose key social support networks for rural mothers (Nelson, 2000; 2006; Stack, 1974).

Contrary to the hypotheses, economic strain was not associated with the psychological distress of grandmothers, although there was a trend indicating that higher levels of economic strain were associated with higher levels of psychological distress ($p = 0.05$) for mothers and grandmothers. The relative economic deprivation across the sample may account for the lack of a statistically significant relationship between economic strain and distress. In this economically disadvantaged sample, income-to-needs ratios were not linked in a bi-variate manner to any of the independent or dependent variables. This finding provides limited support for family stress/process approaches to studying the influences of economic disadvantage on children, as in line with these theories, the perception of
disadvantage rather than the actual disadvantage may be more relevant to caregiver functioning.

Finally, in support of the hypothesis, perceptions of role overload positively predicted self-reported psychological distress for grandmothers only. These predominantly middle-aged grandmothers were likely balancing multiple responsibilities, including the care of grandchildren, and the perception of struggling to meet all of these responsibilities was relevant to their psychological well-being. The measure of role overload (Reilly, 1982) used in the current study was not designed specifically to address family responsibilities, as it was a general measure of feeling overwhelmed by responsibility. The measure may have been relevant to the grandmothers in this study because they were mostly in the workforce. A measure of role overload designed specifically for these grandmothers, or other middle age members of the “sandwich” generation may have revealed a stronger association between role overload and psychological distress.

4.3 Parenting

Family stress/process models suggest that psychological distress is linked to impaired parenting, operationalized as higher levels of negative parenting and lower levels of positive parenting. This study provided limited support for these pathways. Although inferential conclusions cannot be made, different pathways appear to be linked to sensitive and negative intrusive parenting within these multigenerational families. Before turning to a discussion of the patterns of predictors of each dimension of parenting, it is worth commenting on the general patterns for parenting by generation and household. Observed sensitive parenting by both generations was modestly correlated. Grandmothers displayed higher levels of sensitivity in their interactions with the infants. This generational advantage may stem from
greater grandmother experience in caring for a child, especially given that the majority of mothers were first time mothers. The grandmothers may be more experienced at picking up on the signals of an infant and reacting accordingly, a key dimension of sensitive parenting. Moreover, the multi-level models revealed that there was no nesting of sensitivity within household, suggesting little intergenerational transfer of sensitive parenting practices.

In contrast, negative intrusive parenting behaviors displayed by mothers and grandmothers were also moderately correlated, but there were no mean differences between the negative parenting displayed by mothers and grandmothers. A similar level of negative parenting across generations is consistent with Chase-Lansdale and colleagues (1994) finding in their study of triadic grandmother-mother-pre-school child interactions. The multi-level models in this study revealed that there was systematic nesting of negative intrusiveness within household. There may be a greater contagion of negative parenting within households. These findings are in line with prospective examinations of the intergenerational transfer of harsh parenting (Simons et al., 1992). The lack of a main effect for generation may suggest that grandmothers do not have the benefit of experience in terms of negative intrusive behaviors, as the risks they face may trump this experience advantage. It is important to note that many family stress/process models focus solely on negative parenting, but that negative parenting and sensitive parenting may in fact be important dimensions that are working in conjunction to influence child outcomes.

4.3.1 Sensitivity

In addition to generation, race/ethnicity was also linked to sensitivity, as white caregivers displayed higher levels of sensitivity. Post-hoc analyses that included other forms of disadvantage, including grandmother education, mother and grandmother employment and
income-to-needs ratios that may account for these racial differences failed to reveal a
significant main effect and to remove the main effect of race/ethnicity on sensitivity.
General conclusions and implications as well as suggestions for future research to explore the
role of race and parenting in these households are addressed in a later section of the
discussion.

There was no main effect of psychological distress on sensitive parenting. This
finding stands in contrast to much of the literature testing and expanding family/stress
process models. Perhaps processes in these multigenerational families are distinct from the
processes in married or two-parent families. Including the grandmother in these models
instead of the more traditional approach of considering only the parenting of mothers may
contribute to these findings. It is important to note the lack of family stress/process models
tested in samples with young infants. Perhaps as the children in this sample mature and
present different needs, direct effects of psychological distress on parenting will emerge.

Furthermore, contrary to the hypothesis, perceived levels of family social support did
not moderate the relationship between psychological distress and sensitive parenting.
However, family support was negatively linked to psychological distress. Accordingly, those
caregivers who reported higher perceptions of family support were more likely to experience
lower levels of psychological distress, and hence high levels of psychological distress in the
presence of family social support (the conditions necessary for a buffering effect) may not
have been observed in this sample.

