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PREDICTORS OF MATERNAL BEHAVIOR AND THEIR EFFECTS ON THE ACHIEVEMENT OF CHILDREN: DATA FROM THE NATIONAL LONGITUDINAL SURVEY OF YOUTH

By

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ABSTRACT

PREDICTORS OF MATERNAL BEHAVIOR AND THEIR EFFECTS ON THE ACHIEVEMENT OF CHILDREN: DATA FROM THE NATIONAL LONGITUDINAL SURVEY OF YOUTH

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The purposes of this study were to identify factors that predict the parenting behavior of mothers, and factors that predict the achievement of children. Using data from the National Longitudinal Survey of Youth (NLSY), the study focused on 898 mothers (African-American, $\underline{n}$ = 347; Caucasians, $\underline{n}$ = 551), and their 6 to 8 year-old children. Consistent with Belsky's model of the determinants of parenting, the quality of the home environment was influenced by maternal characteristics, contextual factors and child characteristics. Mothers who provided better quality home environments were older in age at the time of their first birth, and had higher levels of intelligence and self-esteem. Mothers who had higher levels of family income, fewer children, and had a spouse or partner in the home also provided more supportive home environments. Female children tended to receive more supportive care than male children. Additional analyses showed that the quality of the home environment was related to the achievement of children. Children who did well had mothers who provided more cognitively stimulating home environment.

To Allah, The All Knowing

To Along Zul, Sheereen, Abah and Emak

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CHAPTER I

INTRODUCTION

Improving the quality of family life, particularly parent-child relationships, has become a national concern in the United States. Social scientists continue to devote much attention to investigating factors that influence childrearing practices and their effects on children's development, particularly cognitive development. Recent research indicates that individual differences in parenting are multiply determined (Belsky, 1984; Belsky, Robins & Gamble, 1984; Sigel, 1985) and that these differences are related to child outcomes (Bradley & Caldwell, 1984; Bradley, Caldwell, Rock, Hamrick & Harris, 1988; Bradley, Caldwell, Rock, Barnard et al., 1989).

As the evidence on determinants of parenting and child development continues to grow, it becomes clear that more information is needed on why parents behave the way they do and how parents' behavior affects the development of children. This information will help to refine the understanding of factors that influence parenting and child development. Moreover, there is a need to expand the understanding of parenting behavior and child development

within designated populations such as low socio-economic status (SES) and minority families. Such research will help to better understand the ramifications of minority and or poverty status, as it relates to parenting and child development.

Statement of the Problem

This study was designed to identify factors that predict the parenting behavior of mothers, and to explore whether or not the same factors predict the quality of care provided by African-American and Caucasian mothers. The factors related to the achievement of children ages 6 to 8 years old, were also examined. The study was based on a secondary analysis of the data from the National Longitudinal Survey of Youth (NLSY).

Purpose of the Study

The primary purpose of the present study is to identify factors that influence the quality of care mothers provide for their young children (ages 6 through 8). Based on Belsky's (1984) model of the determinants of parenting, influences on maternal behavior fall into three broad categories: maternal characteristics, contextual factors and child characteristics. The study determined the extent to which maternal characteristics (age at first birth,

education, intelligence, and self-esteem), contextual factors (family income, family structure, which includes presence of spouse or male partner and number of children, and marital quality), and child characteristics (age and sex) predict maternal childrearing behavior. The study also determined if the same factors are related to the quality of care provided by mothers of two different ethnic groups, African-American and Caucasian mothers.

The present study examines the influence of several potential factors on parenting, because it seems likely that parenting behavior is multiply determined. Therefore to understand parenting, the combined effect of these multiple influences should be assessed (Luster & Okagaki, in press). As Luster and Okagaki write,

> Collecting information on several possible influences in one study is likely to allow the investigator to make a better prediction about which parents are at-risk for providing relatively unsupportive care than if he or she considered only one factor at a time.

The study focuses specifically on mothers because mothers are still typically the primary care-takers of their children, and are usually more involved than fathers in most of the day to day activities of their children (Bigner, 1989; Sroufe, Cooper & Dehart, 1992). Furthermore, men have been shown to be much less involved than their wives in the daily care and supervision of the children (Clark-Stewart, 1980; Parke, 1981). Therefore, it seems likely that mothers have a greater impact on their children's development than

fathers, particularly in the early years. The factors that influence the caregiving behaviors of African-American and Caucasian mothers are of interest in this study because earlier studies have pointed to ethnic differences in maternal behavior (Luster & Dubow, 1990; Menaghan & Parcel, 1991).

Besides identifying factors that affect the parenting behavior of African-American and Caucasian mothers, this study also identified factors related to the achievement of children. Of great interest in this study is the relation between maternal behavior and children's achievement. A review of the literature indicated that there is a substantial relation between maternal behavior and children's cognitive performance (Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; Bradley et al., 1988; Sigman et al., 1988). These studies found that mothers who provide cognitively stimulating home environment have children who score high on intelligence tests. However, other studies found that the effect of home environment on child IQ is insignificant when maternal intelligence is statistically controlled (Longstreth, Davis, Carter, Flint, Owen, Rickert & Taylor, 1981; Scarr, 1985). Given that findings on the relation between home environment and child IQ varied across studies, this study examined the effect of home environment on children's achievement when maternal intelligence was statistically controlled.

Research Objectives

In summary, the research objectives for this study are as follows:

1. Determine what maternal characteristics predict the quality of the home environment mothers provide.
2. Determine what contextual factors predict the quality of the home environment mothers provide.
3. Determine what child characteristics predict the quality of the home environment mothers provide.
4. Determine if the same factors predict the quality of care provided by African-American and Caucasian mothers.
5. Determine if the quality of the home environment is related to the achievement of children.
6. Determine the relations between the predictor variables (maternal characteristics, contextual factors, and child characteristics) and children's achievement, when the quality of the home environment is statistically controlled.
7. Determine the relation between the quality of the home environment and children's achievement, when maternal intelligence is statistically controlled.

Conceptual Model

The present study focuses mainly on factors that influence parenting behavior, which was assessed using a shortened version of Caldwell and Bradley's Home Observation

for Measurement of the Environment (HOME-SF)(Baker & Mott, 1989). The HOME is an instrument that measures the quality of the rearing environment parents provide for their children. It is a well established instrument and has been shown to be a strong predictor of child outcomes such as IQ and school achievement (Caldwell & Bradley, 1979; Bradley & Caldwell, 1984; Gottfried, 1984).

The theoretical framework guiding this study is Belsky's (1984) model of the determinants of parenting behavior (Figure 1). According to Belsky, the three factors most influential in shaping parenting behavior in descending order of importance are the parents' personal resources, sources of stress and support, and the behavioral characteristics of the child. As Belsky writes,

> ... the model presumes that parenting is directly influenced by forces emanating from within the individual parent (personality), within the individual child (child characteristics of individuality), and from the broader social context in which the parent-child relationship is embedded - specifically, marital relations, social networks, and occupational experiences of parents. Furthermore, the model assumes that parents' developmental histories, marital relations, social network, and jobs influence individual personality and general psychological well-being of parents and, thereby, parental functioning and, in turn, child development (p. 84).

Belsky proposed that it would be ideal for investigators to examine the combined effects of these three factors in a single study. Therefore, all three factors in the process model of parenting were used in this study as predictors of parenting behavior. However, the choice of variables under

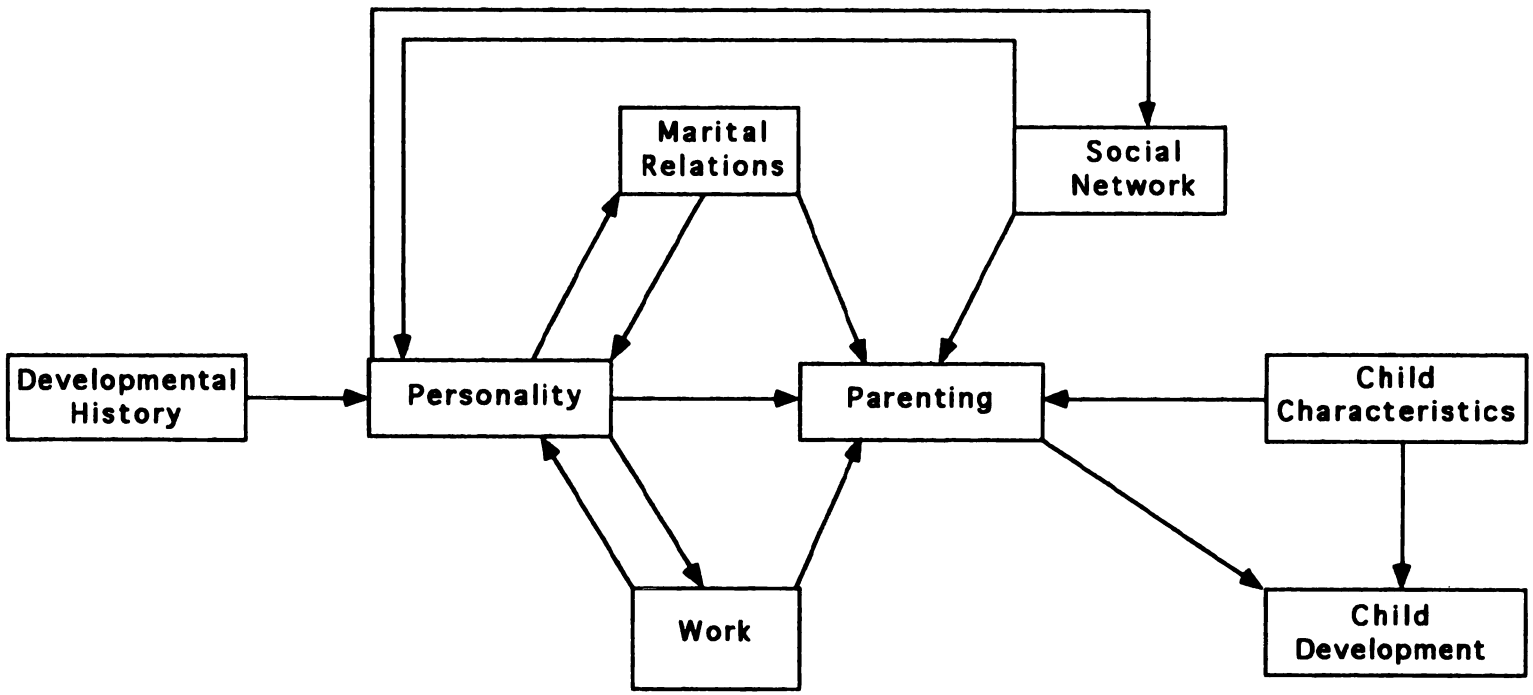

Figure 1. A Process Model of the Determinants of Parenting (Belsky, 1984, p. 84).

each factor was influenced by data available in the NLSY and previous research in the area.

The maternal characteristics that were examined in this study include age at first birth, level of education, intelligence and self-esteem. The birth of the first child may have a major impact on family life. Thus, mothers who have their first child at an early age may find the responsibilities of raising a child an especially trying experience. As Quinton and Rutter (1988) have pointed out, most teenage mothers must cope with many kinds of difficulties in life. They noted that teenage mothers with fewer personal resources may cope less well with adverse circumstances than those with higher levels of personal resources. A number of studies have found an association between teenage parenthood and absence of spouse in the home, lower incomes, and lower educational attainment (King & Fullard, 1982; Garcia-Coll, Hoffman & Oh, 1987; Luster & Rhoades, 1989). In addition, these studies found that teen mothers tend to provide less supportive home environments for their children than mature mothers.

Level of education has repeatedly been found to be related to parenting behavior (Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; Menaghan & Parcel, 1991). Highly educated parents are more likely than less educated parents to provide relatively stimulating home environments. This, in turn, will help to enhance their children's cognitive competence. Numerous studies have shown positive

relations between parents' level of education and children's cognitive competence (e.g., Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984).

Maternal intelligence is another variable that has been found to be associated with the quality of care mothers provide for their children (Longstreth, et al., 1981; Gottfried & Gottfried, 1984; Scarr, 1985; Hannan & Luster, 1991). These studies found that maternal intelligence was a significant predictor of the quality of the home environment when other maternal characteristics were controlled. Hannan and Luster argue that parenting is an intellectually demanding task; therefore more intelligent parents will likely provide more supportive environments for their children.

Parents' behavior with their children can be influenced by their emotional states and feelings of self-worth. Research findings indicate that mothers with high self-esteem create more supportive home environment and behave positively toward their children (Luster & Dubow, 1990; Hannan & Luster, 1991; Menaghan & Parcel, 1991). High self-esteem and positive maternal behavior have been found to be associated with favorable child outcomes (Ricks, 1985; Small, 1988).

The contextual factors focused on in this study were family income, family structure (which includes the presence of spouse/partner and number of children) and marital quality. Earlier studies have shown that the socioeconomic

status (SES) of the family, which includes family income, correlates positively with the quality of the home environment (Hess, 1970; Bradley & Caldwell, 1984). Living in poverty can produce life stresses that can affect parental behavior. Research has consistently shown that low-income parents, on average, provide less cognitively stimulating home environments than middle or high-income parents (Elder & Caspi, 1988; Luster & Dubow, 1990; Hannan & Luster, 1991; Menaghan & Parcel, 1991).

The presence of other adults in the family (particularly nurturing adults) such as a husband or male partner, can enhance maternal well-being and the quality of the home environment (Luster & Dubow, 1990; Hannan & Luster, 1991; Menaghan & Parcel, 1991). According to Hannan and Luster (1991), these effects can be seen in at least three ways: (a) the spouse or male partner can provide emotional support for the mother, (b) provide financial support for the family, and (c) provide direct care for the children.

Several studies have found that the quality of the home environment is affected by the number of children in the family. Families with fewer children have been found to provide more supportive home environment when compared to families with many children (Blake, 1989; Luster & Dubow, 1990; Menaghan & Parcel, 1991).

Belsky (1981) suggested that to understand parenting and its influence on child development, attention must be given to the marital relationship. He noted that marital

relationship is the principle support system for parents (Belsky, 1981, 1984). It is argued that parents who experience satisfying, supportive marital relationship will more likely provide a warmer affective climate in the home and be more available to respond to their children's needs (Belsky et al., 1984; Easterbrooks & Emde, 1988; Simons, Whitbeck, Conger & Melby, 1990). A good marital relationship and sensitive parenting may in turn promote positive development in children. Goldberg and Easterbrooks (1984) found in their study on parents and their 20 months old children that parents with good marriages expressed sensitive parenting behavior and had children who displayed optimal patterns of development. However, Brody, Pillegrini and Sigel (1986) did not find such positive linkages between marital quality, parenting, and child development in their study on parents with school-aged children (between 5 1/2 and 7 1/2 years old). They found that mothers in unsatisfying marriage often make compensatory investments in their children. When observed in a laboratory, these mothers were found to be more involved in teaching their children, and the children, in turn, were more actively responsive to the mothers' teaching behaviors. Thus, some researchers believe that positive marital relationships should contribute to positive parent-child interactions, while others have argued that parents who have an unsatisfying relation with a spouse will make a greater investment in their relationships with their children. The

present study therefore, compared the merits of the two hypotheses to see if the NLSY data support either of the hypothesis.

The "characteristics of the child" is the third factor in Belsky's model of the determinants of parenting. The child's characteristics that were focused on in this study were the child's age and sex. It is reasonable to expect parents to change their childrearing behavior as their children mature. Some researchers have found changes in parental behavior as the children develop (Roberts, Block, & Block, 1984; Steinberg, 1987), while others found stability in parental behavior over time (McNally, Eisenberg, & Harris, 1991). No effect of child's age on parental behavior was found by Hannan and Luster (1991); however, the age range in the sample was very restricted.

Sex of the child can also have an effect on the parent's behavior toward the child. Numerous studies have found that mothers interact differently with their sons and daughters (e.g., Bronfenbrenner, Alvarez & Henderson, 1984; Bradley, et al., 1988). However, some studies have found that the child's gender has little effect on the quality of the home environment (Hannan & Luster, 1991; Menaghan & Parcel, 1991).

In addition to identifying the predictors of parenting behavior for the entire sample, separate analyses were also done for African-American and Caucasian mothers. There is evidence from past studies that maternal ethnicity is

related to maternal behavior and the quality of the home environment the mother provides (Laosa, 1981; Luster & Dubow, 1990; Menaghan & Parcel, 1991). Moreover, the factors that are most strongly related to the quality of the home environment may vary by ethnicity (Luster & Dubow, 1990).

As indicated earlier, the factors that influence the achievement of children are also of interest in this study. Past studies have found that mothers who provide stimulating home environment have children who achieve high IQ scores (Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; Sigman, et al., 1988). The relation between quality of the home environment and children's achievement was examined in this study. Another focus of the present study is the influence of maternal characteristics, contextual factors, and child's characteristics on children's achievement test scores. Are the effects of these factors on children's achievement largely mediated by the quality of the home environment? Bradley and Caldwell (1984) found in their study that the HOME is a better predictor of children's IQ than SES variables. They concluded that SES variables such as parents' education are directly related to parental behavior, and indirectly related to children's cognitive performance.

