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Cognitive Attainment Among Older Children of
Adolescent Mothers: Environments and Outcomes

presented by

Patience Oluchi Adibe

has been accepted towards fulfillment
of the requirements for

M.A. degree in Family Studies

A handwritten signature in cursive script, appearing to read "Tom Rusto", written over a horizontal line.

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**COGNITIVE ATTAINMENT AMONG OLDER CHILDREN OF ADOLESCENT
MOTHERS: ENVIRONMENTS AND OUTCOMES**

By

Patience Oluchi Adibe

A THESIS

**Submitted to
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ABSTRACT

COGNITIVE ATTAINMENT AMONG OLDER CHILDREN OF ADOLESCENT MOTHERS: ENVIRONMENTS AND OUTCOMES

By

Patience Oluchi Adibe

The purpose of this study is to examine the relationship between adolescents' verbal intelligence and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment and neighborhood characteristics. Using data from the National Longitudinal Survey of Youth (NLSY), the study focused on 195 African American adolescent mothers and their 14 to 18 year-old children. Pearson product moment correlations were used to determine the relations between the dependent and predictor variables and to determine the extent to which the predictor variables are correlated with each other. Multiple regression analysis was employed to examine the combined effect of the predictor variables on the Peabody Picture Vocabulary Test-Revised (PPVT-R). The following variables were predictive of adolescents' PPVT Scores in the multiple regression analysis: maternal intelligence, maternal education, and quality of the home environment.

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Chapter I

INTRODUCTION

Problem and Rationale

Approximately 16% of infants in the United States are born to adolescent mothers (U.S. National Center for Health Statistics, 1997). Nearly half a million teenagers give birth each year (Moore 1996; Luster & Brophy-Herb, in press). It has been estimated that over 95% of adolescent mothers choose to keep their children rather than relinquish them for adoption (Hayes, 1987; Dubow & Luster, 1990; Luster & Okagaki, 1993). Most early childbearing studies have focused on the consequences for the mother. Recently, a few researchers have examined the behavior of school-age children having an adolescent mother. Negative effects of adolescent motherhood on the behavior and emotional well-being of the children have been found (Furstenberg et al., 1987).

Earlier studies have suggested that the children of adolescent mothers do worse on tests of cognitive attainment than children of mothers who are older (Dubow & Luster, 1990; Moore & Snyder, 1991). Environmental factors, such as the degree of intellectual stimulation in the child's home, predicted the child's test score. A strong association between the mother's and child's cognitive scores has also been shown to exist (Hayes, 1987; Furstenberg et al., 1987; Luster & Brophy-Herb, in press).

Stressful neighborhoods and communities have a negative impact on parents and children (Garbarino & Kostelny, 1993). Living in poverty has been linked to poor

cognitive and behavioral outcomes. Maternal maladjustment and maternal education of less than 12 years are confirmed risk factors for low cognitive achievement among school-age children of adolescent mothers (Furstenberg, Brooks-Gunn, & Morgan, 1987; Dubow & Luster, 1990).

Dubow and Luster (1990), in their study, examined the contribution of risk and protective factors in the adjustment of children born to teenage mothers. Specifically, their work focused on the factors that distinguish between children born to teenage parents who are experiencing problems in the cognitive and behavioral aspects and their peers who appear to be functioning competently. The authors found that poverty and low maternal self-esteem were related to child behavior problems, while urban residence and low maternal educational level were related to the child's academic test scores. The authors suggested that poverty and maternal adjustment may influence how sensitive the mother is in meeting the social-emotional needs of the child and how she deals with the child when she is trying to change the child's behavior.

A related study by Moore and Snyder (1991) suggested that there is a relationship between early childbearing and lower cognitive attainment among children of adolescent mothers. Results from their study showed that the PPVT scores of children born to younger mothers tend to be substantially lower than the PPVT scores of children born to older mothers. Further, the cognitive achievement of young mothers, as measured by the Armed Forces Qualifying Test (AFQT), is a significant predictor of the child's cognitive attainment as measured by the Peabody Picture Vocabulary Test (PPVT). In addition, an

advantaged environment can have a substantial, positive impact on a child's IQ score compared with children reared in less advantaged environments. The authors noted that the Home Observation for Measurement of the Environment (HOME) scale, measuring the cognitive and emotional stimulation provided to the child in the family home, was positively related to children's cognitive scores.

The differences and similarities between Moore and Snyder (1991) and Dubow and Luster (1990) studies are that Moore and Snyder focused on the risk factors contributing to low cognitive attainment among children of adolescent mothers; in contrast, Dubow and Luster (1990) examined both the risk and protective factors contributing to cognitive attainment among children of adolescent mothers. Both studies used samples from the NLSY data base that included Whites, Blacks, and Hispanics.