As hypothesized, maternal age moderated the relationship between psychological
distress and sensitive parenting. Self-reported psychological distress at or above the mean
for the sample was linked to lower levels of sensitive parenting only for caregivers in
families in which maternal age was below the mean for the sample. In other words, when mothers were approximately 17 or younger, there was a negative association between psychological distress and sensitive parenting by mothers and grandmothers. This finding may suggest that psychological distress is only linked to sensitivity in the presence of other risks. Post-hoc analyses did not support the presence of a three-way interaction to suggest that the relationship between maternal age and psychological distress varied by generation. This finding contributes to the adolescent mother literature by indicating that young maternal age by itself may not be a risk for less sensitive parenting. The children of young mothers with high levels of psychological distress may be particularly vulnerable, and hence they are crucial targets for early interventions. This study also suggests the need for whole family intervention, as not only the distressed mothers, but also their mothers may be at risk for less optimal parenting. Co-residence of grandmothers and young mothers may not always provide optimal childrearing environments, especially if the co-residence is not accompanied by protective factors for the development of psychological distress and less sensitive parenting.

4.3.2 Negative Intrusiveness

The multilevel model predicting negative intrusiveness also failed to reveal a main effect for maternal age or psychological distress, although some interesting interactions emerged. Consistent with the hypotheses, generation moderated the relationship between maternal age and negative intrusive parenting. Contrary to the hypothesis, however, younger maternal age was associated with higher levels of observed negative intrusive parenting by grandmothers, not by mothers. Perhaps the parenting of young mothers is protected in terms of negative intrusiveness when they are residing with their mothers, in line with findings
regarding more positive parenting among young mothers co-residing with grandmothers (Chase-Lansdale et al., 1994; Shapiro & Mangelsdorf, 1994). It is also interesting to note that these findings concur to a certain extent with Berlin and colleagues’ (2002) conclusions regarding the lack of a direct effect of maternal age on parenting for white and Latina mothers. In this sample the finding holds for African American mothers as well, perhaps because in contrast to their sample, the African Americans in the current study were not younger on average than the white mothers.

The parenting of the mothers of young mothers, however, may be compromised. Perhaps the grandmothers of young adolescent mothers are facing elevated levels of stress, not captured by the measures employed in this study, as they bear the burden of caring for an additional dependent, perhaps without the financial support of the mother, while at the same time facing the difficult tasks of caring for an infant and an adolescent. In addition, many grandmothers of adolescent mothers may be disappointed and angry with the mother for becoming pregnant (Burton & Bengston, 1985; Sadler & Clemmens, 2004; See et al., 1998). The primary caregiving grandmother literature suggests that grandmothers are often effective at separating their anger or disappointment in their own children from their relationships with their grandchildren but this separation may be more difficult for grandmothers living with both generations. This relationship may change over time as the grandmother adjusts to and accepts her new role.

Alternatively, the intergenerational nature of negative parenting may be an important factor to consider. Negative or harsh parenting of adolescents may be linked to elevated levels of maladaptive adolescent outcomes, including teenage pregnancy (Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002). Thus, grandmothers with teenage mothers
may be more likely to exhibit negative parenting behaviors in interactions with the
grandchild and with the child (maternal generation). Longitudinal investigations may help
 tease apart this direction of effects by testing for consistency in negative parenting behaviors
towards the grandchild over time for the grandmothers residing with former adolescent
mothers.

Finally, as hypothesized, race moderated the relationship between psychological
distress and negative intrusive parenting such that higher levels of psychological distress
were associated with higher levels of negative intrusiveness for white families only. This
finding is consistent with studies of parenting of older children that suggest that there is a
weaker link between psychological distress and negative parenting among African
Americans (Johnson, 2000; McLeod & Nonnemaker, 2000; McLeod & Shanahan, 2002).
Some researchers have suggested that the lack of relationship between psychological well-
being and negative parenting by African Americans implies that the use of more harsh or
negative parenting is more culturally acceptable or adaptive for African Americans (Deater-
Deckard & Dodge, 1997). Negative parenting, therefore, is not the result of impaired
parental functioning, and hence is not so strongly linked to negative child outcomes.
Alternatively, the risks to parenting by African Americans may be deeper and more distinct,
and they may exert a direct effect on parenting such that the relationship between
psychological distress per se and parenting is weak. There may be unmeasured risks to
parenting among the African American families in this sample. This issue is discussed in
more detail in light of the infant outcome findings.