The extent to which home environment predicts the achievement of children when maternal intelligence is controlled was also examined in this study. Few researchers

have attempted to examine the joint influence of maternal intelligence and home environment on children's achievement. Some studies found an effect of home environment on IQ when maternal intelligence was controlled (Yeates, MacPhee, Campbell & Ramey, 1983; Gottfried & Gottfried, 1984), while others did not (Longstreth et al., 1981; Scarr, 1985). To date, this researcher has not found any studies of the influence of home environment on achievement while controlling for maternal intelligence.

Based on Belsky's theory on the determinants of parenting and findings from past studies, the conceptual model for this study is illustrated in Figure 2. Three major categories of independent variables in this study are maternal characteristics, contextual factors and child characteristics. The dependent variables are maternal behavior and children's achievement. Maternal behavior was also considered as a mediating variable that mediates the relation between the independent variables and the achievement of the children.

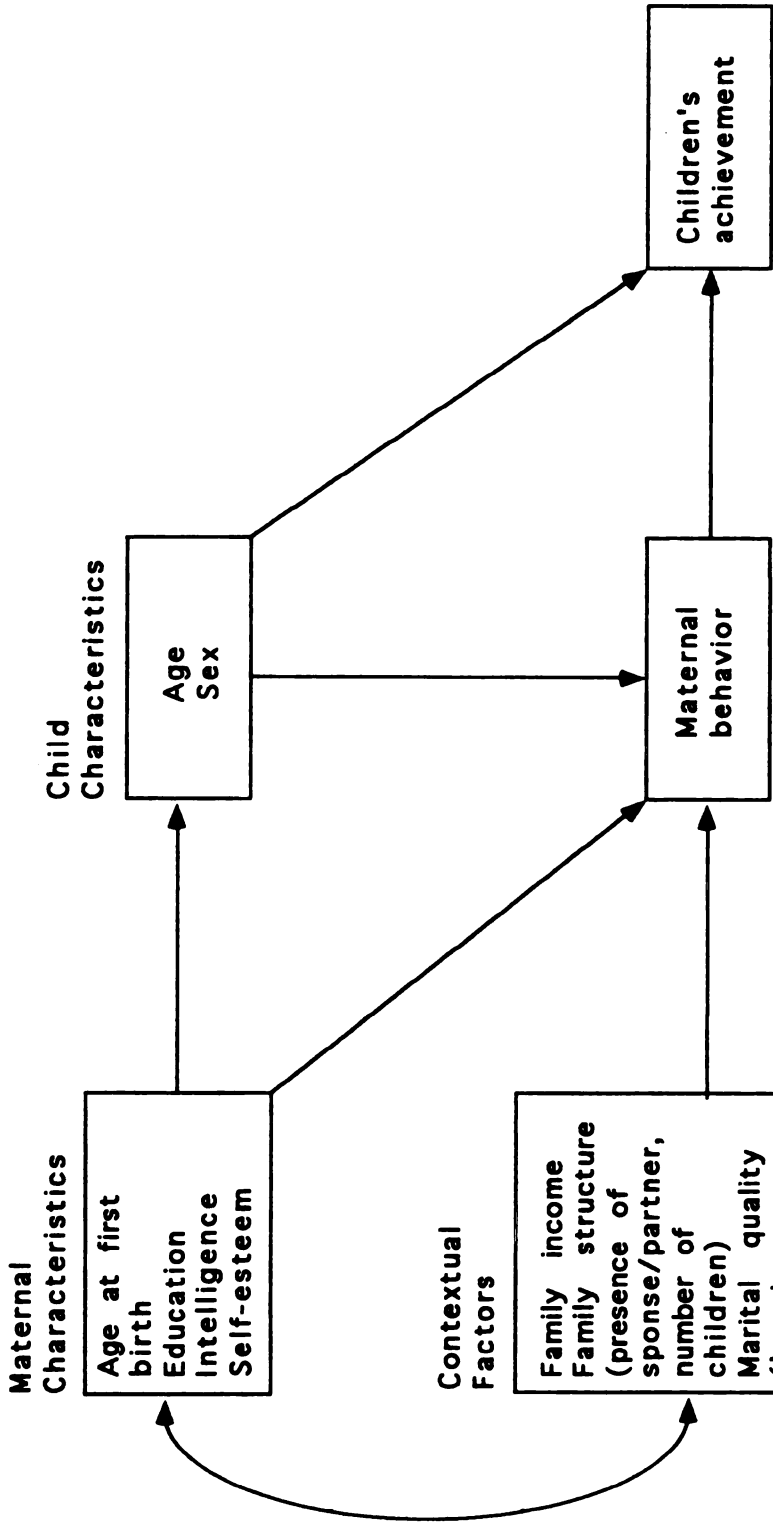

Figure 2. Conceptual Model

Conceptual and Operational Definitions

The following section provides the conceptual and operational definitions for the variables in this study.

Maternal Characteristics:

Conceptual: The individual traits or attributes of the mother, for example, age at first birth, level of education, intelligence, and self-esteem.

Operational: The mother's responses to the questions regarding her age at first birth, and the number of years of education she completed at the time of the 1988 interview; her score on the Armed Forces Qualification Test (AFQT), administered in 1980 (U.S. Department of Defense, 1982); and her score on the Rosenberg's 10-item self-esteem scale (Rosenberg, 1965), administered in 1987.

Contextual Factors:

Conceptual: The situational elements that can affect the parenting behavior of mothers, for example, the level of income, structure of the family, and marital quality.

Operational: Family income is the total household income of the family for the calendar year of 1987. Family structure is the presence or absence of a spouse or male partner in the home, and the number of children of the mother. Marital quality is the mother's score on questions regarding her marital happiness, marital communication and marital conflict.

Child Characteristics:

Conceptual: The individual traits or attributes of the child, for example, age and sex.

Operational: The assessment on the child's age in years, and whether the child is a male or female.

Maternal Behavior:

Conceptual: The quality of the rearing environment provided by the mother for her child.

Operational: The mother's score on the "Home Observation for Measurement of the Environment-Short Form" (HOME-SF) (Baker & Mott, 1989).

Children's Achievement:

Conceptual: The children's ability to know and interpret their environment, and ability to recall, reason, problem solve, think and learn.

Operational: The children's score on the Peabody Individual Achievement Test (PIAT) of Mathematics, Reading Recognition and Reading Comprehension (Dunn & Markwardt, 1970).

Rationale for the Present Study

A review of the literature reveals that studies investigating the factors that contribute to individual differences in parenting behavior and child outcomes in the same study are rare. Most studies have either focused on factors affecting parenting behavior or the effects of parenting behavior on child development. The present study differs from earlier studies in that it focuses on factors that influence parenting and their effects on child development concurrently. In other words, this study focuses on all of the components of Belsky's (1984) model of the determinants of parenting rather than just part of the model.

Although recent studies have begun to focus on the interaction of multiple influences on parenting, most have dealt with parents of infants (e.g., Crockenberg & McCluskey, 1986; Hannan & Luster, 1991). To date, there has been very little research investigating the factors that affect the parenting behavior of parents of older children.

Different factors may affect how parents behave toward their children of different ages.

Several investigations have examined the extent to which maternal intelligence and home environment predict the cognitive competence of children. Some investigators found no significant relationship between home environment and child's IQ when maternal intelligence was controlled (Longstreth et al., 1981; Scarr, 1985), while others found a significant relationship (Yeates, et al., 1983; Gottfried & Gottfried, 1984). Because findings from earlier studies are inconsistent, the present study investigated the effect of home environment on children's achievement when maternal intelligence is statistically controlled.

This study differs from earlier studies on parenting and child development in that it utilized a large and diverse sample, whereas the available samples in most studies are both small and restricted. Also, this study utilized a longitudinal data set and most previous studies have used cross-sectional data. Finally, this study will demonstrate the value of the ecological perspective for understanding parenting and child development. Most studies in this area have focused on a limited aspect of the family environment. From the ecological perspective, the family (which comprises parents and children) has to be conceptualized as a system of mutual transactions with the environments in which they are embedded (Andrews, Bubolz & Paolucci, 1980). Therefore, the effects of a particular

environmental process for parenting and child development may depend to some extent on the particular context in which they are interacting (McGillicudy-Delisi, 1980).

Assumptions

The following underlying assumptions were made in this study.

1. Families in all cultures and at all level of SES organize their rearing environment in ways that affect the development of their children, particularly cognitive development.
2. Observations and interviews with the mothers made by trained staff of the NLSY reflected the mother's actual child rearing behavior. Similarly, the children's responses on the PIAT subtests reflected the children's level of achievement in Math, Reading Recognition, and Reading Comprehension.
3. Belsky's model of the determinants of parenting is conceptually appropriate for the investigation of factors affecting parenting behavior and child development.

CHAPTER II

REVIEW OF LITERATURE

The previous chapter presented a brief review of the literature on factors that affect the quality of the home environment mothers provide for their children, and factors that affect the achievement of children. This chapter presents a review of studies that examined the combined influence of the following factors on the quality of the home environment: maternal characteristics, contextual factors, and child characteristics. Included in the discussion is the relation between the ethnicity of the mothers and the quality of the rearing environment provided by the mothers. The review of factors that affect the achievement of children, specifically the effect of maternal behavior on children's achievement, will be presented toward the end of this chapter.

Factors Predicting Maternal Behavior

Several factors, some of which have been discussed briefly in Chapter I, are likely to contribute to individual differences in parenting behavior. Bigner (1989) has

categorized the various influences of parenting into five different groups: (a) cultural influences, such as social class or peer value systems, (b) personality patterns, (c) attitudes toward parenting, (d) role modeling, or the unconscious learning of parenting behavior from one's own parents, and (e) goals of childrearing, such as short-and long-term expectations of appropriate child behavior.

Based on his review of past studies, Luster (1985) categorized the various influences on parenting into two broad categories, namely: (a) contextual variables, that are aspects of the parents' social ecology, and (b) personal variables, that are characteristics of the parents. In discussing the contextual variables, Luster identified several factors that can influence parenting practices, including culture, social class, community/neighborhoods, social support networks, work, job/income loss, historical influences/cohort differences, parents' experiences as children, marital quality and divorce, parity/family size, and characteristics of the children. The personal variables that may affect parenting behavior discussed by Luster were sex of parent/sex role orientation, age, personality characteristics, intelligence and cognitive complexity, and parental ideology.

A review of the literature reveals that most research in the past has focused on these factors singly; however recent studies have begun to focus on the interaction of multiple influences on parenting. This review will focus

mainly on studies that examined multiple predictors of parenting which is the primary objective of this study.

Multiple Predictors of Parenting

Theory and research have indicated that maternal characteristics, child characteristics, and contextual factors are all related to the quality of care mothers provide for their young children. Belsky et al., (1984) suggested that "individual differences in parenting are multiply determined by a variety of factors both within and beyond individual parents and their families in which they function" (p.252). In his theoretical papers, Belsky (1984, Belsky et al., 1984) identified three primary factors that influenced parental competence: (a) personal resources of parents, (b) the child's characteristics, and (c) social sources of stress and support. Belsky argued that these three sets of factors interact in systematic ways to determine the probability that parents and their children will function competently. However, Belsky (1984, Belsky et al., 1984) noted that these three sets of factors are not equally influential and that stress in one subsystem may be buffered by support in other systems.

Belsky (1984, Belsky et al., 1984) argued that of the three factors that affect parenting, personal resources is the most important factor, followed by social support and characteristics of the child. Belsky also identified three aspects of personal resources that can affect parental competence: (a) empathy/ nurturance, (b) physical health,

and (c) sex-role orientation. Belsky noted that the parents' developmental history and current circumstances will determine the extent to which parents possess these resources. However, current developmental changes and circumstances may modify these resources.

Based on evidence that children do influence the manner in which they are reared, Belsky (1984, Belsky et al., 1984) proposed four primary characteristics of children that affect parenting behavior. These characteristics are temperament, physical health, age, and gender. The context in which the parent-child relationship evolves will also influence the quality of care parents provide for their children. Belsky outlines four primary sources of stress and support: the marital relationship, informal social networks, employment, and formal social resources. Belsky (1984, Belsky et al., 1984) noted that social support networks can exert influence on parenting in three general ways: (a) by providing emotional support to the parents, (b) by providing instrumental assistance, and (c) by providing social expectations.

Crockenberg and McCluskey's (1986) study on mothers with an infant was consistent with Belsky's concept of multiple determinants of parenting. In the study, Crockenberg and McCluskey assessed the effects of maternal attitudes about parenting, infant irritability, and social support on maternal behavior over time. The sample for the study consisted of 46 Caucasian and 2 Asian-American mothers

and their infants. Results of the study show that mothers with good social support were more sensitive toward their babies than mothers with poor support. In addition, mothers with unresponsive attitudes and irritable babies demonstrated insensitive parenting towards their babies.

In a later study, Crockenberg (1987) assessed the impact of rejection/acceptance experienced during childhood, social support received after the baby's birth, and infant irritability on the parenting behavior of 40 adolescent mothers toward their 2 year old children. The study found that mothers who experienced both rejection during childhood and little support from a partner after birth exhibited angry and punitive parenting. No relation was found between infant irritability and maternal behavior. Crockenberg concluded that mothers' developmental history and social support affects maternal behavior.

Stevens (1988) identified predictors of parenting behaviors of three groups of low-income mothers and their infants who were between 13 and 30 months. Sixty-two of the mothers were Caucasian adults (mean age = 27 years), 62 were African-American adults (mean age = 26), and 74 were African-American teenagers (mean age = 18). The mother's parenting behavior was assessed with the HOME Inventory (Bradley & Caldwell, 1984). Specific predictors of parenting behaviors included in the study were mothers' use of extended family members and of professionals for help, and their sense of personal control.

The study found that African teen and Caucasian adult mothers who were skillful parents sought help with child-rearing problems from extended family members. Use of professionals for help with child-rearing problems and mothers' sense of internal control were also significant predictors of Caucasian mothers' parenting behaviors. However, for African-American adult mothers the only important predictor was locus of control. Feelings of self-reliance and personal determination were directly related to African-American adults' ability to provide stimulating home environments. Infant's age was not related to the parenting behaviors of the mothers. Based on findings for 2 of the groups (African-American teens and Caucasian adults), the study suggested that social ties to significant others may enhance parenting behavior. The study also demonstrated the importance of examining the influence of several factors when studying parenting.

The study by Conger, McCarty, Yang, Lahey and Kropp (1984) illustrated the value of examining the effects of multiple factors on parenting behaviors. Specifically, the study examined the relationship between demographic factors or chronic environmental stress (financial, structural, and historical circumstances) and the psychological functioning (emotional distress, authoritarian child-rearing values, negative perceptions of children) and behavior of mothers toward their children (mean age = 5.61). A total of 74

mothers (38 Caucasians, and 36 African-Americans) with an average age of 28.2 years were involved in the study.

Results of the study showed that the demographic conditions indicative of stressful financial (low income and public assistance), family structure (single-parenthood and number of children) and historical circumstances (age at first birth and low academic achievement) were negatively related to positive maternal behaviors. All of the measures of psychological risk for parenting problems were also found to be inversely related with positive maternal behaviors. Results of hierarchical regression analyses show that demographic conditions accounted for 52.9% of the variance in mothers' psychological characteristics and 36.6% of the variance in maternal behavior. Psychological characteristics accounted for 15.1% of the variance in mothers' caregiving behaviors. It was concluded that the psychological characteristics examined in the study mediated the relationship between demographic or stressful life conditions and maternal behavior.

Research findings on the quality of the home environment by Hannan and Luster (1991) provide support for Belsky's theory of the multiple determinants of parenting. In their study, Hannan and Luster used NLSY data to examine factors related to the quality of care 602 mothers provided for their infants.

The study showed that characteristics of the mother that contributed uniquely to the home environment were age

at first birth and intelligence. Contextual variables found to be significantly related to the quality of the home environment were the presence of spouse or male partner in the home, level of income and number of children. The investigators also found that infants with difficult temperaments received less supportive care than easier children. The researchers concluded that the characteristics of the parent, child and contextual factors all contributed to quality of the rearing environment provided by the mothers in the study.

Luster and Dubow (1990) also found multiple influences on the quality of the rearing environment adolescent parents provided for their school-age children. This sample of NLSY data consisted of 898 mothers from three ethnic groups, African-Americans (n = 356), Caucasians (n = 391), and Hispanics (n= 151). Luster and Dubow found four major factors that were useful in identifying mothers who were at greatest risk for providing less supportive care. These factors were: (a) characteristics of the mother, (b) characteristics of the family of origin, (c) current SES level, and (b) the composition of the mother's household. Results of the study show that maternal self-esteem and age at first birth were related to the quality of the home environment. In addition, grandfather's education, poverty status, presence of grandmother, presence of spouse or male partner in the home, and number of children were related to the quality of care the mothers provided for their children.

Across ethnic groups, it was found that child characteristics (that is age and gender) contributed little to differences in HOME scores. The study showed that the strongest predictors of the quality of the home environment were poverty status, presence of a spouse or male partner in the home, and mother's intelligence.

Some factors were predictive of HOME scores in some ethnic groups, but not in others. Grandfather's education and self-esteem were found to be significant predictors of HOME scores for Caucasian and Hispanic mothers, but not for African-American mothers. For African-American mothers, a higher level of education and the presence of the grandmother in the home were significant predictors of HOME scores. These findings suggest that factors that influence parenting behavior are different for different ethnic groups.