In light of this work, further investigations examining factors related to individual differences in verbal intelligence among older children of African American adolescent mothers are needed. The reasons why further work is needed is because most earlier studies did not include the effects of neighborhood problems in their study. It is important to study the effects of neighborhood problems because neighborhoods may have an indirect effect that is mediated by home environment. For example, Garbarino and Kostelny (1993) have suggested that poor, inner-city, minority neighborhoods were the sites for most murders and serious assaults. Therefore, some children and their parents face environmental violence as a fact of everyday life.

Considering the above, knowledge of the effects of neighborhood problems on the

verbal intelligence of children of adolescents mothers is likely to be of interest to researchers, educators, and policy makers. Moreover, few studies have focused on adolescents who were born to teenage mothers.

Statement of the problem

This study investigated individual differences in cognitive attainment among older children of African American adolescent mothers. Specifically, this study examined the relationship between verbal intelligence among 14 to 18 year-old children of African American adolescent mothers and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment, and neighborhood characteristics.

Research Questions

To accomplish this study, the following questions were addressed.

1. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) and maternal intelligence as measured by the Armed Forces Qualifying Test (AFQT) in this sample of African American adolescents who were born to teenage mothers?
2. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) and maternal education as measured by the number of years of education completed among older children of African American adolescent mothers?
3. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) and family size as measured by the number of children of the mother?

4. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary and poverty status?
5. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the quality of the home environment as measured by the Home Observation for Measurement of the Environment-Short Form (HOME-SF) inventory?
6. Is there a relationship between adolescents' verbal intelligence as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) and neighborhood characteristics as measured by the neighborhood problems scale?
7. Does quality of the home environment, as measured by the HOME inventory, mediate the relation between the other predictor variables (e.g., neighborhood characteristics) and PPVT-R scores?

In addition to the above questions, this study examined how much of the variance in PPVT scores can be explained by all of the predictor variables combined, and determined which of the predictor variables were significantly related to PPVT scores when the other predictor variables were controlled.

Conceptual and Operational Definitions

Verbal Intelligence

Conceptual: Children's ability to know and identify objects in their environment.

Children's ability to understand the meaning of spoken words.

Operational: Children's scores on the Peabody Picture Vocabulary Test-Revised (PPVT-R) measure.

Maternal Intelligence

Conceptual: Mother's ability to reason, problem solve, learn, think and recall. Mother's ability to interpret her environment.

Operational: Mother's score on the Armed Forces Qualifying Test (AFQT).

Maternal Education

Conceptual: Mother's level of education.

Operational: The number of years of education completed.

Family Size:

Conceptual: Family size.

Operational: The number of children of the mother.

Poverty Status

Conceptual: The income level that distinguishes between people who are in poverty and those not in poverty.

Operational: The family's poverty status based on Federal guidelines regarding total family income and family size.

Quality of Home Environment

Conceptual: Characteristics of the home environment that support the development of children, such as, parental guidance and teaching, as well as the physical environment and learning environment.

Operational: Scores from the Home Observation for Measurement of the Environment-Short Form (HOME-SF) inventory.

Neighborhood Problems

Conceptual: The extent to which parents' perceive that there are neighborhood problems in the neighborhood in which they reside.

Operational: Mother's responses to survey items that comprise the NLSY neighborhood problems index. A sample item is "neighborhood people don't respect rules/law." These 9 items were summed to produce a total neighborhood problems scale with higher scores reflecting more problems.

Assumptions

1. Families in all cultures organize their parenting environments in ways that affect the development of their children, particularly cognitive development.
2. Family environments present possibilities of observation and measurement.

Research Hypotheses

- Ho1** There is no relationship between children's verbal intelligence and maternal intelligence.
- Ha1** Mothers who have higher levels of intelligence will have children who score higher on the PPVT than mothers who have lower levels of intelligence.
- Ho2** There is no relationship between children's verbal intelligence and maternal education.
- Ha2** Mothers with higher levels of education will have children who score higher on the PPVT than mothers who have lower levels of education.
- Ho3** There is no relationship between verbal intelligence and family size.
- Ha3** Mothers who have fewer numbers of children will have children who score higher on the PPVT than mothers who have larger numbers of children.

- Ho4** There is no relationship between verbal intelligence and poverty.
- Ha4** Children in higher income families will have higher levels of verbal intelligence than children who are living in poverty.
- Ho5** There is no relationship between children's verbal intelligence and the home environments.
- Ha5** Children who are reared in advantaged home environments will score higher on indicators of verbal intelligence than children who are reared in less advantaged home environments.
- Ho6** There is no relationship between verbal intelligence and neighborhood problems.
- Ha6** Children who are reared in neighborhoods with fewer problems will score higher on indicators of verbal intelligence than children who are reared in neighborhoods with more problems.

Research Design

This correlational study was carried out using the 1992 National Longitudinal Survey of Youth (NLSY) merged mother-child data set. The study is non-experimental and longitudinal in nature. The unit of analysis in this study is the African American adolescent mother and her 14 to 18 year old child.