4.4 Infant Outcome
Emerging research highlights the early malleability of temperamental characteristics, as the childrearing environment, including caregiver behavior, likely shapes infant and toddler temperament. The results from this study suggest that contrary to the hypotheses, there was no main effect for the 6-month parenting of mothers or grandmothers on 15-month temperamental/behavioral risk, controlling for 6-month child behavior.

There was mixed support for the hypothesis regarding the relationship between mother and grandmother parenting and infant behavior and the potential role of race in shaping these relationships. The results support a three-way interaction. For white families only, high levels of grandmother sensitivity buffered the relationship between high levels of maternal negative intrusiveness and temperamental/behavioral risk because above average levels of grandmother sensitivity in the presence of high levels of maternal negative intrusiveness were associated with lower levels of 15-month temperamental/behavioral risk. At the same time, low-levels of grandmother sensitivity in the presence of high levels of maternal negative intrusiveness were associated with increases in the level of temperamental/behavioral risk. Grandmother parenting, therefore, seems to pose a potential risk and a potential buffer for child outcomes. Post-hoc analyses indicated that households in which grandmothers displayed low-levels of sensitivity and mothers displayed high levels of negative intrusiveness were more common in this sample (28%) in comparison to households in which high grandmother sensitivity was paired with high maternal negative intrusiveness (11%).

There are numerous potential explanations for the findings. Examination of the distribution of temperamental/behavioral risk by race at 15 months suggests that the white infants (mean = 5.89(2.68)) displayed significantly higher levels of
temperamental/behavioral risk than the African American infants (mean = 4.20 (1.80), t = 0.0352, p < 0.001). The relatively low levels displayed by the African American infants and the relative stability in temperamental/behavioral risk from 6 to 15 months among this subgroup may indicate that there was limited variability among the African Americans in the sample, and therefore limited observed effects of the predictor variables. Post hoc analyses introduced other variables into the model that may account for race-based differences in the sample. Including measures of maternal economic deprivation, income-needs ratios, caregiver education, and maternal partner status failed to change the significant nature of the relations observed in the more trimmed model, and failed to produce significant interactions with race. These findings may also be linked to the lack of a relationship between psychological distress and negative intrusive parenting for African American mothers and grandmothers, as given the inability to predict negative intrusive behaviors by African Americans, it may not be surprising that this behavior is not linked to child outcomes. Perhaps the degree of disadvantage faced by both African American mothers and grandmothers prevented grandmother parenting from serving a protective role. In other words, the stressors and disadvantages that may exert a direct effect on maternal parenting behaviors (independent of psychological distress) may also impact grandmother parenting such that African American grandmother sensitivity cannot serve as a buffer for child outcomes. If this speculation is accurate, the findings point to the vulnerability of parenting by both generations and the importance of providing support to caregivers, rather than assuming that extended family structures will compensate for environmental, social and economic disadvantages. Alternatively, although this study addressed a gap in the literature by testing directly the influence of a caregiver other than the mother, African American
children are more likely to be embedded within extended family networks such that the influence of other household or family members on child outcomes may need to be accounted for in order to achieve a complete picture of family functioning.

The roles of mothers and grandmothers within white and African American multigenerational households may differ. The analyses in this study measured caregiver-child behavior during a semi-structured task. Although global observations of parenting among low-income families has consistently been linked to child outcomes across race (Zaslow et al., 2006), little is known about the patterns of daily caregiver-child interactions in these multigenerational households. These findings underscore the importance of within group analyses and studies in order to explore pathways within African American samples that are specific to the observed behaviors and outcomes of African Americans, rather than applying a framework developed from the broader literature in order to compare white and African American families. The sample size in the present study does not provide the statistical power required for multivariate within group analyses.

The failure of post hoc analyses that substituted mother and grandmother negative and sensitive parenting behaviors to result in a significant interaction (or to produce a significant main effect of parenting) suggests that there is something unique about the role of grandmother sensitivity in buffering the relationship between maternal negative intrusiveness and negative infant outcomes. The higher levels of sensitivity displayed by grandmothers and the similar levels of negative intrusiveness displayed by both generations may account for the fact that the direction of buffering for infant outcomes seems to be generation-specific. In other words, given that grandmothers were likely to display higher levels of sensitivity than mothers, it seems logical that grandmother sensitivity became an important
resource for infants, especially those infants exposed to high levels of maternal negative intrusiveness. The lack of main effects for the parenting of either caregiver provides a strong rationale for including caregivers other than mothers in studies of low-income children, and more generally, consistently using a family systems or whole-family approach to studying young children.