The study by Reiss, Barbera-Stein and Bennett (1986) also lends support to the view that parenting behavior is multiply determined. Reiss et al. examined the interrelationships among psychological determinants of parenting (level of depressive symptomatology, parental knowledge of and attitudes toward child development, and the type and amount of social support), parental age, parental race, and parenting skill for a sample of 210 teenage mothers. Eighty-two (39%) Caucasian and 128 (61%) African-American mothers were recruited from three family development agencies in the Midwest. Most of the mothers

were single parents, and economically disadvantaged. The parenting behavior of the mothers in the study was assessed using Caldwell and Bradley's (1979) HOME instrument.

The study found parents' race to be significantly related to attitudes toward childrearing, knowledge of child development, and perceived social support. African-American parents were shown to have a more punitive attitude toward childrearing, less knowledge of child development, and less social support than Caucasian parents. Reiss et al. also found punitive attitudes toward childrearing and parental age to be significant predictors of the parenting quality, with more punitive and younger parents having less nurturant home environments.

A study of older children by Simons et al., (1990) provided further evidence for the combined influence of several factors on parenting behavior. The study determined if parents' values, beliefs about parenting, perceptions of the child, level of depression, marital satisfaction, education and degree of financial distress are related to the parenting practices of husbands and wives. A total of 63 families and their 7th grade children from a largely rural midwestern county were involved in the study.

The results showed that mothers who have more education, satisfying marital relationships, less individualistic values, and who perceived the child as being less difficult provided constructive parenting. Financial strain was found to have an indirect effect on mothers'

parenting practices. The study found that fathers, but not mothers, provided constructive parenting when they believed that parenting is consequential for child development. It was also found that fathers with high commitments to individualistic values, high levels of depression, financial difficulty, and who perceived the child as difficult provided destructive parenting. Father's level of education was found to have no effect upon the parenting behavior of fathers. The investigators concluded that different factors may combine to affect the parenting behavior of husbands and wives.

A more recent study by Menaghan and Parcel (1991) also provides evidence to support the contention that parenting behavior is multiply determined. Using data from the NLSY, Menaghan and Parcel focused on 795 employed mothers with their three through six year-old children. In the study, Menaghan and Parcel examined how maternal working conditions, maternal and child characteristics and current family circumstances influenced the home environments that working mothers provided for their young children. The home environment in this study was measured using the NLSY-HOME (Baker & Mott, 1989).

Results of the study show that mothers who work in occupations with more complex activities provide a more enriched home environment than those who work in occupations with less complex activities. The study also found that maternal ethnicity is related to home environments, with

African-American and Mexican mothers having lower scores than Caucasian mothers on the scale. In addition, the study found that mothers with higher self-esteem scores, higher intelligence (AFQT) scores, higher educational levels, and who were older in age, provided more stimulating home environment for their children.

In examining the relationship between child characteristics (gender and health) and home environment, the study found a significant correlation between the children's health problems and the children's home environment. Children with health problems came from homes that provided more supportive care than children without problems. This finding is surprising, because one would expect parents of healthy children to provide a more stimulating environment than parents of children that are difficult to care for. However, Menaghan and Parcel argue that mothers whose children have health problems may compensate for their children's limitations by providing a more supportive home environment. The relations between the child's gender and home environment was, however, not significant.

The study also showed that the presence of a spouse and higher spousal earnings are associated with better home environments. However, the presence of a greater number of children in the family was associated with a less supportive home environment. Menaghan and Parcel concluded that the home environments that mothers create for their young

children are a function of maternal and child characteristics, maternal working conditions, and current family characteristics.

Maternal Behavior and Children's Achievement

As noted in Chapter I, of the factors that have been linked to the achievement of children, the factor that is of special interest in this study is maternal behavior. Therefore, in this section the review will focus mainly on the effect of the quality of the home environment mothers provide on the achievement of children.

One of the early investigations of the effects of home environment on child development was conducted longitudinally by Moore (1968) with 76 children born in London. Data on the children's home environment were collected by observations from the time the children were 6 months old until they were 8 years old. The types of data collected included the children's experiences with toys and books, the parents' use of examples and encouragement with the child, and the level of acceptance, warmth, and sensitivity of the parents to the child. When the children were 2 1/2 years old, none of these variables were significantly related to the children's scores on developmental tests given concurrently. However, at age 8 significant correlations were found between each of the variables and children's scores on IQ, vocabulary,

comprehension, and reading tests. Further analysis showed that when SES was statistically controlled, these correlations remained significant but smaller. Moore concluded that global measures of the home environment during early childhood are significant predictors of later IQ and language development.

Over the years numerous studies continue to document the link between early parent-child interactions and children's later IQ. Of all the studies, the most influential are probably those of Caldwell and her associates (Elardo, Bradley and Caldwell, 1975; Bradley & Caldwell, 1976, 1977, 1980). Caldwell and Bradley devised an instrument called the HOME, that measures the quality of the rearing environment parents provide for their children. In Elardo, Bradley and Caldwell's original study, they observed and scored the homes of 77 children from poor and working-class families. The homes were first observed when the children were 6 months old and again at 24 months. The children's IQs were tested when they were 36 months and again at 54 months. They found that the 6-month and 24-month HOME scores were positively related to 36 months Binet scores.

The results of a study by Ramey, Farran and Campbell (1979) are consistent with these findings. In their study, they found that mothers who were more physically restrictive and more punitive toward their children, especially around 24 months of age, had children who had lower IQs later on.

In a more recent study, Bradley and Caldwell (1984) found a strong relation between children's early home environment (as measured by HOME) and their later intellectual and academic performance. In the study, Bradley and Caldwell examined: (a) the relation between HOME scores and children's achievement test scores, (b) the early environment/school achievement test relation in light of children's mental test performance up to age 3, and (c) the relation between early environment and school achievement in light of the child's intervening home environment. The sample for the study consisted of 37 first grade children and their families. This sample was involved in Bradley and Caldwell's earlier studies (1975 and 1976). The majority (84%) of the children in the 1984 study were African-American, and male (60%). Their mean 3-year Stanford-Binet IQ was 90.

All families in the study were administered the HOME Inventory infant version when the children were 12 and 24 months old. When the children were 3 years, the preschool version of the HOME was administered. The MDI (from the Bayley Scales of Infant Development) was administered to the children at age 1, the Stanford-Binet Intelligence Test at age 3, and the SRA Achievement Test battery in first grade.

In the two earlier studies, Bradley and Caldwell (1984) found substantial correlation between scores on the HOME Inventory administered during the first 2 years of life and intelligence test scores measured at ages 3 and 4 1/2. In

the 1984 study, similar relations were found between HOME scores (measured in the first 2 years) and SRA Achievement Test scores (measured during the first grade). However, in this study "maternal responsivity" (a subscale of the HOME) showed a weaker relation to achievement than IQ, while the "variety of stimulation" subscale showed a stronger relation. Of all the HOME subscales, "play materials" showed the strongest correlation with first-grade achievement.

In discussing the results, Bradley and Caldwell indicated that maternal responsivity may be more important for early cognitive development but not so critical for later cognitive development. After the first few years of life, cognitive development may become more strongly related to other types of parental behavior (for example, parents who permit exploration, parents who directly encourage achievement, and parents who set-up in-home and out-of-home opportunities for varied experiences). The results of the study seem to suggest the importance of making available developmentally stimulating materials and experiences to enhance children's cognitive development. In summary, the findings from this study and earlier studies by Bradley and Caldwell provide evidence that home environment influences children's IQ and subsequent academic performance.

Bradley et al., (1989) reported a collaborative study which also showed similar evidence. In the study, the researchers examined the general pattern of relationship

between specific aspects of the home environment, as measured by the HOME Inventory, and children's cognitive development over the first few years of life. Participants for the study were 931 children and their families from six cities in North America. They were pooled from six longitudinal studies that were conducted from the 1970s to 1984. Four hundred and ninety-seven of the sample were Caucasians, 161 African-Americans, 262 Mexican-Americans, and 11 other.

The study found that measures of specific aspects of the child's home environment such as parental responsivity and availability of stimulating play materials were more strongly related to children's cognitive development than global measures of environmental quality such as SES. Home environment scores for Caucasians were more highly correlated with social status (maternal education and occupation) and cognitive measures (Bayley and Stanford Binet) than HOME scores for African-Americans or Mexican-Americans. The study also found that when children's early developmental status and early home environment were both very low, the likelihood of poor developmental outcomes was markedly increased compared with cases when only one was low.

Findings by Gowan and Johnson (1984) parallel those of previous investigations on the effect of the home environment on child's IQ. In the study, they assessed the interaction of 69 Mexican-American mothers and children in

situations of varying degrees of structure; the quality of the home environment (Bradley & Caldwell's HOME Inventory); the mother's attitudes toward traditional versus modern family behavior, and general valuation of achievement and independence within the family; and demographic variables to predict verbal and performance IQ (measured with Stanford-Binet at 3 years). The researchers found that the number of years of mother's education and maternal attitudes that encouraged child independence and reciprocity in parent-child interaction positively influenced the child's intellectual performance at 3 years of age. These variables were also found to contribute to maternal behaviors that promote child competence.

Barnard, Bee and Hammond (1984) examined the effects of the quality of the home environment on the cognitive development of 80 healthy, low-risk Caucasian children. The cognitive development of the children was assessed at 12 and 24 months with the Bayley Scales of Infant Development, and at 48 months with the Stanford-Binet. The quality of the home environment was assessed with Caldwell and Bradley's (1978) Home Inventory at 4, 8, 12 and 24 months. Findings from the study show moderate to strong correlations between the quality of the home environment (measured during the first 2 years of life) and the child's performance on IQ tests at later ages. These correlations remained significant when the effects of maternal education and SES were statistically controlled. Thus, Barnard et al.

conclude that "the findings strengthen the conclusions drawn from other studies, on less advantaged populations, that aspects of the home environment have a significant impact on children's development of cognitive skills" (p. 147).

The importance of the aspects of the home environment on cognitive development was also studied by Siegel (1984). The sample for the study consisted of two cohorts of full-term and very-low-birthweight preterm children. The children were administered a series of developmental tests (Bayley at age 1, Stanford-Binet at 3 years, McCarthy at 5 years), and the HOME Inventory at 1 year (Infant version), 3 and 5 years (Preschool version).

The HOME scores of families of delayed (preterm) children were found to be significantly lower than those of the non-delayed (full-term) children at each age. These differences were more pronounced in later development. Evidence of environmental influences on cognitive development was found in the study. Children who showed early developmental delay, but functioned normally at 3 years came from more stimulating environments. However, children who appeared to be developing normally at 1 year and delayed at 3 years, came from less-stimulating home environments.

The study by Sigman et al., (1989) is consistent with past studies (Elardo et al., 1975; Bradley & Caldwell, 1976, 1984; Ramey et al., 1979). They found that home environment contributes significantly to the cognitive development of

children between 15 and 30 months of age. The sample for the study consisted of 110 Embu children (52 boys and 58 girls) from 15 to 30 months who lived in monogamous families in Kenya. The study indicated that children who lived in an environment where they were talked to frequently, whose vocalization were responded to, and who engaged in sustained social interactions passed more of the items on a revised version of the Bayley Mental Scale and showed more positive affect than children who had been less involved in verbal and social interaction.

The results of a longitudinal study on children of Kauai, Hawaii, are consistent with these findings. The study found that children who came from homes that were emotionally responsive and academically stimulating had higher IQ scores than children from unresponsive and unstimulating homes (Werner & Smith, 1977). The study showed that the best predictors of the child's IQ at age 10 were the parenting practices of moderate warmth, low physical punishment, responsiveness, moderate verbalness, and encouragement to develop.

The overall finding from the studies reviewed so far showed that home environmental factors contributed significantly to cognitive development. However, four studies have addressed the controversial issue of whether the correlation between home environment and cognitive development is accounted for by their relationship with

maternal intelligence (Longstreth et al., 1981; Yeates et al., 1983; Gottfried & Gottfried, 1984; Scarr, 1985).

With a sample size of 80 families (mainly Caucasians, above average educationally and intellectually), Longstreth et al., (1981), examined the separate contributions of maternal IQ and home environment to child IQ. Parental intelligence and children's (mean age 12 years) IQ were assessed with the Raven's Standard Progressive Matrices (RPM) and the Peabody Picture Vocabulary Test (PPVT). Aspects of the home environment expected to be related to the child's intellectual development were measured using Wolf's Home Environment Interview.

In the bivariate analyses, home environment and maternal IQ (average of the two IQ scores) showed significant correlations (.30 and .40, respectively) with child IQ (average of the two IQ scores). However, in the multiple regression analyses, the relationship between home environment and child IQ was no longer significant when the effect of maternal IQ was removed. The results were the same for both RPM and PPVT, and their average scores. When the effect of the home environment was statistically controlled, maternal IQ was found to be significantly related to child IQ. Longstreth et al. concluded that "when maternal IQ is allowed to covary, the correlation of home environment and child IQ is considerably overestimated. When maternal IQ was statistically controlled, the

correlation between home environment ratings and child IQ was attenuated to nonsignificance" (p. 539).

Results of Scarr's (1985) study on 125 Bermudian families with 42-48 month old children lend support to the conclusion of Longstreth et al. Data on the children's home environment were collected by observing maternal control behavior of children in teaching situations, and by interviews with mothers about their methods of disciplining their children. Mother's positive control and mother's positive discipline were found to be significantly related to the children's IQ (Stanford-Binet) scores. Both environmental measures accounted for 23% of the variance in children's IQ scores. However, when the mother's education and her vocabulary score on the Wechsler Adult Intelligence Scale (WAIS) were put into the regression equation, only the mother's IQ significantly predicted child's IQ.

In a longitudinal study of middle-class children (predominantly Caucasians), Gottfried and Gottfried (1984) reported results that are inconsistent with the results reported by Longstreth et al., (1981) and Scarr (1985). The children's (n = 118) cognitive development was assessed at 42 months using the McCarthy Scales of Children's Ability (General Cognitive Index). The home environment was measured with the HOME (Bradley & Caldwell, 1984). The mother's IQ was measured with the vocabulary subtest of the Wechsler Adult Intelligence Scale (WAIS).

Results of the study showed a significant correlation (.50) between the HOME and the children's IQ scores. A significant correlation (.24) was also found between maternal IQ and the general cognitive index of the McCarthy. Using hierarchical regression, they found a significant relation between home environment and child IQ when maternal IQ was statistically controlled. However, maternal IQ did not significantly predict children's IQ when both HOME scores and maternal IQ were included in the regression equation. Gottfried and Gottfried concluded that "the relationship between home environment and children's cognitive development is not spuriously due to their relationship with mother's intelligence" (p. 109).

Yeates et al., (1983) also reported results that are inconsistent with Longstreth et al., (1981) and Scarr's (1985) studies. Their study focused on 46 black children (from low SES families) who were at risk for sociocultural mental retardation, and who had been studied longitudinally from birth to 4 years of age. Maternal IQ was assessed before the children's birth using the WAIS. Children's IQ was tested with the Stanford-Binet at 24, 36, and 48 months of age. The children's home environment was assessed with the HOME Inventory at 18, 30 and 42 months.

Results show an increase in the zero-order correlations between the HOME scores and children's IQ from 24 to 48 months. The respective correlations between the 18 months HOME and 24 months IQ, 30 months HOME and 36 months IQ, and

42 months HOME and 48 months IQ were .15, .31 and .50. In the multiple regression analyses, when the effect of maternal IQ was removed, home environment was not significantly related to child IQ measured at 24 and 36 months but was significant at 48 months. When the effect of home environment was statistically controlled, maternal IQ was related to child IQ assessed at 24 months but not at 36 and 48 months. Both variables accounted for 11%, 17%, and 29% of the variance in child IQ at the three consecutive periods. Yeates et al. suggested that the regression findings "point to a monotonic increase in the predictability of child IQ within the context of a shift in the relative importance of maternal IQ and home environment as predictors" (p. 736).

Summary

The first section of the literature review presented studies that examined the combined influence of various factors on parenting behavior. In general the studies support Belsky's model that parenting behavior is multiply determined. Personal psychological resources of parents (such as, education, intelligence, self-esteem), characteristics of the child (such as, age, gender, health, and temperament) and contextual sources of stress and support (such as, family structure, family income and the marital relationship) interact and produce differences among

parents in their approaches to childrearing. Findings from the studies suggest that different factors may influence the behavior of parents of different ethnic groups, and factors that are most strongly related to the quality of the home environment may vary by ethnicity. The studies reviewed also illustrate the value of examining the effects of multiple factors on parenting in the same study.

In the second section of the review, studies that examined factors that influence the achievement of children were presented. Specifically, the review focused on the effect of maternal behavior on children's achievement. Overall the studies provide evidence that suggests a strong influence of the home environment upon children's cognitive development, independent of their association with SES (e.g., Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; and Yeates et al., 1983). However, two studies (Longstreth et al., 1981; and Scarr, 1985) argued that the relationship between the quality of the home environment and children's intellectual ability may be largely due to their correlation with maternal intelligence.