4.5 Race/Ethnicity

This study contributes to the accumulating body of literature that suggests the family-based processes linking economic disadvantage to negative child outcomes may vary by race. There were no observed racial/ethnic differences in mean levels of self-reported psychological distress or factors predicting psychological distress. African American caregivers of both generations were observed to display lower levels of sensitive parenting and higher levels of negative parenting, however, psychological distress was only linked to parenting in white families. It is important to acknowledge that these patterns may stem in part from measurement or methodological shortcomings. The measures of psychological distress and observations of parenting were both developed in white samples, although they have been validated in multi-ethnic samples.

This study, like many other studies in this arena, may fail to capture accurately the risks associated with parenting and with child outcomes among African Americans. Racial economic disadvantages may interact with geographic disadvantages. For example, Costello et al. (2001) found that in their sample of approximately 900 families in non-metropolitan southern counties, African Americans were consistently poorer than their white counterparts across all income brackets. Different processes among racial/ethnic groups may culminate in low family incomes, and hence make those families differentially vulnerable to parental
psychological distress, negative parenting and negative child outcomes. Horton and Allen’s (1995) analysis of national survey data revealed that while rural residence predicted poverty for the population as a whole, race, but not rural residence was a significant predictor of poverty for African Americans. Furthermore, in 1990 black and white female-headed rural households were both likely to live below the poverty line, but black female-headed households were twice as likely as white female-headed households to be living in poverty (Horton & Allen, 1995). This disadvantage may be amplified in multigenerational families given the intergenerational transfer of disadvantage.

The circumstances that influence both economic disadvantage and the formation of multigenerational households may differ by race. In their analysis of a national data set, McLeod & Nonnemaker (2002) found that poor white mothers were more likely than poor black mothers to report experiencing delinquency and divorce. These factors in turn were associated with differences in child outcomes that suggested the white children were more disadvantaged than the black children. Measuring current family poverty alone to predict child outcomes without consideration of these other factors would have suggested that African American children were less vulnerable to the influences of poverty. In reality, different poverty co-factors among the white sub-sample may have accounted for this difference. In the present sample, different pathways may lead to the formation of three-generation households among African American and white families. Given more normative African American multigenerational and extended kinship involvement in childrearing, perhaps the formation of three-generation households among white families only is associated with maternal dysfunction. Therefore, white children in these households may be
at risk for poor early outcomes linked directly to maternal characteristics, and in these circumstances grandmother parenting may be particularly protective.

In this study, race is also confounded with context. All of the families resided in chronically disadvantaged non-urban communities transitioning into service-based economies. The majority of the African American portion of the sample resided in the South, while the majority of the white sample resided in central Appalachia. Although both regions represent relative racial isolation, the context shaped by the legacy of historical patterns of discrimination in the South may confer greater disadvantage beyond that measured by income or economic strain, that in turn may be relevant to parent and child outcomes. There may also be interesting generational differences across both rural contexts as the nature of the economy and the patterns of out of wedlock births have shifted in both locales. These elements are not measured in the current study, yet they bear examination in future studies.

4.6 Maternal Age and Timing

This study presented a unique opportunity to study the role of maternal age in the prediction of psychological distress and parenting in a sample with mothers of varying ages residing in similar household structures. Maternal age failed to emerge as a main effect on the relevant outcomes. Contrary to the hypotheses, it was not linked to self-reported psychological distress or parenting (directly for mothers). However, grandmothers with younger daughters exhibited higher levels of negative intrusiveness. Furthermore, maternal age in conjunction with elevated psychological distress posed a risk to parenting by mothers and grandmothers. These findings suggest that maternal age is highly relevant to functioning in these families, but the lack of main effects for maternal age may account for
the mixed findings in the literature linking maternal age to parenting and to child outcomes. This study took advantage of the relatively broad distribution of maternal age. Greater age effects may have emerged if maternal age was dichotomized in order to compare adolescent and young adult mothers. Shapiro & Mangelsdorf (1994), for example, reported more significant effects of maternal age when the age distribution in their all adolescent mother sample was dichotomized. Future analyses could use this approach, especially if the goal is to apply the findings to policy-relevant issues, as policies often have clear age cut-offs.

Further, although the literature suggests the potentially important role of other metrics of age and timing, including grandmother age and generational age gap, those other factors were not linked to relevant outcomes or predictors for either generation in this sample. It is premature, however, to dismiss those factors as irrelevant to family functioning in multigenerational households. There was little variability in generational age gap in this sample. Moreover, age gap was examined without knowledge regarding patterns of spacing across more than two generations or mother and grandmother expectations regarding appropriate age points for transitions to parenthood and grandparenthood, factors considered important to family functioning (Burton, 1996; Burton & Bengston, 1985). The majority of grandmothers were in their early forties, suggesting early, but not very early grandmotherhood, and furthermore there are few elderly grandmothers in the sample. Grandmother age in this sample, therefore, may be a poor indicator of grandmother well-being and functioning. Maternal age seems to be more relevant than grandmother age, which may underscore the nature of grandparenthood as a life transition that is beyond the grandmother’s control.

4.7 Implications
Like many social science investigations, this study does not yield a simple “yes” or “no” response to the query concerning whether grandmothers serve protective roles for infants living in multigenerational homes. The results from this study indicate that the buffering role depends on maternal, grandmother and family characteristics. Despite evidence in the extant research to the contrary, public policy appears to assume that grandmother co-residence is beneficial for the grandchild and for the adolescent mother (see Kalil et al., 1998; Rosman & Yoshikawa, 2001 for discussions of this issue). For example, a provision of the Personal Responsibility and Work Opportunity Reconciliation Act in 1996 required minor mothers to live with a parent or guardian and to attend school in order to receive welfare benefits. The findings of this study suggest a far more complex constellation of relationships and outcomes in three-generation households.

First of all, policies promoting adolescent mother-grandmother co-residence ignore the potential impact of this co-residence on the oldest generation, yet understanding the well-being of grandmothers is an important clinical and policy issue in and of itself. Low-income middle-age rural women may face a host of disadvantages in terms of physical and mental well-being. The introduction of a dependent grandchild to these households may be linked to further impairments for the grandmothers. In comparison to the mothers, the grandmothers exhibited higher mean levels of role overload, lower levels of perceived family social support. Although there were no mean generational differences in global psychological distress, grandmothers did report higher mean levels of self-reported depressive symptoms. In addition, role overload was linked to higher levels of psychological distress for grandmothers only. Despite these risks, grandmothers displayed higher levels of sensitive parenting, and this sensitive parenting appeared to be especially beneficial to infants.
experiencing high levels of maternal negative parenting (at least among white families). This strength of grandmothers should not overshadow the concerns regarding grandmother well-being. Moreover, the fact that many of these grandmothers were able to behave in sensitive ways towards their grandchildren should inspire the development of greater supports for these grandmothers, not the relegation of support to these grandmothers as a substitute for public policy. Following the well-being of these grandmothers longitudinally becomes a critical goal for researchers with potential public health and social work relevance, as the long term tolls of this caregiving role on grandmothers remains unknown. Policy and intervention programs, therefore, rather than relying on the parenting of grandmothers, should find ways to bolster the well-being and parenting of grandmothers and mothers.

In addition, policies that mandate grandmother-mother co-residence may be short-sighted in that the complexity of the households in this study reveals that other members of the household should also be considered, as the number of children under five in the home was associated with maternal and grandmother psychological distress. Furthermore, the findings from this study indicate that for white families, low-levels of grandmother sensitivity in conjunction with high levels of maternal negative intrusiveness increase the levels of early temperamental/behavioral risk. Households in which parenting by both generations is non-optimal provide a particularly risky early environment. Assuming that grandmothers can compensate for parental shortcomings is dangerous, for when grandmother sensitivity is jeopardized, the children may be at greater risk for negative development. This study suggests that grandmother sensitivity may be particularly vulnerable to psychological distress in conjunction with young maternal age. The families that may be the most at risk, and thus the most in need of interventions, may be households in which young mothers and
grandmothers are co-residing along with other young children. Given the negative relationship between perceived family social support and psychological distress for both generations, family social support appears to be an important target to bolster caregiver well-being.

4.8 Limitations

This study represents a first step in an important line of research into family processes in economically disadvantaged low-income rural families. Accordingly, there are numerous limitations to the current study. The results regarding psychological distress should be viewed with caution, as same method variance may influence the strength of the findings because all of the measures were mother/grandmother self-reports. This sample was an untargeted sample within a larger study of early family processes in low-income rural families. Mothers were the targets of recruitment, and in fact were the primary subjects in the study. Some factors, therefore, that may be linked to mental health, parenting and child well-being, such as the experience of negative life events and self-efficacy, were only collected for mothers. Within the framework of this study, therefore, it was not possible to explore the role of these other factors.