CHAPTER III

METHODOLOGY

The objectives of this study are to identify factors that predict the parenting behavior of mothers, and to determined if the same factors predict the quality of care provided by African-American and Caucasian mothers. In addition, factors related to the achievement of children were also studied. The methods used to meet those objectives are described in this chapter. The chapter is divided into the following sections: (a) research hypotheses, (b) research questions, (c) research design and procedures, (d) sample selection, (e) sample descriptions, (f) research instruments, and (g) data analyses.

Research Hypotheses

Based on the research objectives, the following hypotheses were tested in this study.

Ho 1: Maternal age at first birth is unrelated to the quality of the home environment mothers provide for their children.

Ha 1: Mothers who delayed child bearing are likely to provide better quality home environments than mothers who started child bearing earlier.

Ho 2: Mother's level of education is unrelated to the quality of home environment mothers provide for their children.

Ha 2: Mothers with higher levels of education will provide better quality home environments than mothers with lower levels of education.

Ho 3: Mother's level of intelligence is unrelated to the quality of home environment mothers provide for their children.

Ha 3: Mothers with higher levels of intelligence will provide better quality home environments than mothers with lower levels of intelligence.

Ho 4: Mother's level of self-esteem is unrelated to the quality of home environment mothers provide for their children.

Ha 4: Mothers with higher levels of self-esteem will provide better quality home environments than mothers with lower levels of self-esteem.

Ho 5: Family income is unrelated to the quality of the home environment mothers provide for their children.

Ha 5: Mothers with higher family incomes will provide better quality home environments than mothers with lower family incomes.

Ho 6: The presence of a spouse or male partner in the home is unrelated to the quality of home environments mothers provide for their children.

Ha 6: Mothers who have a spouse or male partner in the home will provide better quality home environments than mothers who do not have a spouse or male partner in the home.

Ho 7: Number of children is unrelated to the quality of home environment mothers provide for their children.

Ha 7: Mothers who have smaller numbers of children will provide better quality home environments than mothers who have more children.

Ho 8: Marital happiness is unrelated to the quality of the home environment mothers provide for their children.

Ha 8: Mothers who experience higher levels of marital happiness will provide better quality home environments than mothers who experience lower levels of marital happiness.

Ho 9: Marital communication is unrelated to the quality of the home environment mothers provide for their children.

Ha 9: Mothers who experience higher levels of marital communication will provide better quality home environments than mothers who experience lower levels of marital communication.

Ho 10: Marital conflict is unrelated to the quality of the home environment mothers provide for their children.

Ha 10: Mothers who experience lower levels of marital conflict will provide better quality home environments than mothers who experience higher levels of marital conflict.

Ho 11: The quality of the home environment is unrelated to the children's levels of achievement.

Ha 11: Children whose mothers provide more supportive home environments will demonstrate higher levels of achievement than children whose mothers provide lower quality home environments.

Ho 12: Maternal age at first birth is unrelated to children's levels of achievement when the quality of the home environment is controlled.

Ha 12: Maternal age at first birth is positively related to children's levels of achievement when the quality of the home environment is controlled.

Ho 13: Mother's level of education is unrelated to children's levels of achievement when the quality of the home environment is controlled.

Ha 13: Mother's level of education is positively related to children's levels of achievement when the quality of the home environment is controlled.

Ho 14: Mother's level of intelligence is unrelated to children's levels of achievement when the quality of the home environment is controlled.

Ha 14: Mother's level of intelligence is positively related to children's levels of achievement when the quality of the home environment is controlled.

Ho 15: Mother's level of self-esteem is unrelated to children's levels of achievement when the quality of the home environment is controlled.

Ha 15: Mother's level of self-esteem is positively related to children's levels of achievement when the quality of the home environment is controlled.

Ho 16: Family income is unrelated to the achievement of the children, when the quality of the home environment is controlled.

Ha 16: Family income is positively related to the achievement of the children, when the quality of the home environment is controlled.

Ho 17: The presence of a spouse/partner in the home is unrelated to the achievement of children, when the quality of the home environment is controlled.

Ha 17: The presence of a spouse/partner in the home is positively related to the achievement of children, when the quality of the home environment is controlled.

Ho 18: Number of children in the family is unrelated to achievement of the children, when the quality of the home environment is controlled.

Ha 18: Number of children in the family is negatively related to achievement of the children, when the quality of the home environment is controlled.

Ho 19: Marital happiness is unrelated to the achievement of the children, when the quality of the home environment is controlled.

Ha 19: Marital happiness is positively related to the achievement of the children, when the quality of the home environment is controlled.

Ho 20: Marital communication is unrelated to the achievement of the children, when the quality of the home environment is controlled.

Ha 20: Marital communication is positively related to the achievement of the children, when the quality of the home environment is controlled.

Ho 21: Marital conflict is unrelated to the achievement of the children, when the quality of the home environment is controlled.

Ha 21: Marital conflict is negatively related to the achievement of the children, when the quality of the home environment is controlled.

Ho 22: Home environment is unrelated to children's achievement when maternal intelligence is controlled.

Ha 22: Home environment is significantly related to children's achievement when maternal intelligence is controlled.

Research Questions

In addition to the above hypotheses, the following research questions were explored in this study:

1. Does child's age predict the quality of the home environment mothers provide for their children?

2. Does child's sex predict the quality of the home environment mothers provide for their children?

3. Will the same factors predict the quality of care provided by African-American and Caucasian mothers?

4. Is the child's age related to the achievement of the child when the quality of the home environment is controlled?

5. Is the child's sex related to the achievement of the child when the quality of the home environment is controlled?

Research Design and Procedure

A correlational design was used to achieve the objectives of this study. The study contained three major categories of independent variables: (a) maternal characteristics, which includes maternal age at first birth, education, intelligence, and self-esteem; (b) contextual factors, which includes family income, family structure (presence of spouse or male partner, number of children),

marital quality (marital happiness, marital communication, and marital conflict); and (c) characteristics of the child, which includes age, and sex of child. Two dependent variables examined in this study were maternal behavior and the achievement of children. Maternal behavior was also considered as a mediating variable that mediated the relation between maternal characteristics and achievement of the child.

The unit of analysis examined in this study was the mother and her 6 to 8 year-old children. This study assessed the extent to which the data available for this study are consistent with the model presented in Figure 2. The data for this study were drawn from a national data set called the National Longitudinal Survey of Youth (NLSY). The data were collected by the National Opinion Research Center (NORC) in Chicago. The project was sponsored by the United States Department of Labor and the National Institute for Child Health and Human Development (Baker & Mott, 1989). A more detailed description of the NLSY data set is presented in the next section. Permission for the present study was granted by the Michigan State University Human Subjects Review Committee (UCRIHS)(see Appendix A).

Sample Selection

Data for this study came from the National Longitudinal Survey of Youth (NLSY) data set. This survey, which began

in 1979, involved a national probability sample of 12,686 youth aged 14 to 21. Included in this sample was an oversample of African-American, Hispanic, and economically disadvantaged Caucasian youth. The oversampling was done to allow for separate analyses on the minority and disadvantaged groups. Regular interviews with the subjects have been made annually since 1979, with an extremely high retention rate (greater than 90%). These interviews have generated a wealth of information on employment, educational, and family-related experiences of the subjects (Baker & Mott, 1989).

More than 6,000 of the original NLSY sample were women. Over 3,000 of the women were mothers at the start of the survey or became mothers during the course of the study. By 1986 there were 4,971 children born to the mothers of the NLSY; data were collected on the children of the female respondents for the first time that year. The children's ages ranged from infancy to the teen years. As part of the 1986 survey, the mothers were given supplemental questionnaires regarding maternal and child health, the home environment, family relationships, child's behavior and activities, and child-care histories. In addition, trained staff of the NLSY gathered information on the cognitive, social, emotional, and physiological development of the children through maternal report, direct observation, and the use of standardized tests administered in the child's home. Data on the children were then merged with the eight

years of data collected on the mothers. In 1988, information on more than 6,000 children of the NLSY female respondents was gathered, and again merged with the data on the mothers (Baker & Mott, 1989). This 1988 merged mother-child data set was recently released. For purposes of this study, the 1988 merged mother-child data set was utilized. It includes both waves of data on the children. The sample selected for this study includes the 898 mothers between the ages of 23 and 30 years of age, and their children who were between the ages of 6 and 8 years on January 1, 1988. Three hundred and forty-seven of the mothers were African-American and 551 were Caucasian. These ethnic subsamples were selected because they represent the two largest ethnic groups in the United States. The sample size for each of these groups was also sufficiently large to allow for separate analyses.

Sample Description

Table 1 presents a summary of the demographic and background characteristics of the overall sample and ethnic subsamples. In this section, the discussion will focus mainly on the characteristics of the overall sample. Descriptions of the African-American and Caucasian mothers, and the differences between them, will be presented in Chapter IV.

Table 1

Sample Characteristics

Independent Variables	Overall sample (n = 898)	African-American (n = 347)	Caucasian (n = 551)
Age of mother			
Mean	27.6	27.3	27.7
SD	2.1	2.1	2.1
Age of mother at first birth			
Mean	19.0	18.3	19.4
SD	2.3	2.2	2.3
Educational level			
Mean	11.7	11.8	11.6
SD	1.9	1.8	1.9
Family income			
Mean	$21,054	$16,250	$23,870
SD	$16,000	$13,482	$16,697
Poverty level			
% in poverty	34.9	51.4	25.2
% not in poverty	65.1	48.6	74.8
Presence of spouse/partner in household			
% Yes	62.8	41.9	75.8
% No	37.2	58.1	24.2
Number of children			
Mean	2.3	2.4	2.3
SD	1.1	1.2	1.1
Age of child (in months)			
Mean	83.5	83.4	83.6
SD	7.3	7.4	7.2
Sex of child			
% of males	50.2	49.0	51.0
% of females	49.8	51.0	49.0
Birth order of child			
% First born	54.9	48.4	59.0
% Later born	45.1	51.6	41.0

The mean age of the 898 mothers sampled was 27.6 years. The range spanned 8 years with the youngest mother at 23 years and the oldest at 31 years. Most (80.6%) of the mothers were between 25 and 30 years of age. The age of the mothers at the time of birth of their first child ranged from 14 years to 25 years, with a mean of 19.0 years.

The number of years of education completed by mothers in the overall sample ranged from 4 to 20 years. On average, they achieved 11.7 years of education. The median family income of the sample was $17,000, and the mean was $21,054 (S.D. = $16,000). However, 34.9% of the sample was living in poverty at the time of the 1988 survey. In addition, quite a large proportion (37.2%) of the mothers were not living with a spouse or partner at the time of the interview.

The average number of children of the mothers in the overall sample was 2.3, with a range from 0 to 9. The age of the children included in this study ranged from 72 to 96 months, with a mean of 83.5 months (S.D. = 7.3). Half of the children were males, and half were females. Most (54.9%) of the children were firstborn.

Research Instruments

The independent variable, mothers' level of intellectual ability, was measured using the Armed Forces Qualification Test (AFQT). The test, which consists of four

subsets of the Armed Services Vocational Aptitude Battery (ASVAB), was administered to all the mothers in the 1980 NLSY main survey. The AFQT score of the mothers is the sum of the scores on the four subsets including word knowledge, paragraph comprehension, numeric operations, and arithmetic reasoning. The AFQT has been shown to be a highly reliable and valid measure. The alternate form reliability coefficient and the internal consistency of the AFQT subsets range from .7 to .9 (U.S. Department of Defense, 1982).

The level of self-esteem of the mother was measured using Rosenberg's self-esteem scale (Rosenberg, 1965). The scale was designed to measure an individual's feeling of self-worth. It consists of ten statements that describe a respondent's degree of approval or disapproval toward him or herself. The respondent indicates whether he or she strongly agrees, agrees, disagrees, or strongly disagrees with each statement. A high score on this scale indicates high self-esteem. The self-esteem scale was administered to the mothers in the NLSY project in 1987. This scale is widely used and has shown evidence of validity and reliability (Baker & Mott, 1989).

The mothers' level of marital quality was assessed using three sets of items: marital happiness, marital communication, and marital conflict. Marital happiness measures the mothers' degree of happiness in their marital relationships. Mothers' responses to this question ranged from 1 (not too happy) to 3 (very happy). In this study,

marital happiness was found to correlate significantly with marital communication ($r = .47$, $p < .001$), and marital conflict ($r = -.38$, $p < .001$). Marital communication measures mothers' pattern of communication with their husband. This measure consists of 3 Likert-type scale items, with responses rated from 1 (less than once a month) to 4 (almost every day). A sample item is, "How often do you and your husband tell each other about your day?" The reliability coefficient for this scale is .70 for this study sample. A nine item Likert scale with a response range from 1 (never) to 4 (often) was used to assess marital conflict. A sample item is, "How often do you and your husband argue about chores and responsibilities?" The reliability coefficient for this scale was .74 for the present study sample. If all 13 marital quality items are combined into a single scale the reliability coefficient is considerably smaller (.61) than if separate indicators of happiness, communication and conflict are used. Therefore, three measures of marital quality were used in the analyses.

The dependent and mediating variable, maternal behavior, was measured using the preschool and elementary versions of the Home Observation for Measurement of the Environment-Short Form (HOME-SF)(Baker & Mott, 1989). The preschool version was administered in 1986, and the elementary version was administered in 1988. The HOME is a highly regarded and widely used measure for assessing qualitative aspects of the rearing environment. It has been

found to be reliable over time, and predicts later cognitive development of children (Baker & Mott, 1989). The abbreviated versions of the HOME were designed for the NLSY study by one of the original developers of the measure. According to Baker and Mott, the items included in the short form versions of the HOME "were selected based on reliability coefficients, discrimination indices, validity coefficients, and factor loadings from previous published and unpublished research" (p. 51). The original preschool version of the HOME contains 55 items, and the elementary version contains 59 items. The abbreviated versions are comprised of 26 items for both measures. Like the original HOME, each item was scored in binary fashion (0 or 1). A score of 0 indicates the absence of quality stimulation, and 1 indicates the presence of quality stimulation. The mean score on the preschool version of the HOME for this sample was 18.2 (SD = 3.6), and the mean score on the elementary version was 18.4 (SD = 4.0). The respective coefficient alphas for the preschool and elementary versions were .65 and .70 (Baker & Mott, 1989). Similar to the original HOME, the shortened version is based on observations in the home and interviews with the mother. However, the internal consistency for the shortened versions is lower than the original versions of the HOME (Baker & Mott, 1989). The reliability coefficients of the original preschool and elementary versions were .93 and .90, respectively (Caldwell & Bradley, 1984; Bradley et al., 1988).

The other dependent variable, the achievement of the child, was measured using the Peabody Individual Achievement Test (PIAT)(Dunn & Markwardt, 1970). Three subtests (math, reading recognition, and reading comprehension) of the PIAT were administered to the NLSY children when they were between 6 and 8 years old. The math subtest, which consists of 84 multiple-choice items of increasing difficulty, measures a child's ability in mathematics. The test requires the child to look at the problem and then to point to the answer. The reading recognition subtest also contains 84 multiple-choice items that increase in difficulty. It measures the child's ability in oral reading by first asking the child to read a word silently and then to say it aloud. The reading comprehension subtest measures the child ability to deduce meaning from printed words. It is made up of 66 items that also increase in difficulty. In this test, the child reads a sentence silently and then chooses one of the four pictures that best represents the meaning of the sentence. The PIAT is a widely used measure and has adequate reliability and validity (Baker & Mott, 1989). Scores are based on a mean of 100 and a standard deviation of 15.

Data Analyses

Data analyses were done using the IBM-PC version of the Statistical Package for the Social Sciences (SPSS-PC). The

analyses were conducted separately for the overall sample and ethnic subsamples. Descriptive statistics were used to determine the distributional characteristics of each of the independent variables as well as the mediating and dependent variables. T-test and Chi-Square Analyses were computed to test for differences in characteristics between the African-American and Caucasian mothers. Zero-order correlations were calculated to determine the extent of associations among the predictor variables, the associations between the predictor variables and the quality of the home environment, and the associations between the predictor variables and the achievement of children.

Multiple regression analyses, employing the forward selection procedure, were performed to examine the combined effects of several predictor variables on the quality of the home environment, and to identify which of the variables were related to the quality of the home environment when other variables were controlled. Additional multiple regression analyses were computed to determine which of the predictor variables have a direct or an indirect (via home environment) effect on the achievement of children. In these analyses the predictor variables, including the quality of the home environment were entered together as a set. Multiple regression analyses, using the forced entry procedure, were computed to determine the extent to which home environment predicts the achievement of children when

maternal intelligence is controlled. A chance probability level of less than .05 was set to reject the null hypotheses.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter will first present the results of the data analyses on the differences between the African-American and Caucasian mothers on demographic characteristics, and other characteristics. The relations among the predictor variables will be presented next. Third, the zero-order correlation between the predictor variables and the quality of the home environment will be discussed. The discussion will be presented in terms of the research hypotheses and research questions posed in Chapter III. These discussions will be followed by a presentation of the multiple regression analyses in which the combined influence of several factors on the quality of the home environment will be assessed. Besides identifying which of the predictor variables uniquely predict the quality of the home environments, the fit of the data to the model presented in Figure 2 (Chapter I) will also be discussed.

The fourth part of this chapter will present a discussion on the relations between the predictor variables and the achievement of children. The next section will present which of the predictor variables are directly or

indirectly (via home environment) related to the children's achievement. As in the earlier section, the discussions will be presented in terms of the research questions and specific research hypotheses shown in Chapter III. The discussion will also focus on the fit of the data to the conceptual model (Figure 2). This will be followed by a discussion on the extent to which the home environment predicts the achievement of children when maternal intelligence is controlled. A summary of the research findings will be presented at the end of this chapter.

Differences between Ethnic Groups in Demographic and Background Characteristics

A series of independent t-test and chi-square analyses were run to examine the differences between the African-American and Caucasian subsamples on the demographic and background characteristics. Tables 2 and 3 present the results of the analyses. As can be seen from the tables, several differences were found between the two ethnic groups. In terms of the characteristics of the mothers, it was found that African-American mothers were significantly younger than Caucasian mothers at the time of the 1988 survey. African-American mothers were also shown to be significantly younger at the time of their first birth. However, the levels of educational attainment of the two groups of mothers were found to be similar.

Table 2

T-Test for Differences between African-American and Caucasian Subsamples in Demographic Characteristics

Independent Variables	Mean (SD) African-American (N=347)	Caucasian (N=551)	t-value	df	Prob.
Maternal age	27.3 (2.1)	27.7 (2.1)	-2.67	893	.01**
Age at first birth	18.3 (2.2)	19.4 (2.3)	-7.09	896	.00***
Education level	11.8 (1.8)	11.6 (1.9)	1.90	890	.06
Family income	$16,250 ($13,482)	$23,870 ($16,697)	-6.52	761	.00***
Number of children	2.4 (1.2)	2.3 (1.1)	1.65	888	.10
Age of child	83.4 (7.4)	83.6 (7.2)	-0.25	896	.80

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

Table 3

Chi-square Analyses for Differences between African-American and Caucasian Subsamples

Independent Variables	African-American	Caucasian	$X^2(1)$	Prob.
Sex of child				
Male	170 (49.0%)	281 (51.0%)	.34	.59
Female	177 (51.0%)	270 (49.0%)		
Spouse/Partner				
Present	143 (41.9%)	416 (75.8%)	103.11	.00***
Absent	198 (58.1%)	133 (24.2%)		
Poverty status				
In poverty	145 (51.4%)	121 (25.2%)	53.99	.00***
Not in poverty	137 (48.6%)	360 (74.8%)		

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

There were also several significant differences in the contexts of the two groups of mothers. African-American mothers, on average, were found to have lower family incomes than Caucasian mothers. Additionally, African-American families were more often living in poverty (51.4%) than Caucasian families (25.2%). Furthermore, a larger percentage (58.1%) of the African-American mothers were not living with a spouse or partner, as compared to Caucasian mothers. An additional analysis comparing two-parent families of both ethnic groups also shows that more African-American families (25%) were living in poverty than Caucasian families (17.2%) [X^2 (1) = 3.59; $p < .05$]. No significant difference was found between the two groups of mothers with respect to the number of children. Similarly, no significant differences were found between the two groups with regard to the characteristics of the children in this study.

Other Differences between Ethnic Groups

Given that several significant differences existed in the demographic and background characteristics of the African-American and Caucasian subsamples, an additional series of t-test was computed to determine if the samples also differ in intelligence test scores, self-esteem, marital quality, the quality of the home environment and achievement scores. Results of the analyses indicated that

the intelligence test scores of the Caucasian mothers were significantly higher than the intelligence test scores of the African-American mothers (see Table 4). Differences in the intelligence test scores may reflect the extent to which mothers in the two ethnic groups have been exposed to the

Table 4

T-Test for Differences between African-American and Caucasian Subsamples in Intelligence, Self-esteem, Marital Quality, Quality of Home Environment and Achievement Scores

Independent Variables	Mean (SD) African-American (N=347)	Mean (SD) Caucasian (N=551)	t-value	df	Prob.
Intelligence (AFQT)	479.9 (171.4)	669.4 (192.7)	-14.66	855	.00***
Self-esteem	32.4 (4.0)	32.5 (4.2)	-0.21	864	.83
Marital happiness	2.6 (0.6)	2.7 (0.5)	-3.14	525	.01**
Marital Communication	11.0 (1.4)	11.2 (1.4)	-1.03	525	.30
Marital conflict	19.5 (4.4)	17.8 (4.7)	3.76	523	.00***
HOME (1986)	16.7 (3.7)	19.3 (3.3)	-11.04	843	.00***
HOME (1988)	16.9 (4.1)	19.4 (3.7)	-9.07	862	.00***
Math	95.8 (10.8)	101.2 (11.0)	-7.05	857	.00***
Reading Recognition	100.9 (10.1)	103.2 (11.5)	-3.01	852	.01**
Reading Comprehension	102.5 (10.1)	104.8 (10.9)	-2.74	656	.01**

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

kinds of information assessed in the test. In terms of the mothers' level of self-esteem, no significant difference was found between the two groups of mothers.

There were significant differences found in two measures of marital quality. Although the difference is not large, Caucasian mothers appear to be significantly happier in their marital relationships than African-American mothers. They were also significantly less involved in marital conflict when compared to the African-American mothers. However, the pattern of marital communication between the two groups was found to be similar.

Significant differences were found between African-American and Caucasian mothers in the quality of the rearing environment they provide for their children. Caucasian mothers were shown to provide a more supportive home environment (as measured by the HOME-SF Inventory) than African-American mothers. The quality of the home environment measured two years earlier (when the children were 4 to 6 years old) also indicated a significant difference between the two groups of mothers. There may be several plausible explanations for these findings. First, the difference in HOME scores between the two groups of mothers may be largely due to the differences in their family structure. As noted earlier, African-American mothers are less likely to have a spouse present in the households. Both the preschool and elementary HOME Inventory contain items that tap father's involvement in

child care. Secondly, African-American mothers were more likely than Caucasian mothers to live in poverty. Therefore, their financial constraints may prohibit them from providing a more stimulating home environment. Furthermore, as pointed out in Chapter I, living in poverty can produce life-stresses that can negatively affect parenting behavior.

With respect to the children's achievement, it was found that children of Caucasian mothers tend to perform significantly better in all the PIAT subtests compared to the children of African-American mothers. Although the African-American children scored lower than the Caucasian children in the achievement tests, it is important to understand why such differences existed. Unlike the Caucasian children, African-American children were more likely to experience multiple stressors in life. African-American children in this study more often have mothers who were early childbearers, low in intelligence, and provided less supportive home environments. In addition, the African-American children more often lived in poverty and in homes where the father was absent. Therefore, these risk factors could exert influence upon their achievement. Alternatively, scores on the PIAT measures may be influenced by the extent to which children are reared in the culture of the test. Nevertheless, the average scores of both groups of children in this study on the achievement tests were close to the population mean of 100.

Relations Among the Predictor Variables for Overall Sample and Ethnic Subsamples

Correlational analyses were done to determine the extent of associations among the predictor variables. Tables 5, 6 and 7 present the zero-order correlations among the predictor variables for the overall samples and the two ethnic subsamples. Several significant correlations among the predictor variables were found for all the groups. Most of the correlations were in the expected directions, and small to moderate in magnitude. Significant positive correlations for the overall sample ranged from r = .08 to .47; the range for African-American subsample was from r = .11 to .55, and for Caucasian subsample the range was from r = .09 to .66.

Consistent with expectations, mothers in the overall sample and ethnic subsamples who delayed childbearing completed more years of schooling, had higher incomes, and thus were less likely to be living in poverty. In addition, these mothers more often had a spouse or male partner present in the home. Mothers who experienced first childbirth at a later age were also shown to have higher self-esteem than mothers who experienced childbirth earlier.

More educated African-American and Caucasian mothers tended to have higher earnings and were less likely to be living in poverty compared to less educated mothers. In addition, more educated mothers had fewer children in the

Table 5

Relations among the Predictor Variables for Overall Sample

	Age at first birth	Education	Intelligence (AFQT)	Self-esteem	Family income	Poverty status	Spouse/partner	Number of children	Marital happiness	Marital communication	Marital conflict	Age of child	Sex of child
Age at first birth	1.00												
Education	.47***	1.00											
Intelligence	.36***	.45***	1.00										
Self-esteem	.16***	.29***	.37***	1.00									
Family income	.24***	.27***	.41***	.22***	1.00								
Poverty status	-.30***	-.27***	-.41***	-.20***	-.63***	1.00							
Spouse/partner	.19***	.09**	.28***	.10**	.44***	-.44***	1.00						
Number of children	-.22***	-.09**	-.03	-.01	-.02	.25***	.09**	1.00					
Marital happiness	.06	.09*	.10*	.13**	.10*	-.04	.07	.02	1.00				
Marital communication	.04	.08	.09*	.10*	.04	-.02	.13**	-.05	.47***	1.00			
Marital conflict	-.05	-.03	-.14***	-.13**	-.03	-.01	.06	.08	-.38***	-.30***	1.00		
Age of child	-.09***	-.01	.01	.01	-.02	.02	.03	.01	.04	-.01	-.08	1.00	
Sex of child	.00	.00	-.01	-.02	-.00	.03	.05	.00	.01	-.05	.05	.08*	1.00

Note. Poverty status was coded as follows: 0 = not in poverty, 1 = poverty.
Spouse/partner was coded as follows: 0 = not present, 1 = present
Sex of child was coded as follows: 0 = female, 1 = male.
* $p < .05$ ** $p < .01$ *** $p < .001$

Table 6

Relations among the Predictor Variables for African-American Subsample

	Age at first birth	Education	Intelligence (AFQT)	Self-esteem	Family income	Poverty status	Spouse/partner	Number of children	Marital happiness	Marital communication	Marital conflict	Age of child	Sex of child
Age at first birth	1.00												
Education	.40***	1.00											
Intelligence	.21***	.55***	1.00										
Self-esteem	.15**	.37***	.49***	1.00									
Family income	.19***	.33***	.45***	.26***	1.00								
Poverty status	-.18**	-.32***	-.33***	-.24***	-.66***	1.00							
Spouse/partner	.11*	.14**	.20***	.12*	.54***	-.46***	1.00						
Number of children	-.30***	-.17**	.00	.00	.00	.27***	.04	1.00					
Marital happiness	.05	.16	-.04	.13	-.07	.08	-.06	-.05	1.00				
Marital communication	.05	.07	-.04	.05	-.12	.13	.00	-.10	.59***	1.00			
Marital conflict	.01	.12	.13	.00	.03	-.08	.20*	.15	-.38***	-.22**	1.00		
Age of child	-.08	.03	-.00	.10	-.00	.04	.02	-.01	.06	.02	-.10	1.00	
Sex of child	-.06	.04	-.03	-.11*	-.03	.08	-.02	-.01	.05	.03	.07	.13**	1.00

Note. Poverty status was coded as follows: 0 = not in poverty, 1 = poverty.
Spouse/partner was coded as follows: 0 = not present, 1 = present
Sex of child was coded as follows: 0 = female, 1 = male.
* $p < .05$ ** $p < .01$ *** $p < .001$

Table 7

Relations among the Predictor Variables for Caucasian Subsample

	Age at first birth	Education	Intelligence (AFQT)	Self-esteem	Family income	Poverty status	Spouse/partner	Number of children	Marital happiness	Marital communication	Marital conflict	Age of child	Sex of child
Age at first birth	1.00												
Education	.55***	1.00											
Intelligence	.35***	.54***	1.00										
Self-esteem	.17***	.26***	.36***	1.00									
Family income	.21***	.28***	.31***	.21***	1.00								
Poverty status	-.31***	-.28***	-.35***	-.20***	-.58***	1.00							
Spouse/partner	.13**	.11**	.13**	.10**	.33***	-.33***	1.00						
Number of children	-.14***	-.05	-.01	-.02	-.00	.20***	.18***	1.00					
Marital happiness	.03	.09	.10	.14**	.16**	-.08	.13**	.05	1.00				
Marital communication	.02	.09	.12*	.12*	.08	-.07	.17***	-.03	.41***	1.00			
Marital conflict	-.02	-.10*	-.17***	-.18***	-.03	-.00	.01	.05	-.36***	-.33***	1.00		
Age of child	-.10**	-.04	.01	-.04	-.04	.03	.04	.03	.03	-.02	-.07	1.00	
Sex of child	.03	-.02	-.01	.04	.01	.01	.10*	.02	-.02	-.08	.05	.04	1.00

Note. Poverty status was coded as follows: 0 = not in poverty, 1 = poverty.
Spouse/partner was coded as follows: 0 = not present, 1 = present
Sex of child was coded as follows: 0 = female, 1 = male.
* p < .05 ** p < .01 *** p < .001

family. This is consistent with expectations because mothers who spent more time pursuing higher education more often delayed childbearing, and thus had fewer children.

As expected, African-American and Caucasian mothers who scored higher on the intelligence test, completed more years of schooling, and thus had higher family incomes. These mothers also tended to perceive themselves more positively on the self-esteem measure. Caucasian mothers who had higher levels of intelligence and self-esteem tended to be happier in their marriages and communicated better with their spouses. Subsequently, they were less likely to be involved in marital conflict. However, no significant relationships were found among these variables for African-American mothers. In the overall sample and Caucasian subsample, mothers who reported happier marital relationships, communicated more positively with their spouses or partners, and less often engaged in marital conflict.

Relations between Predictor Variables and the Quality of the Home Environment

This section discusses the associations between the predictor variables and the quality of the home environment, as assessed with the HOME-SF, for the overall sample and ethnic subsamples. To determine the relations between the predictor variables and the dependent variable (HOME),

correlations were computed. Table 8 presents the zero-order correlations between the predictor variables and the quality of the children's home environment. Almost all of the variables were significantly related to the HOME scores of the overall sample and ethnic subsamples. The signs of the correlation coefficients were typically in the expected directions.

Consistent with expectations, all of the maternal characteristics were found to be positively related to the quality of the home environment the mothers provide for their children. African-American and Caucasian mothers who delayed childbearing tended to provide better quality home environment than mothers who began childbearing earlier. In addition, mothers of both ethnic subsamples who provided better quality home environment were more highly educated, scored higher on the intelligence test, and had higher levels of self-esteem. Therefore, the hypotheses that maternal characteristics are related to the quality of the home environment the mother provides are supported by the data.

It was hypothesized that the amount of stress and social support received by the mothers will affect the quality of their caregiving behavior. The data were consistent with this hypothesis. Across ethnic groups, mothers who had higher family incomes, fewer children, and had a spouse or partner present in the home provided more supportive home environments. In addition, mothers in

Table 8

Zero-order Correlations: The Relations between the Predictor Variables and the Quality of the Home Environment (HOME 1988)

Predictor Variables	HOME 1988		
	Overall Sample (n=898)	African-American (n=347)	Caucasian (n=551)
Maternal Characteristics			
Age at first birth	.30***	.23***	.27***
Education	.25***	.23***	.33***
Intelligence (AFQT)	.44***	.29***	.41***
Self-esteem	.26***	.20***	.32***
Contextual Factors			
Family income	.40***	.30***	.39***
Poverty level	-.42***	-.31***	-.42***
Spouse/partner	.40***	.35***	.33***
Number of children	-.15***	-.17**	-.11**
Marital happiness	.16***	.07	.17***
Marital communication	.30***	.17*	.35***
Marital conflict	-.17***	-.06	-.17***
Child Characteristics			
Age	-.05	-.04	-.07
Sex	-.06	-.07	-.06

Note. Poverty status was coded as follows: 0 = not in poverty, 1 = poverty. Spouse/partner was coded as follows: 0 = not present, 1 = present. Sex of child was coded as follows: 0 = female, 1 = male. * $p < .05$ ** $p < .01$ *** $p < .001$

two-parent families who experienced higher marital quality tended to provide more positive home environments. Specifically, the levels of communication between the mothers and their spouses tended to be consistently related to the quality of the home environment they provided. The level of marital happiness was significantly related to the quality of the home environment provided by Caucasian mothers, but not African-American mothers. There was a significant negative association between level of marital conflict of Caucasian mothers and the quality of the home environment they provided. The relation between marital conflict and the quality of the home environment provided by African-American mothers was in the expected direction, but the relation was not significant. None of the child characteristics were found to be significantly related to the quality of the home environment provided by the mothers.

Multiple Predictors of the Quality of the Home Environment

As discussed in Chapter 2, maternal childrearing behavior may be influenced by a combination of several factors. Therefore, in this section the combined influence of the various factors identified in the conceptual model on the quality of the home environment mothers provide is assessed. Three major sets of factors identified in the model were maternal characteristics, contextual sources of

stress and support, and characteristics of the child. Multiple regression analyses were used to examine which of the predictor variables contributed uniquely to the quality of the home environment. The method of entry used was stepwise forward selection. The regression analyses were conducted separately for the overall sample and ethnic subsamples. Separate analyses were done for the two ethnic groups because earlier analyses showed that the two groups differed on many demographic measures (e.g., % in poverty). Furthermore, the objective of this study was also to determine if the same factors predict the quality of the home environment provided by mothers within each ethnic group. Table 9 presents the results of the regression analyses.