The original family/stress process models proposed by Conger and colleagues (1992; 1994) featured the role of the caregiver (in particular the marital) relationship as a potential mediator between psychological distress and impaired parenting. Although a large body of literature on single mothers has eliminated this pathway and demonstrated a robust direct relationship between psychological distress and parenting (Jackson et al., 2000; Mistry et al., 2002), it is imperative to acknowledge the omission in this study of the relationship between the mother and grandmother. The affective nature of this relationship and the degree of
conflict between the mother and the grandmother were not included in the present study, yet these factors are likely linked to caregiver psychological distress, parenting behaviors and infant outcomes. Understanding how aspects of this relationship may vary across families based on race/ethnicity and maternal age, and thus may influence well-being and parenting, should become a critical goal in future research.

In addition, the role of the mother’s romantic relationship was not incorporated in the present study. Approximately half of the mothers reported being involved in a romantic relationship at the 6-month time point. Although maternal relationship status was not linked to the outcomes studied, the quality of this relationship may be linked directly to maternal psychological distress, and indirectly linked to maternal parenting and infant outcomes. The mother's romantic relationship may also be a source of conflict for the mothers and grandmothers, and thus may carry relevance for the grandmothers as well (Apfel & Seitz, 1996; Caldwell et al., 1998; East & Felice, 1999). A strength of this study is the incorporation of grandmother well-being and parenting, moving beyond studies that focus narrowly on the single-mother child dyad. It is naïve to conclude, however, that other adults are not playing important roles in the lives of the mothers and grandmothers. The child’s father, mother and grandmother romantic partners as well as other family members in the social support networks of the mothers and grandmothers likely influence parenting, well-being and child outcomes. Although this study includes a racially-mixed sample in relatively unstudied rural locales, as noted previously, race is confounded with context, so it is unwise to generalize these findings regarding racial/ethnic differences in processes to other rural areas.
Caution is warranted in interpreting the apparent disadvantage faced by white infants as measured by the 15-month temperamental/behavioral risk index. Although this measure is sound in terms of theory and psychometric properties, its predictive validity for white or African American children remains unknown. Limited research has explored early pathways for the development of behavior problems, especially among low-income non-white populations (Scaramella et al., in press). Follow up research linking this measure to later child outcomes is essential. Moreover, the white subsample was relatively small. Understanding the potentially different processes that may give rise to different levels of early temperamental/behavioral risk and in turn shape how this early marker may or may not be linked to later negative socioemotional outcomes represents an important next step in this line of research.

4.9 Future Directions

The findings from this study suggest multiple directions for future research. Although this study presents an interesting picture of the naturally ecology of rural multigenerational families, future studies would benefit from more detailed and specific information regarding who is residing in the household in addition to the mother and grandmother. In addition, as previously mentioned, future investigations should include both objective observations of the grandmother-mother relationship as well as mother and grandmother perceptions of that relationship. This study chose to focus on perceived levels of social support from family members, given the important role of family-based social support in the extant research on adolescent mothers and primary caregiving grandmothers. Other sources of support, including friends, community and church/religious/spiritual could be incorporated in future investigations. Although including grandmother measures and
self-reports is an important strength of this study, future investigations would benefit from gathering more information on the grandmothers, including their life histories and their relationships with their own mothers, as well as the roles these women may be playing in the lives of other family members. The primary caregiving literature suggests that the physical health of grandmothers providing child care may be at risk (Jendrek, 1994; Goodman & Silverstein, 1996; Musil, 1998). In addition, given the general health concerns among low-income rural women, measures of grandmother health should be incorporated both as relevant outcomes, and as predictors of psychological distress and parenting. Similar to a criticism leveled at research on fathering that evaluates fathers' behaviors using measures developed and validated within maternal samples, the parenting constructs used in the present study were not designed particularly for grandmothers. It remains unknown if grandmothers display different kinds of parenting behaviors and/or if they contribute unique elements to the interaction with the child. Future research that focuses exclusively on grandparents may illuminate these potential patterns.

This line of research would benefit immensely from the incorporation of qualitative interviews to capture the potential role of ambivalence that may characterize the relationship between the mother and grandmother, and the relationship between the grandmother and the grandchild. This qualitative work may also suggest the incorporation of additional predictors into the models accounting for caregiver functioning, as it is important to acknowledge that much of the observed variance in caregiver psychological distress and parenting was not explained by the models in the current study. Another methodological improvement could involve the incorporation of structured whole-family interactions, much like the methodology
employed by Chase-Lansdale and colleagues (1994) to explore the ways in which grandmothers may support or discourage the mothers' autonomous parenting practices.