Only four variables were found to be predictive of the quality of the home environments of both ethnic groups: age of mother at the time of first birth, intelligence, presence of spouse/partner in the household, and number of children. Higher levels of self-esteem and family income were shown to be predictive of HOME scores of the Caucasian subsample, but not the African-American subsample. Mother's level of education did not emerge as a unique predictor of HOME scores in either ethnic groups. Sex of child made a modest unique contribution to predicting HOME scores for the overall sample and Caucasian subsample, but was not significantly related, at the .05 level, to the HOME scores of the African-American subsample. Thus, female children in

Table 9

Stepwise Multiple Regression Analyses: Predictors of the Quality of the Home Environment (HOME 1988)

Predictor Variables	Overall sample (n = 687) ß	African American (n = 252) ß	Caucasian (n = 435) ß
Age at first birth	.11**	.15*	.09*
Education			
Intelligence (AFQT)	.18***	.14**	.18***
Self-esteem	.10**		.17***
Family income	.15***		.19***
Spouse/partner	.28***	.31***	.26***
Number of children	-.16***	-.19**	-.14***
Age of child			
Sex of child	-.06*		-.08*
R^2	.34	.23	.33
F	50.20***	18.87***	30.14***

Note. Betas presented are standardized betas. Spouse/partner was coded as follows: 0 = not present, 1 = present. Sex of child was coded as follows: 0 = female, 1 = male.
* p < .05 ** p < .01 *** p < .001

the overall sample and Caucasian subsample appear to receive more supportive care than male children. The predictor variables accounted for between 23 and 34% of the variance in the HOME scores of the overall sample and ethnic subsamples. The F values for the models were all found to be highly significant ($p < .001$). Together the predictor variables accounted for more of the variance in the HOME scores of Caucasian mothers (33%) than the HOME scores of African-American mothers (23%).

As noted earlier in this chapter, several differences in demographic and background characteristics existed between the Caucasian subsample and African-American subsample. One notable difference was that African-American mothers were less likely than Caucasian mothers to have a spouse present in the home. Therefore, further analyses using similar regression procedures were done to see if different factors would emerge if only two-parent households were compared. In these analyses, indicators of marital quality (i.e., marital happiness, marital communication, and marital conflict) were included as predictor variables. Table 10 shows the results of the multiple regression analyses.

Marital communication was shown to be the only variable that entered the prediction equations for two-parent families of both ethnic groups. Age of mother at first birth was a significant predictor of HOME scores of two-parent African-American families, but not for the two-parent Caucasian families. In two-parent Caucasian families, higher levels of intelligence, self-esteem, and family income, and fewer children in the family made unique contributions to predicting a more supportive home environment. As in the earlier analyses, the level of education of the mothers failed to emerge as a unique predictor of the HOME scores. Overall, the predictor variables accounted for more variance in the two-parent Caucasian families (28%) than the two-parent African-

American families (15%). The F values for all the regression models were highly significant ($p < .001$).

Table 10

Stepwise Multiple Regression Analyses: Predictors of the Quality of the Home Environment (HOME 1988) for Two-parent Families

Predictor Variables	Overall sample (n = 411) ß	African-American (n = 106) ß	Caucasian (n = 305) ß
Age at first birth	.12**	.31***	
Education			
Intelligence (AFQT)	.16***		.19***
Self-esteem	.09*		.13*
Family income	.14**		.19***
Number of children	-.17***		-.18***
Marital happiness			
Marital communication	.28***	.21*	.28***
Marital conflict			
Age of child			
Sex of child			
R^2	.25	.15	.28
F	21.91***	8.90***	22.84***

Note. Betas presented are standardized betas. Sex of child was coded as follows: 0 = female, 1 = male.
* p < .05 ** p < .01 *** p <.001

Relations between the Predictor Variables and the Achievement of Children

Table 11 presents the zero-order correlations between the predictor variables, the quality of the home environment, and the children's achievement for the overall sample and the ethnic subsamples. Small to moderate correlations were obtained between the predictor variables and the children's achievement. With the exception of marital conflict, most of the statistically significant correlations between the independent variables and the dependent variables were in the expected directions.

Consistent with expectations, children who scored higher on the achievement tests tended to have mothers who were more intelligent and well educated. Their mothers also appeared to have higher self-esteem, and to have started childbearing at a later age. In addition, children who were doing well in all the tests tended to come from families with higher levels of income and fewer children. The presence of a father in the household was also found to be positively related to the achievement of the children.

Contrary to expectations, parents' levels of marital conflict tended to have positive effect on the achievement of African-American children. Specifically, African-American children who scored higher in the reading recognition test, tended to have parents who were more often involved in marital conflict. This finding may be

Table 11

Relations between the Predictor Variables and the Achievement of Children

Predictor Variables	MATH			READING RECOGNITION			READING COMPREHENSION		
	Overall Sample	African American	Caucasian	Overall Sample	African American	Caucasian	Overall Sample	African American	Caucasian
Maternal Characteristics									
Age at first birth	.16***	.11*	.11**	.20***	.23***	.16***	.19***	.23***	.15**
Education	.17***	.18***	.20***	.21***	.24***	.21***	.19***	.23***	.17***
Intelligence (AFQT)	.39***	.31***	.34***	.34***	.36***	.33***	.33***	.34***	.32***
Self-esteem	.12*	.12*	.13**	.17***	.14**	.18***	.14***	.08	.17***
Contextual Factors									
Family income	.22***	.15**	.19***	.17***	.20***	.13**	.17***	.14*	.16**
Poverty level	-.21***	-.05	-.23***	-.19***	-.21***	-.15***	-.19***	-.16**	-.18***
Spouse/partner	.17***	.12*	.08	.11**	.15**	.04	.09*	.13*	.01
Number of children	-.08*	-.08	-.05	-.10**	-.13*	-.07	-.10*	-.14*	-.05
Marital happiness	.05	-.11	.09	.02	-.15	.07	.01	-.12	.05
Marital communication	.09*	-.02	.12*	.08	.03	.10*	.04	.02	.04
Marital conflict	-.06	.16	-.09	-.04	.27**	-.13**	-.04	.16	-.09
Child Characteristics									
Age	-.01	.02	-.02	.00	-.13**	.08	-.19***	-.32***	-.11*
Sex	-.06	-.11*	-.04	-.13***	-.14**	-.14**	-.14***	-.19**	-.12**
HOME									
1986	.37***	.28***	.35***	.34***	.35***	.30***	.30***	.32***	.25***
1988	.31***	.17***	.33***	.30***	.29***	.28***	.29***	.25***	.28***

Note. Poverty status was coded as follows: 0 = not in poverty, 1 = poverty.
Spouse/partner was coded as follows: 0 = not present, 1 = present
Sex of child was coded as follows: 0 = female, 1 = male.
* $p < .05$ ** $p < .01$ *** $p < .001$

surprising, but it supports the Brody et al., (1986) hypothesis that mothers in deteriorating marriages often make compensatory investments in their children that promote learning. Although this explanation is not consistent with the results of an earlier analysis (see Table 8) that showed no relation between marital conflict and parenting behavior in the African-American subsample, there may be some aspects of the mother's behavior that were not captured by the HOME. For example, mothers in distressed marriage may develop close emotional relationships with their children and engage in conversation with the children more often. This kind of involvement may provide the children with opportunities to ask and answer questions, learn new information, and receive frequent feedback from their mothers that can enhance their learning. Another plausible explanation is that children from two-parent African-American families may benefit from the fact that there are more financial resources available in those families, and financial resources may offset any disadvantages associated with marital conflict.

The characteristics of the child were found to be related to some of the achievement measures. Younger children of both ethnic groups appeared to score significantly higher than older children in reading comprehension. Younger African-American children also scored significantly higher on reading recognition. It is evident from these findings that the negative impact of exposure to risk factors may increase over time; the older

the child the greater is the impact. Moreover, older children in this study were likely to be born when the mothers were very young in age. In addition, they may not have completed high school at the time the child was born. Thus, their mothers may lack the necessary parenting skills and knowledge to provide for more cognitively stimulating home environments. Besides being more likely to be born to teenage mothers and mothers with lower levels of education, older children in this study may have spent more of their early years in poverty and in father absent homes.

The child's gender is also significantly related to some of the achievement measures, particularly reading recognition and reading comprehension. Results of t-test analyses indicate sex differences in the achievement scores of children of both ethnic groups. Female children in the African-American subsample obtained higher scores on math ($t = -2.03$, $p < .05$), reading recognition ($t = -2.55$, $p < .01$), and reading comprehension ($t = -3.11$, $p < .01$). In the Caucasian subsample, female children scored significantly higher than males on reading recognition ($t = -3.13$, $p < .01$) and reading comprehension ($t = -2.44$, $p < .01$). There was no significant difference between male and female Caucasian children in math.

For both ethnic groups, it appears that female children did better than male in two of the achievement measures. One possible explanation for why female children did better in the achievement tests is that they tended to receive more

supportive care than male children (see Table 9). Perhaps they were also more responsive to the mother's care, thus enhancing their cognitive ability.

As expected, the quality of the children's home environment was positively related to their achievement scores. Children who scored higher in all the tests tended to come from more supportive home environments. The quality of the children's home environments measured two years earlier also showed a similar pattern of relationships with the children's achievement measures.

Multiple Regression Analyses

This section discusses the results of several multiple regression analyses that were done to determine which of the predictor variables are related to the children's achievement when the quality of the home environment is controlled. In these analyses all of the independent variables (maternal characteristics, contextual factors, and child's characteristics), including the quality of the home environment were entered simultaneously. Table 12 shows the results of the regression analyses for the overall sample and ethnic subsamples.

Results of the analyses suggest that some of the predictor variables have a direct effect on the achievement of the children, while others have an indirect effect (via home environment). The total amount of variance accounted

Table 12

Multiple Regression Analyses: Predictors of the Achievement of Children

Predictor Variables	Math β			Reading Recognition β			Reading Comprehension β		
	Overall sample (n=671)	African American (n=247)	Caucasian (n=424)	Overall sample (n=666)	African American (n=244)	Caucasian (n=422)	Overall sample (n=524)	African American (n=189)	Caucasian (n=335)
Age at first birth									
Education									
Intelligence (AFQT)	.35***	.35***	.26***	.24***	.33***	.24***	.27***	.38***	.26***
Self-esteem									
Family income									
Spouse/partner									
Number of children									
Age of child						.13**	-.12***	-.24***	
Sex of child	-.07*	-.14*		-.14***	-.13*	-.13**	-.13**		-.11*
HOME 1988	.18***		.25***	.15***	.13*	.16***	.15**		.17**
R^2	.21	.15	.18	.17	.25	.16	.18	.31	.15
F	17.14***	4.12***	8.84***	13.32***	7.87***	7.73***	11.18***	7.96***	5.69***

Note. Betas presented are standardized betas.
Spouse/partner was coded as follows: 0 = not present, 1 = present
Sex of child was coded as follows: 0 = female, 1 = male.
* p < .05 ** p < .01 *** p < .001

for by the models ranged from 15 to 31% for the three achievement tests. The F values were highly significant ($p < .001$) for all of the outcome measures.

Maternal intelligence was found to be the only variable that was consistently related to all of the measures of the children's achievement across ethnic groups. These findings support the hypothesis that maternal intelligence is related to the achievement of the children when the quality of the home environment is controlled. Earlier regression analyses show that maternal intelligence was a significant predictor of the quality of the home environments for both ethnic groups (see Table 9). This shows that maternal intelligence may also have an indirect (via home environment) effect on the achievement of the children. Thus, maternal intelligence may have both a direct and an indirect (via home environment) effect on children's achievement. The results, therefore suggest that more intelligent mothers influence their children directly through their genes, and indirectly by providing more cognitively stimulating environments.

Mothers' age at first birth and level of self-esteem were not related to any of the children's achievement measures, when the quality of the home environment was controlled. These findings indicate that these two variables do not have direct effects on the children's achievement. Therefore, the findings did not support the hypotheses that mothers' age at first birth and self-esteem

are related to the achievement of the children when the quality of the home environment is controlled. The effects of these maternal characteristics on the achievement of the children may be largely indirect, via the home environment. As shown in the earlier regression analyses, mothers' age at first birth, and level of self-esteem were significantly related to the quality of the home environments the mothers provide for their children (see Table 9). One possible explanation for these findings could be drawn from past studies, which indicate that mother's age at first birth may be an indicator for her developmental history and adjustment, and therefore directly affects the quality of the home environment she provides for her children (Butler & Burton, 1990; Quinton & Rutter, 1988). As just indicated, mothers with high self-esteem create more supportive home environment for their children. This, in turn, affects their children's achievement. Therefore, the effect of self-esteem is indirect.

Maternal education was not related to any of the children's achievement measures. Maternal education was also not related to the quality of the home environment the mothers provide when other factors were controlled (see Table 9). One possible reason why maternal education was unrelated to both outcome measures is that maternal intelligence was included in the analyses. The association between maternal education and the dependent variables may be accounted for by maternal intelligence. In this study

the correlation between maternal education and maternal intelligence was .45, ($p < 001$) for the overall sample. For the African-American and Caucasian subsamples the correlations were .55 ($p < .001$) and .54, ($p < .001$), respectively. Thus, the hypothesis that maternal education is related to the achievement of children when the quality of the home environment is controlled is not supported.

When the quality of the home environment was statistically controlled, none of the contextual variables were found to be related to the children's achievement scores. The data therefore, did not support the hypotheses that family income, presence of spouse/partner and number of children are related to the achievement of the children when the quality of the home environment is controlled. This does not mean that the contextual factors have no effect on the achievement of the children. Instead, the effects of these variables on children's achievement are likely to be indirect, via the home environment. As shown in the previous regression analyses, family income, presence of spouse/partner in the home, and number of children were significantly related to the quality of the home environments the mothers provide (see Table 9).

The characteristics of the child were related to some of the achievement scores of children of both ethnic groups when the quality of the home environment was controlled. Older children in the Caucasian subsample tended to obtain higher scores in reading recognition. However, in the

African-American subsample, younger children did better than older children in reading comprehension. As noted earlier, African-American children's achievement may have been affected by a combination of several risk factors that they were exposed to. The negative impact of exposure to the risks may be stronger as the children get older, thus affecting their scores. In earlier regression analyses age of the child was found to be unrelated to the quality of the home environment (Table 9). Therefore, it appears that with home environment controlled, age of child is related to only some of the achievement measures.

Compared to male children, female children in the overall sample and ethnic subsamples did better in reading recognition and reading comprehension. In addition, female children in the overall sample and African-American subsample did better in math than male children. The child's gender however, did not emerge as a unique predictor of the Caucasian children's math scores when controlling for the effect of the home environment. As pointed out earlier, female children tended to receive more supportive care than male children. Therefore, it appears that the achievement of female children is indirectly influenced by the quality of care they received. They may also be more responsive to the care, and this may have enabled them to perform better in the tests.

Given that African-American children were less likely than Caucasian children to have a father in the home,

additional regression analyses, using similar regression procedures, were done to determine if different factors would affect children's achievement, if only children from two-parent households were compared. The parents' measures of marital quality were included as predictor variables in these analyses. As noted earlier, indicators of the parents' marital quality used in these analyses were marital happiness, marital communication and marital conflict. Table 13 shows the results of these analyses.

The percentage of variance in achievement scores accounted for by the models ranged from 12 to 34%. The F values for the models were significant for all of the outcome measures. Consistent with expectations, maternal intelligence was found to be predictive of the achievement scores of children in two-parent families, particularly their achievement in math and reading recognition. Maternal intelligence was also related to the reading comprehension scores of two-parent Caucasian children, but not the two-parent African-American children (see Table 10). For the most part, the results are consistent with the earlier regression analyses. Maternal intelligence has both a direct and indirect (via home environment) effect on the achievement of children in two-parent families.

For the most part, mothers' age at first birth and level of self-esteem were not related to the achievement scores of children of two-parent families when the quality of the home environment was controlled. The one exception

Table 13

Multiple Regression Analyses: Predictors of the Achievement of Children in Two-parent Families

	Math			Reading Recognition			Reading Comprehension		
	β			β			β		
Predictor Variables	Overall sample (n=104)	African American (n=104)	Caucasian (n=297)	Overall sample (n=396)	African American (n=102)	Caucasian (n=294)	Overall sample (n=319)	African American (n=77)	Caucasian (n=242)
Age at first birth								.27*	
Education									
Intelligence (AFQT)	.38***	.35**	.29***	.21***	.26*	.20**	.21***		.24**
Self-esteem									
Family income									
Number of children									
Marital happiness									
Marital communication									
Marital conflict					.20*				
Age of child						.11*			
Sex of child				-.14**		-.11*	-.13*		
HOME 1988	.38***		.20**	.13**		.15*	.14*		
R^2	.20	.29	.15	.16	.29	.14	.14	.34	.12
F	8.14***	3.14***	4.29***	5.90***	3.10**	3.95***	4.28***	2.76**	2.51**

Note: Betas presented are standardized betas.
Sex of child was coded follows: 0 = female, 1 = male.
* $p < .05$ ** $p < .01$ *** $p < .001$

involves reading comprehension in the African-American subsample. African-American mothers who delayed child-bearing had children with relatively high reading comprehension scores.

As noted earlier in this chapter, maternal self-esteem was related to the quality of the home environment the mothers provide (see Table 10). Thus, any effect of self-esteem on the achievement of children in two-parent families would appear to be indirect, via the home environment.

Maternal education again did not show any effect on the children's achievement. As pointed out earlier, maternal education is a proxy for maternal intelligence. Therefore, the effect of maternal education on children's achievement is suppressed when maternal intelligence is added to the regression equations.

With the exception of marital conflict, the context of the family was also indirectly related to the achievement of children in two-parent families of both ethnic groups. Although the direct effect of marital conflict on two-parent African-American children's achievement in reading recognition is surprising, as pointed out earlier, it is consistent with the Brody et al., (1986) study of school-aged children. Brody et al., (1986) reported in their study that mothers from unsatisfactory marriages were more involved in teaching their children when observed in a laboratory setting, and the children, in turn, exhibited greater gains in knowledge. In contrast, Goldberg and

Easterbrooks (1984) noted that low marital quality promoted insensitive parenting that inhibited toddler functioning.

Age of child was related to only one achievement measures when the quality of the home environment was controlled. Older children in the two-parent Caucasian subsample tended to score higher in reading recognition than younger children. In addition, in the overall sample, female children in two-parent families out performed male children on two achievement measures: reading recognition and reading comprehension. Female children in two-parent Caucasian families also did better than male children in reading recognition. Previous regression analyses on two-parent families showed that sex of child was not related to the quality of the home environment (see Table 10). Thus, the relation between sex of child and achievement is not mediated by HOME scores.

The Quality of the Home Environment and Maternal Intelligence as Predictors of Achievement

Table 14 presents the results of several multiple regression analyses that were computed to examine the extent to which home environment predicts the achievement of children when maternal intelligence is statistically controlled. The regression analyses were done first for the overall sample, and then separate analyses were done for the

Table 14

Multiple Regression Analyses: The Quality of Home Environment and Maternal Intelligence as Predictors of Achievement of Children

	Math			Reading Recognition			Reading Comprehension		
	Standardized Beta			Standardized Beta			Standardized Beta		
Predictor Variables	Overall sample	African-American	Caucasian	Overall sample	African-American	Caucasian	Overall sample	African-American	Caucasian
HOME 1986	.29***	.25***	.24***	.25***	.28***	.21***	.20***	.26***	.14*
HOME 1988	.14***	.03	.19***	.16***	.14*	.16**	.17***	.10	.20***
R^2	.15	.07	.14	.13	.14	.11	.11	.10	.09
F	70.28***	12.13***	40.54***	59.17***	24.13***	29.14***	36.97***	13.50***	18.39***
n	796	313	483	790	309	481	614	236	378
HOME 1986	.20***	.17**	.18***	.17***	.19**	.17**	.10*	.16*	.07
HOME 1988	.09*	.00	.15**	.09*	.12	.08	.11*	.09	.13*
AFQT	.26***	.23***	.20***	.23***	.26***	.22***	.25***	.25***	.24***
R^2	.20	.12	.18	.17	.19	.15	.15	.16	.13
F	63.15***	13.08***	34.23***	50.15***	23.60***	26.25***	33.37***	13.89***	18.03***
n	764	303	461	757	299	458	586	229	357

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

two ethnic subsamples. In these analyses the predictor variables were entered together as a set.

In the first series of regression analyses, shown on the upper portion of Table 14, both preschool and contemporary home environment measures were used as predictors of children's achievement. Results of the analyses show that the quality of the home environment provided by mothers of both ethnic groups was related to their children's achievement scores. Children who achieved higher scores in all the achievement measures tended to experience more supportive home environments. However, the quality of the home environment measured two years earlier (when the children were between 4 to 6 years old), was a better predictor of the children's achievement in math and reading recognition than their contemporary home environment scores. Together the preschool HOME scores and contemporary HOME scores accounted for between 7 and 15% of the variance in the achievement scores of children in the overall sample and ethnic subsamples. The F values for the models were all found to be highly significant ($p < .001$).

In the second series of the regression analyses, maternal intelligence was added to the models. Results of the analyses show that both home environment and maternal intelligence predicted the achievement of the children. Children who do well have mothers who are high in intelligence and who provide cognitively stimulating home environments. Therefore, the hypothesis that home

environment is significantly related to the children's achievement when maternal intelligence is controlled is supported. The preschool home environment continues to be a better predictor of achievement scores (with the exception of reading comprehension scores of children in the Caucasian subsample) than the present home environment when maternal intelligence is statistically controlled. The amount of variance accounted for by the models ranged from 12 to 20%. The F values were highly significant ($p < .001$) for all of the outcome measures.

Summary of Results

In this section, the results of the study are summarized. The summary is presented in terms of the research hypotheses and research questions addressed in the study.

Hypothesis 1: Mothers who delayed childbearing are likely to provide better quality home environments than mothers who started childbearing earlier.

Hypothesis 2: Mothers with higher levels of education will provide better quality home environments than mothers with lower levels of education.

Hypothesis 3: Mothers with higher levels of intelligence will provide better quality home environments than mothers with lower levels of intelligence.

Hypothesis 4: Mothers with higher levels of self-esteem will provide better quality home environments than mothers with lower levels of self-esteem.

The results presented in the earlier section are consistent with these hypotheses. African-American and Caucasian mothers who delayed childbearing, had higher levels of education, intelligence and self-esteem tended to provide better quality home environments than other mothers (see Table 8). Of all the maternal characteristics, only age at first birth and intelligence were significant predictors of home environment of both ethnic groups when other factors were controlled (see Table 9). Mothers' levels of education were not significantly related to the HOME scores of the mothers when other factors were controlled. Level of self-esteem also emerged as a unique predictor of HOME scores of Caucasian mothers, but not African-American mothers.

For mothers of two-parent families, age at first birth was a significant predictor of African-American mothers' HOME scores; and higher levels of intelligence and self-esteem were significant predictors of Caucasian mothers' HOME scores, when other factors were controlled (see Table 10). The mothers' level of education again failed to emerge as a unique predictor of the HOME scores of both groups of mothers.

Hypothesis 5: Mothers with higher family incomes will provide better quality home environments than mothers with lower family incomes.

Hypothesis 6: Mothers who have a spouse or male partner in the home will provide better quality home environments than mothers who do not have a spouse or male partner in the home.

Hypothesis 7: Mothers who have smaller numbers of children will provide better quality home environments than mothers who have more children.

Hypothesis 8: Mothers who experience higher levels of marital happiness will provide better quality home environments than mothers who experience lower levels of marital happiness.

Hypothesis 9: Mothers who experience higher levels of marital communication will provide better quality home environments than mothers who experience lower levels of marital communication.

Hypothesis 10: Mothers who experience lower levels of marital conflict will provide better quality home environments than mothers who experience higher levels of marital conflict.

The data were consistent with these hypotheses. In the overall sample mothers who had higher family incomes, fewer children, and/or a spouse or partner in the home provided better quality home environments. Mothers in two-parent families who experienced higher marital quality (specifically higher levels of marital communication with husbands) tended to provide more positive home environments. For Caucasian mothers, higher level of marital happiness, and lower level of marital conflict were significantly related to the quality of the home environments (see Table 8).

Of the contextual variables, the presence of spouse/partner in the home, and number of children were significantly related to the quality of the home environment

provided by mothers in the overall sample when other factors were controlled. Family income contributed uniquely to Caucasian mothers' HOME scores, but not African-American mothers' HOME scores (see Table 9).

When other factors were controlled, higher family income and fewer children in the family were significant predictors of higher HOME scores of two-parent Caucasian families. Marital communication was the only contextual variable that made a unique contribution to predicting a more supportive home environment, for two-parent families of both ethnic groups (see Table 10).

Hypothesis 11: Children whose mothers provide more supportive home environments will demonstrate higher levels of achievement than children whose mothers provide lower quality home environments.

The data provide support for this hypothesis. Children who achieved higher scores on all the achievement tests experienced more supportive home environments (see Table 11). Children who scored higher in the achievement tests had mothers who provided more supportive home environments in the preschool years also.

Results of multiple regression analyses also showed that children whose mothers provide more supportive home environment achieve higher scores on all the achievement measures (see Table 14). However, the preschool HOME measure was a better predictor of the children's achievement

in math and reading recognition than their contemporary HOME measure.

Hypothesis 12: Maternal age at first birth is positively related to children's levels of achievement when the quality of the home environment is controlled.

This hypothesis was not supported by the data. Mother's age at first birth was unrelated to the achievement of the children when the quality of the home environment was controlled. This does not imply that mother's age at first birth has no effect on the achievement of the children. Given that mother's age at first birth was significantly related to the quality of the home environment when other factors were controlled (see Table 9), the effect of this variable on the achievement of children may be largely indirect (via the home environment).

When the quality of the home environment was controlled for children of two-parent families, the mother's age at first birth was not related to the children's scores in achievement, with the exception of reading comprehension for African-American children (see Table 13). Children whose mothers delayed childbearing achieved relatively higher scores in reading comprehension.

Hypothesis 13: Mother's level of education is positively related to children's levels of achievement when the quality of the home environment is controlled.

The relations between maternal education and all of the achievement measures were not significant when the quality of the home environment was controlled (see Table 12). Therefore, the data did not provide support for this hypothesis. Maternal education was also unrelated to the quality of the home environment when other factors were controlled (see Table 9). The effect of maternal education on the quality of the home environment and the achievement of the children may have been accounted for by maternal intelligence. Similar results were obtained for the two-parent families (see Table 13).

Hypothesis 14: Mother's level of intelligence is positively related to children's levels of achievement when the quality of the home environment is controlled.

The data provide support for this hypothesis. Maternal intelligence was significantly related to the achievement of children when the quality of the home was controlled (see Table 12). This indicates that maternal intelligence has direct effect on the achievement of the children. In addition when other factors were controlled, maternal intelligence was related to the quality of the home environment. This shows that maternal intelligence also has indirect effect on children's achievement. Maternal

intelligence was also found to have both a direct and indirect effect on nearly all of the achievement scores of children in two-parent families (see Table 13).

Hypothesis 15: Mother's level of self-esteem is positively related to children's levels of achievement when the quality of the home environment is controlled.

No support was found for this hypothesis. Mother's self-esteem was unrelated to the achievement of children when the quality of the home environment was controlled (see Table 12). This indicates that self-esteem has no direct effect on the achievement of the children. The effect of maternal self-esteem may be largely indirect, via the home environment. When other factors were controlled, self-esteem was significantly related to the quality of the home environment (see Table 9). Similar results were obtained for children in two-parent families (see Table 13).

Hypothesis 16: Family income is positively related to the achievement of the children when the quality of the home environment is controlled.

Hypothesis 17: The presence of a spouse/partner in the home is positively related to the achievement of the children, when the quality of the home environment is controlled.

Hypothesis 18: Number of children in the family is negatively related to the achievement of the children, when the quality of the home environment is controlled.

The data did not support the hypotheses that family income, presence of spouse/partner and number of children

are related to the achievement of the children in the overall sample when the quality of the home environment was controlled (see Table 12). These findings do not suggest that these variables have no effect on the achievement of children. Instead the effects may be largely indirect, through the home environment. Results presented in the earlier section showed that family income, presence of spouse/partner in the home, and number of children were significantly related to the quality of the home environment (see Table 9). These variables also had an indirect effect on the achievement of children in two-parent families.

Hypothesis 19: Marital happiness is positively related to the achievement of the children, when the quality of the home environment is controlled.

Hypothesis 20: Marital communication is positively related to the achievement of the children, when the quality of the home environment is controlled.

Hypothesis 21: Marital conflict is negatively related to the achievement of the children, when the quality of the home environment is controlled.

When the quality of the home environment was controlled, marital happiness and marital communication were not related to any of the achievement measures (see Table 13). Therefore, hypotheses 19 and 20 were not supported by the data. The effect of these two variables on the achievement of children may be indirect, through the home environment. However, when the effect of the home environment was controlled, marital conflict appeared to

have a direct effect on the achievement of African-American children's in reading recognition. This result was surprising, but was consistent with Brody et al., (1986) finding on school-aged children.

Hypothesis 22: Home environment is significantly related to children's achievement when maternal intelligence is controlled.

The data supported this hypothesis. This finding is consistent with Gottfried and Gottfried (1984) and Yeates et al., (1983) findings that home environment is significantly related to the children's achievement when maternal intelligence is controlled (see Table 14). Results of the regression analyses also show that both home environment and maternal intelligence were significant predictors of the achievement of children of both ethnic groups. Children who did well had mothers who were more intelligent and who provided more stimulating home environments. The preschool home environment tended to be a better predictor of achievement scores than the contemporary home environment.

Research Question 1: Does the child's age predict the quality of the home environment mothers provide for their children?

Research Question 2: Does the child's sex predict the quality of the home environment mothers provide for their children?

When zero-order correlations were computed, child's age and sex were not related to the quality of the home environment provided by the mothers (see Table 8). The child's age was not related to the quality of the home environment when other factors were controlled. However, when other factors were controlled, sex of child was marginally related to HOME scores of mothers in the overall sample and Caucasian subsample (see Table 9). The results suggest that female children in the overall sample and Caucasian subsample received more supportive care than male children. Age and sex of child, however were not related to the quality of the home environment provided by mothers in two-parent families (see Table 9).

Research Question 3: Will the same factors predict the quality of care provided by African-American and Caucasian mothers?

Results of the multiple regression analyses show that age at first birth, intelligence, presence of spouse/partner in the home, and number of children were predictive of the quality of the home environments provided by African-American and Caucasian mothers. In addition self-esteem, family income, and sex of child were predictive of the quality of home environments provided by Caucasian mothers.

For two-parent African-American families, the factors that were predictive of the quality of the home environments were age at first birth and marital communication. For two-

parent Caucasian families, the factors that were predictive of the home environments were intelligence, self-esteem, family income, number of children and marital communication. These findings suggest that different factors may predict the quality of care provided by mothers of different ethnic groups. However, there were substantial differences in the size of the ethnic subsamples. Thus, differences in the power to detect effects may explain for the differences between the two groups of mothers (Luster & Dubow, 1990).

Research Question 4: Is the child's age related to the achievement of the child when the quality of the home environment is controlled?

When the quality of the home environment was controlled, older Caucasian children achieved higher scores in reading recognition. In contrast, younger African-American children scored significantly higher than older children in reading comprehension (see Table 11). For children in two-parent families, age was related to only one achievement measure when the quality of the home environment was controlled. Older Caucasian children in two-parent families scored higher in reading recognition than younger children (see Table 13).

Research Question 5: Is the child's sex related to the achievement of the child when the quality of the home environment is controlled?

When the quality of the home environment was controlled, female children in the overall sample and ethnic subsamples did better in two achievement measures: reading recognition and reading comprehension. Female African-American children also did better in math than male children (see Table 13). Given that female children were shown to receive more supportive care than male children (see Table 9), these findings suggest that the superior performance of female children results from the quality of care they received.

For children in two-parent families, when the quality of the home environment was controlled, female children out performed male children in reading recognition and reading comprehension. Earlier regression results for two-parent families (see Table 10) showed that sex of child was not related to the quality of the home environment. These findings imply that the relation between sex of child and achievement is not mediated by aspects of the environment measured by the HOME-SF.

CHAPTER V

SUMMARY, CONCLUSIONS, LIMITATIONS, IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This chapter presents a summary of the study, conclusions, limitations, implications and suggestions for future research.

Summary of the Study

The major purposes of this study were to identify factors that predict the parenting behavior of mothers and their effects on the achievement of children ages 6 to 8 years using NLSY data. In this section, specific objectives related to those purposes and findings pertaining to the objectives of the study are summarized. Findings pertaining to objectives 1 to 3 are summarized in Table 15.

Objective 1

The first objective was to determine what maternal characteristics predict the quality of the home environment mothers provide.

Table 15

Summary Table of Significant Predictors of the Quality of the Home Environment

Variables (Belsky's Model)	Samples					
	Overall Samples	African American	Caucasian	Two-Parent	Two-Parent African American	Two-Parent Caucasian
Maternal Characteristics						
Age at first birth	X	X	X	X	X	
Education						
Intelligence	X	X	X	X		X
Self-esteem	X		X	X		X
Contextual Factors						
Family income	X		X	X		X
Spouse/partner	X	X	X			
Number of children	X	X	X	X		X
Marital happiness						
Marital communication				X	X	X
Marital conflict						
Child Characteristics						
Age						
Sex	X		X			

Results of the study show that for the overall sample, age at first birth, intelligence, and self-esteem were predictive of the quality of the home environment the mothers provided for their children when other factors were controlled. Mothers who were older in age at the time of their first birth and had higher levels of intelligence and self-esteem tended to provide more supportive home

environments. Across ethnic groups, age at first birth and intelligence were significant predictors of the quality of the home environment mothers provided. Level of self-esteem was also a significant predictor of the HOME scores of Caucasian mothers.

Objective 2

The second objective was to determine what contextual factors predict the quality of the home environment mothers provide.

The result of the analyses indicated that of all the contextual variables, higher levels of family income, the presence of spouse/partner in the home, and fewer children were predictive of higher HOME scores of mothers in the overall sample and Caucasian subsample when other factors were controlled. The contextual factors which were predictive of African-American HOME scores were presence of spouse/partner and fewer children in the family.

Objective 3

The third objective was to determine what child characteristics predicted the quality of the home environment mothers provide.