Longitudinal research is essential to understanding the nature, course and implications of family processes in these household structures. The stability of these family structures may be limited, as Nelson’s (2000; 2006) ethnographic research among white rural single mothers suggests that there may be considerable mobility in household structure as mothers move from their households of origin to households with romantic partners, and back again as those relationships dissolve. As Nelson suggests (2006), mothers may value the support of grandmothers at different points in time, depending on their own romantic relationship status. The nature of the mother-grandmother, and perhaps as importantly, the grandmother-grandchild relationship across time once these are no longer co-resident relationships remains an empirical question. Following this sample longitudinally would provide the opportunity to tease apart residence from support patterns within a sample that represents diverse maternal ages. Following child outcomes longitudinally is of great interest, as the implications of the interaction between mother and grandmother behaviors for child outcomes may vary across time as the child presents different needs and caregiving demands. In addition, the findings regarding the interactive role of grandmother sensitivity and maternal negative intrusiveness should be explored in other studies in which the parenting of both caregivers is observed.

Future research exploring family processes in three-generation households would benefit from the incorporation of relevant comparison groups. Maternal psychological distress and parenting and child outcomes in the multigenerational families in this study could be compared to these factors among demographically similar mothers living with
romantic partners and living on their own. Many of the mothers who may be classified as single mothers in other investigations may in fact be living in multigenerational homes.

Replicating and expanding this study design across other populations would inform the development of effective family interventions and policies.

4.10 Conclusion

This study presents a complex picture of family processes among rural low-income multi-generational families. The findings underscore the importance of family systems perspectives that consider simultaneously the behaviors and perceptions of multiple family members. The emergence of numerous statistical interactions as opposed to strong main effects may help explain some of the mixed findings in the literature while also underscoring the importance of understanding complex variations in processes across and within families. This study warrants future investigations that expand the family stress process model perspective and follow families longitudinally.
**Table 1. Descriptive Statistics by Generation (N=105)**

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<th>Mothers</th>
<th>Grandmothers</th>
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<td>%</td>
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<td>In School</td>
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<table>
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<th>SD</th>
<th>Mean</th>
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<tr>
<td>Age</td>
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<td>4.32</td>
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<td>0.70</td>
<td>2.61</td>
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<td>Role Overload</td>
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<td>Psychological Distress</td>
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<td>Negative Intrusiveness</td>
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<td>0.73</td>
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<td>0.80</td>
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Note. Mother value is significantly different from grandmother value * p < 0.05, **p < 0.01
Table 2. Bi-Variate Correlations Among Independent and Dependent Variables

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<td>.23*</td>
<td>.12</td>
<td>.09</td>
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<td>9. Mother Distress</td>
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<td>.03</td>
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<td>.29**</td>
<td>.05</td>
<td>.23</td>
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<td>-.17</td>
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<td>-.02</td>
<td>-.23*</td>
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</tbody>
</table>

* p < 0.05. **p < 0.01. *** p < 0.001
**Table 3. Final Multi-Level Model Predicting Psychological Distress**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>46.39</td>
<td>2.86</td>
</tr>
<tr>
<td>Race</td>
<td>-1.53</td>
<td>1.43</td>
</tr>
<tr>
<td>Maternal age</td>
<td>0.02</td>
<td>0.16</td>
</tr>
<tr>
<td>Age gap</td>
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<td>0.10</td>
</tr>
<tr>
<td>Children Under 5</td>
<td>2.45*</td>
<td>1.18</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td>-0.41</td>
<td>1.20</td>
</tr>
<tr>
<td>Economic Strain</td>
<td>1.98</td>
<td>1.02</td>
</tr>
<tr>
<td>Role Overload</td>
<td>1.40</td>
<td>0.88</td>
</tr>
<tr>
<td>Family Social Support</td>
<td>-2.03*</td>
<td>0.93</td>
</tr>
<tr>
<td>Gen By Role Overload</td>
<td>2.29*</td>
<td>1.12</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 Variance</td>
<td>7.43</td>
<td>7.93</td>
</tr>
<tr>
<td>Level 2 Variance</td>
<td>71.45***</td>
<td>10.00</td>
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<tr>
<td>Level 2 Variance Accounted For</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Level 2 Variance Accounted For</td>
<td>0.16</td>
<td></td>
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</tbody>
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* *p < 0.05. **p < 0.01. *** p < 0.001
### Table 4. Final Multi-Level Models Predicting Sensitivity and Negative Intrusiveness