When other factors were controlled, sex of child was related to the quality of the home environments provided by mothers in the overall sample and Caucasian subsample. Female children in the overall sample and Caucasian subsample received more supportive care than male children.

Objective 4

The fourth objective of this study was to determine if the same factors predict the quality of care provided by African-American and Caucasian mothers.

Factors that affect parenting behavior may be somewhat different for mothers of different ethnic groups. Age at first birth, intelligence, presence of spouse/partner in the home, and number of children were significant predictors of HOME scores of both African-American and Caucasian mothers. However, self-esteem, family income, and sex of child were also significant predictors of Caucasian mothers' HOME scores. Given that the analyses done on the two groups of mothers were exploratory, these results need to be viewed cautiously. The considerable difference in the sample sizes of the two groups of mothers affected the power to detect differences between them (Luster & Dubow, 1990).

Initially there was no plan to do separate analyses for two-parent families. However, several measures of marital quality were available in the 1988 NLSY data set. Therefore, these measures were added to take advantage of the available data. Moreover, African-American mothers were less likely than Caucasian mothers to have a spouse present in the home. Thus, it was deemed useful to examine if different predictors of home environment would emerge if only two-parent households were compared. The study found that age of mother at first birth and marital communication were the only two variables that emerged as unique

predictors of HOME scores of two-parent African-American families. For two-parent Caucasian families, significant predictors of the quality of the home environments were intelligence, self-esteem, family income, number of children, and marital communication.

Objective 5

The fifth objective was to determine if the quality of the home environment is related to the achievement of children.

The study found that children who do well on all the achievement measures have mothers who provided more supportive home environments. The preschool home environment tended to be a better predictor of the children's achievement than the contemporary home environment.

Objective 6

The sixth objective was to determine the relations between the predictor variables (maternal characteristics, contextual factors, and child characteristics) and children's achievement, when the quality of the home environment is statistically controlled.

Findings related to this objective are summarized in Table 16. The results of the data analyses show that maternal intelligence was the only variable that was consistently related to all of the achievement measures of the children across ethnic groups. Maternal intelligence was found to be predictive of the achievement scores of

Table 16

Summary Table of Significant Predictors of Achievement

Variables (Belsky's Model)	Samples																	
	Overall Samples			African American			Caucasian			Two-Parents			Two-Parents African American			Two-Parents Caucasian		
	M	RR	RC	M	RR	RC	M	RR	RC	M	RR	RC	M	RR	RC	M	RR	RC
Maternal Characteristics																		
Age at first birth															X			
Education																		
Intelligence	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Self-esteem																		
Contextual Factors																		
Family income																		
Spouse/partner																		
Number of children																		
Marital happiness																		
Marital communication																		
Marital conflict															X			
Child Characteristics																		
Age			X			X		X									X	
Sex	X	X	X	X	X			X	X		X	X					X	
HOME 1988	X	X	X		X		X	X	X	X	X	X				X	X	

Note: M is Math
RR is Reading Recognition
RC is Reading Comprehension

children of two-parent families in math and reading recognition when the effect of home environment was controlled. Maternal intelligence was also predictive of two-parent Caucasian children's scores in reading comprehension. Unexpectedly, marital conflict was

positively related to the achievement of African-American children of two-parent families when the quality of the home environment was controlled (see discussion in Chapter IV).

With home environment controlled, the age and sex of the child were related to some of the achievement measures. Older Caucasian children obtained higher scores in reading recognition than younger children. In contrast, younger African-American children did better than older African-American children in reading comprehension. Thus, with home environment controlled, age of child is related to some of the achievement measures.

When the quality of the home environment is controlled, sex of child is related to the achievement of the children. Female children in the overall sample and ethnic subsamples achieved higher scores in reading recognition and reading comprehension than male children. Female children in the overall sample and African-American subsamples also scored higher in math.

Objective 7

The final objective of this study was to determine the relation between the quality of the home environment and children's achievement when maternal intelligence was statistically controlled.

Results of the study show that the quality of the home environment is significantly related to the achievement of the children when maternal intelligence is controlled. Both home environment and maternal intelligence were significant

predictors of children's achievement. Mothers who were higher in intelligence provided more stimulating home environment and had children who did well on the achievement tests. The preschool home environment was generally a better predictor of the children's achievement than the present home environment measures when maternal intelligence was statistically controlled.

Conclusions

Belsky (1984) proposed that the factors affecting parenting behavior could be grouped into three broad categories: parental characteristics, contextual sources of stress and support, and characteristics of the child. Findings from this study are consistent with Belsky's model. Maternal characteristics, contextual factors and child characteristics were all related to the quality of the home environments provided by the African-American and Caucasian mothers for their 6 to 8 year-old children.

Of the maternal characteristics, age at first birth, intelligence, and self-esteem were predictive of the quality of the home environment provided by the mothers when other factors were controlled. African-American and Caucasian mothers who delayed childbearing and had higher levels of intelligence and self-esteem provided better quality home environments than other mothers. The contextual factors that contributed uniquely to HOME-SF scores were level of

family income, presence of spouse/partner in the home, and number of children. Mothers who had higher levels of family income, fewer children, and had a spouse or partner in the home provided more supportive home environments. Sex of child was also related to the quality of the home environment provided by the mothers. Female children tended to receive more supportive care than male children. Thus, findings from this study show that the characteristics of the mother, the child and the contexts in which the family is embedded are all related to the quality of care children receive. These findings are in accord with Belsky's view that parenting is multiply determined.

Results of the study show that factors affecting parenting behavior may be slightly different for mothers of different ethnic groups. Age of mother at the time of first birth, intelligence, presence of spouse/partner in the home, and number of children were significant predictors of the quality of the home environment provided by African-American and Caucasian mothers in the study. However, self-esteem, family income, and sex of child were also predictive of Caucasian mothers' HOME scores. Therefore, slightly different factors emerged as unique predictors of the home environment of the two ethnic groups. Thus, not all of the factors examined in this study are equally important for both groups. These findings are consistent with results from a study by Luster and Dubow (1990). When only mothers of two-parent families were compared (given that African-

American mothers were less likely to live with a spouse/male partner in the home), only age at first birth and marital communication emerged as significant predictors of HOME scores of two-parent African-American families. In contrast, maternal intelligence, self-esteem, family income, number of children, and marital communication were significant predictors of home scores for two-parent Caucasian families.

Belsky's model also assumed that parental behavior influences child development. Results from this study were also consistent with this assumption and with findings from previous studies (e.g., Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984). Children who achieved higher scores on the achievement measures had mothers who provided more cognitively stimulating home environments. When the quality of the home environment was controlled, maternal intelligence, age and sex of child were related to the achievement of the children. Both home environment and maternal intelligence were significantly related to children's achievement. When maternal intelligence was controlled, home environment was related to the achievement of the children. The results of the present study support Belsky's assertion that the quality of the home environment mothers provide for their children is influenced by multiple factors, and that the quality of the home environment children receive and maternal intelligence affect children's achievement.

Limitations

Although support for Belsky's model was found in this study, several other variables that would have been useful to fully test the model were not available in the NLSY data set. For example, there were no data on the extent to which other network members other than the spouse provided support for the mothers. In addition, personality characteristics of the mothers other than self-esteem (e.g., depression) were not available in the data set. Other child characteristics that may make them more or less difficult to care for (e.g., physical distinctiveness -- body type, facial attractiveness, cerebral palsy) were not available; there was also no sufficient information on the "goodness of fit" (Lerner, in press) between the characteristics of the child and the parents in the NLSY.

Because the short-form of the HOME Inventory was used in this study instead of the complete version, the relations between the predictor variables and the quality of the home environment provided by the mothers may have been attenuated. Likewise, the relation between the HOME and the child outcomes may have been underestimated. Despite these limitations, the study provides useful information on the determinants of parenting and child outcomes, which could not be provided by earlier cross-sectional studies with smaller samples. In addition, the study was able to demonstrate the utility of using all of the components of

Belsky's model in understanding parenting behavior and child development.

Implications

The results of this study are consistent with findings from earlier studies which indicate that individual differences in parenting are multiply determined, and that these differences are related to child outcomes. As in the earlier studies, this study emphasizes the importance of considering the characteristics of the parent, the child and the contexts in which the parent and child interact when working with families. Such considerations are necessary so that efforts at changing parenting behavior and enhancing family functioning can be maximally effective. In addition, parents who are at risk for suboptimal parenting may be easily identified and helped as early as possible. Thus, to understand parenting considering the broader ecology of the family may be more useful than focusing on a limited aspect of the family environment (Luster & Okagaki, in press).

Findings from this study tended to suggest that factors affecting parenting behavior may be somewhat different for mothers of different ethnic groups. Some possible reasons for these differences are that African-American mothers are more likely than Caucasian mothers to be single parents and living in poverty. Lower incomes may limit African-American mothers' ability to provide more optimal home environments.

The stresses of being poor could also affect their feelings of competence as parents. In this study, mothers who were lower in self-esteem provided lower quality home environments for their children. Therefore, those who work with families may need to consider the economic consequences of minority status to understand the parenting behavior of minority mothers (Reiss et al., 1986, Luster & Dubow, 1990).

Findings from the present study illustrate the importance of providing highly enriched home environments for children. Parents who provided a richer and stimulating home environment had children who scored higher on all the achievement tests. These findings imply that parents' roles as contributors to children's development should be considered seriously. Therefore, parenting education aimed at enhancing parenting skills and knowledge of child development needs to be offered to parents, especially parents who are at risk for suboptimal parenting.

Suggestions for Future Research

The NLSY data set affords an excellent opportunity for researchers to continue to examine factors related to maternal behavior and child outcome. As indicated in Chapter 3, surveys of the NLSY mothers continue annually; their children are assessed every other year. Therefore, future researchers may wish to examine changes over time in maternal childrearing behavior and children's achievement.

In addition, more research is needed to fully understand how characteristics of child, parent and context combine to influence the parent-child relationship. Other predictor variables, for example, parent's level of depressive symptomatology, child's physical distinctiveness, and the "goodness of fit" between the characteristics of parent and child may be included in future studies. Additional characteristics of parents that may be included are parents' knowledge and attitudes toward child development, parents' expections and aspirations for the child, parents' concerns and goals for the child, parents' developmental history, and parents' health status.

Future studies may also investigate the effects of other contextual factors, such as levels of tension or cohesion in the family, housing quality, neighborhood quality, and presence of other adults or grandparents in the household on parenting. Child characteristics that may be productive to examine in future studies are child's health or medical history, relationships with parents, or other adults in the family, or the child's ability to evoke responses from the caregiver (Scarr & McCartney, 1983).

The role of parent's ethnicity on parenting may be of interest to future researchers. Such research will determine the extent to which predictors of parenting behavior differ for ethnic groups (Luster & Dubow, 1990). Results of the present study show that there were some differences among the ethnic groups in the factors that

emerged as unique predictors of their HOME scores. However, it must be cautioned that the analyses done on the two groups of mothers were exploratory. The substantial difference in the sample sizes of the ethnic subsamples affected the power to detect differences between the two groups of mothers in this study (Luster & Dubow, 1990).

The present study has focused on the effects of maternal behavior on child's achievement. Other family members may also have great influence on the child. The influence of fathers, siblings, and grandparents on child outcome may also be of interest to future researchers. In addition, it is important to note that different children evoke different environmental inputs from their families and other adults (Scarr & McCartney, 1983). Therefore, the children's role in shaping their own development should be examined in future studies.

Finally, the aspects of maternal behavior that influenced achievement examined in this study are "between family" influences (i.e., influences that are shared by all children within a family, such as SES -- parental education, parental income). Effects of "within family" factors such as differential treatment of children by parents, sibling influences, as well as serendipitous events (e.g., moving to a new neighborhood) that may affect one sibling more than another, may better explain individual differences in children's achievement. Thus, instead of examining influences on a family-by-family basis, future studies may

wish to focus on influences on an individual-by-individual basis (Dunn & Plomin, 1990). An ethnographic research design which focuses on the impact of the factors discussed earlier on maternal behavior and child development may also increased the ability to explain individual differences in parenting behavior and child development.

APPENDIX A

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

December 5, 1991

Rozumah Baharudin
1541-F Spartan Village
East Lansing, MI 48823

RE: ECOLOGICAL PREDICTORS OF MATERNAL BEHAVIOR AND THEIR EFFFECTS ON THE COGNITIVE COMPETENCE OF CHILDREN: A STUDY ON BLACK AND WHITE MOTHERS AND CHILDREN OF THE NATIONAL LONGITUDINAL STUDY OF YOUTH, IRB #91-545

Dear Ms. Baharudin:

I am pleased to advise that because of the nature of the proposed research, it was eligible for expedited review. This process has been completed, the rights and welfare of the human subjects appear to be adequately protected, and your project is therefore approved.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to November 22, 1992.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

David E. Wright, Ph.D., Chair
University Committee on Research
Involving Human Subjects (UCRIHS)

DEW/deo

cc: Dr. Tom Luster

APPENDIX B

Measures of Home Environment

The number of the home environment items correspond to the number of the items in the original measures, as presented in the 1984 HOME manual. Items marked with an asterisk were itmes that were not included on the original versions of the HOME but were added to the HOME-SF for the National Longitudinal Survey of Youth. The subscales from which the items were taken are also included.

HOME Inventory -- Short Form (Preschool)

Learning Stimulation

3. Child has record player and at least five children's records.

7. Child has at least 10 children's books.

10. Family sunscribes to at least one magazine.

11. Child is encouraged to learn shapes.

Language Stimulation

13. Child is encouraged to learn the alphabet.

17. Parent's voice conveys positive feeling to child.

18. Child is permitted choice in breakfast or lunch menu.

Physical Environment

20. Play environment appears safe (This item combines 19 and 20 from original HOME: Building appears safe (19), and outside play environment appears safe (20).)

21. Interior of apartment not dark or perceptually monotonous.

25. House is reasonably clean. (in the orignial HOME the item is: House is reasonably clean and minimally cluttered. This item was divided into two items for the HOME-SF.)

Warmth and Acceptance

27. Parent converses with child at least twice during visit.

28. Parent answers child's questions or requests verbally.

31. Parent caresses, kisses, or cuddles child during visit.

Academic Stimulation

33. Child is encouraged to learn colors.

36. Child is encouraged to learn numbers.

Modeling

39. TV is used judiciously.

40. Parent introduces visitor to child.

42. Child can hit parent without harsh reprisal.

Variety in Experience

44. Child is taken on outing by family member at least every other week.

46. Child has been taken to a museum during past year.

50. Child eats at least one meal per day with mother and father.

Acceptance

53. Parent does not use physical restraint during visit.

54. Parent neither slaps nor spanks child during visit.

55. No more than one instance of physical punishment during past week.

* About how often do you read stories to your child? This item was developed by the National Institute of Child Health and Human Development for inclusion in the HOME-SF).

* All rooms in the house are reasonably free of clutter (see number 25).

HOME Inventory -- Short Form (Elementary School)

Emotional and Verbal Responsivity

5. Parent encourages child to contribute to the conversation during visit.

7. Parent responds to child's questions during interview.

9. Parent's voice conveys positive feelings about child.

Encouragement of Maturity

11. Family requires child to carry out certain selfcare routines, e.g., makes beds, cleans room, cleans up after spills, bathes self.

12. Family requires child to keep living and play area reasonably clean and straight.

15. Parent introduces interviewer to child.

Emotional Climate

19. Mother reports no more than one instance of physical punishment occurred during past week ("past month" in the original version of the HOME).

20. Child can express negative feelings toward parent without harsh reprisals.

23. Parent talks to child during visit (beyond correction and introduction).

Growth Fostering Materials and Experiences

27. Child has free access to musical instrument (piano, drum, ukulele, or guitar, etc.)

28. Child has free access to at least ten appropriate books.

29. Parent buys and reads a newspaper daily.

Provision for Active Stimulation

35. Family encourages child to develop and sustain hobbies.

37. Family provides lessons or organizational membership to support child's talents (especially Y membership, gymnastic lessons, art center, etc.)

40. Family member has taken child, or arranged for child to go to a scientific, historical or art museum within the past year.

Family Participation in Developmentally Stimulating Experiences

42. Family visits or receives visits from relatives or friends at least once every other week.

44. Family member has taken child, or arranged for child to attend some type of live musical or theatre performance.

46. Parents discuss television programs with child.

Paternal Involvement

48. Father (or father substitute) regularly engages in outdoor recreation with child.

49. Child sees and spends some time with father or father figure, 4 days a week.

50. Child eats at least one meal per day, on most days, with mother and father (or mother and father figures).

Aspects of the Physical Environment

53. The interior of the apartment is not dark or perceptually monotonous.

55. All visible rooms of the house are reasonably clean. (In the original HOME, the items is: All visible rooms in

the house are reasonably clean and minimally cluttered. This items was divided into two items for the HOME-SF).

58. Building has no potentially dangerous structural or health defects (e.g., plaster coming down from ceiling, stairways with boards missing, rodents, etc.)

* About how often do you read stories to your child? (This item and the next item were developed by the National Institute of Child Health and Human Development for inclusion in the HOME-SF).
* About how often does your child read for enjoyment?
* All visible rooms in the house are minimally cluttered (see item 55).

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