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity</th>
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<th>Negative Intrusiveness</th>
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<td></td>
<td>Beta</td>
<td>SE</td>
<td>Beta</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2.82</td>
<td>0.11</td>
<td>2.38</td>
<td>0.11</td>
</tr>
<tr>
<td>Race</td>
<td>-0.48**</td>
<td>0.12</td>
<td>0.43**</td>
<td>0.12</td>
</tr>
<tr>
<td>Maternal age</td>
<td>0.03</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
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<tr>
<td><strong>Level 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generation</td>
<td>0.37**</td>
<td>0.10</td>
<td>-0.38</td>
<td>0.10</td>
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<tr>
<td>Maternal Age X Generation</td>
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<td>-</td>
<td>-0.06**</td>
<td>0.02</td>
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<tr>
<td>Family Social Support</td>
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<td>0.07</td>
<td>0.02</td>
<td>0.07</td>
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<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td>Distress X Maternal Age</td>
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<td>0.002</td>
<td>0.001</td>
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<tr>
<td>Distress By Family Support</td>
<td>-0.07</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Distress By Race</td>
<td>-0.001</td>
<td>0.01</td>
<td>-0.02*</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 Variance</td>
<td>0.06</td>
<td>0.06</td>
<td>0.11*</td>
<td>0.06</td>
</tr>
<tr>
<td>Level 2 Variance</td>
<td>0.49***</td>
<td>0.07</td>
<td>0.43***</td>
<td>0.07</td>
</tr>
<tr>
<td>Level 1 Variance Accounted For</td>
<td>-</td>
<td></td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Level 2 Variance Accounted For</td>
<td>0.10</td>
<td></td>
<td>0.13</td>
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</tbody>
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* $p < 0.05$. **$p < 0.01$. ***$p < 0.001$
Table 5. Summary of Hierarchical OLS Regression Predicting Temperamental/Behavioral Risk

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>F</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
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<tbody>
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<td>Control</td>
<td>6.03***</td>
<td>0.13</td>
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<tr>
<td></td>
<td>6-Month IBR</td>
<td>0.18</td>
<td>0.10</td>
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<tr>
<td></td>
<td>Race/Ethnicity</td>
<td>-1.57***</td>
<td>0.46</td>
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<tr>
<td></td>
<td>Maternal Age</td>
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<td>0.05</td>
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</tr>
<tr>
<td>2.</td>
<td>Parenting</td>
<td>3.05*</td>
<td>0.11</td>
<td>-0.02</td>
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<tr>
<td></td>
<td>Grandma Sensitivity</td>
<td>-0.13</td>
<td>0.34</td>
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<tr>
<td></td>
<td>Mother Neg. Intrusive</td>
<td>0.28</td>
<td>0.35</td>
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<tr>
<td>3.</td>
<td>Interaction 2-Way</td>
<td>3.64**</td>
<td>0.16</td>
<td>0.05*</td>
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<tr>
<td></td>
<td>Grandma Sensitivity X Mother Neg. Intrusive</td>
<td>-1.17</td>
<td>0.49*</td>
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<tr>
<td>4.</td>
<td>Interaction 3-Way</td>
<td>4.39***</td>
<td>0.27</td>
<td>0.11**</td>
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<td></td>
<td>Grand Sens X Mother Neg. Intrusive X Race</td>
<td>2.84</td>
<td>1.00</td>
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</tbody>
</table>

* $p < 0.05$. **$p < 0.01$. ***$p < 0.001$
Figure 1. Traditional Family Stress Process Model

Adapted from Conger et al., 1992; 1994; 2002

Figure 2. Theoretical Revised Family Stress Process Model
Figure 3. Mean Psychological Distress for Mothers and Grandmothers
Figure 4. Generation Moderates the Relationship Between Role Overload and Psychological Distress

Note. — Mothers  — Grandmothers
Figure 5. Mean Observed Parenting for Mothers and Grandmothers

(a) Sensitivity

(b) Negative Intrusiveness

Mothers  Grandmothers

Mothers  Grandmothers
Figure 6. Maternal Age Moderates the Relationship Between Psychological Distress and Sensitive Parenting

Note. Maternal Age 1 SD below the mean  Maternal Age at the mean  Maternal Age 1 SD above the mean
Figure 7. Generation Moderates the Relationship Between Maternal Age and Negative Intrusiveness
Figure 8. Race Moderates the Relationship Between Psychological Distress and Negative Intrusiveness

Note. — white —— black
Figure 9. High Grandmother Sensitivity Moderates the Relationship Between Maternal Negative Intrusiveness and Infant Temperamental/Behavioral Risk for White Families

Note. ——— Black ——— White

Figure 10. Low Grandmother Sensitivity Moderates the Relationship Between Maternal Negative Intrusiveness and Infant Temperamental/Behavioral Risk for White Families
REFERENCES


Clinical Psychometric Research. Johns Hopkins University School of Medicine.


of population and structural change. *Journal of Comparative Family Studies*, 29(2), 397-406.


direction of effects.