Conceptual Model

Human ecology models deal with the interaction and the interdependence of individuals and families with their environments. Specifically, the conceptual model for this study will be based on Bronfenbrenner's theory which posits that the primary setting in which mother and children directly interact has implications for the outcome of the

child. Bronfenbrenner credits his own childhood environment with directing his attention to the crucial role children's social and physical setting play in fashioning their development (Thomas, 1996).

Seen in different contexts, human nature, which Bronfenbrenner thought of as a singular noun, became plural and pluralistic. Different environments were producing discernible differences, not only across but also within societies, in talent, temperament, human relations, and particularly in the ways in which the culture, or subculture, brought up its next generation (Bronfenbrenner, 1979, 1989, 1993; Thomas, 1996).

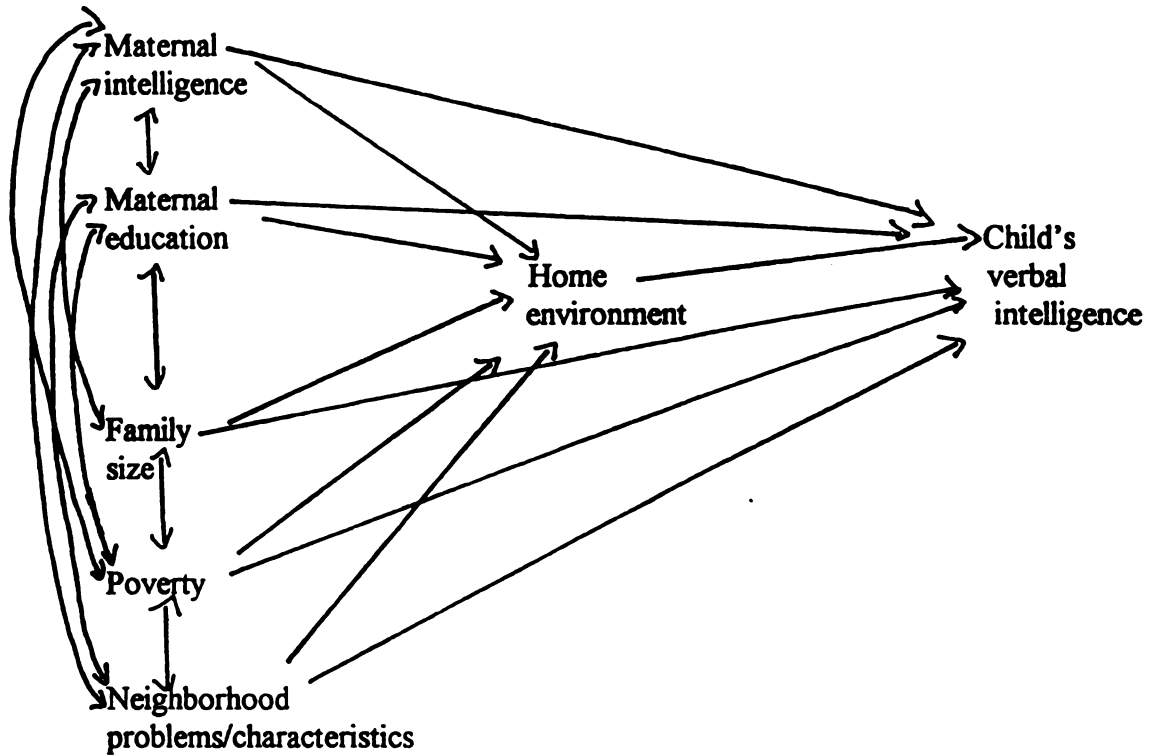
According to Bronfenbrenner's theory, the primary setting in which mother and children directly interact is at the microsystem level. At this level, the mother and child influence each other. How they interact and view the relationship has implications for the child. Children's development is influenced by the quality of parenting they receive, which is in turn, influenced by numerous factors within the family ecosystem (Bronfenbrenner, 1979, 1989, 1993).

Bronfenbrenner systematically defined the environment as having four different levels: microsystem, mesosystem, exosystem, and macrosystem. These levels may be thought of as a nested structures, each inside the next, like a set of Russian dolls. The microsystem is the innermost and immediate environment for the parents and children. At this level, parents and children have opportunities for face to face interaction. Included in the microsystem are the school classroom, the child care program, and the neighborhood. The mesosystem is a connection between two microsystems. We measure the richness of mesosystems for the child by the number and quality of connections. The stronger, more

positive, and more diverse the links between the settings, the more powerful and beneficial the resulting influence on the child's development.

The exosystem is the level in which the individual does not participate directly, but which influences development because it affects some part of the microsystem; examples for a child include the parents' workplace, and school administration. The macrosystem is the particular culture or subculture in which the other systems operate. Events taking place at the level of nations--the big picture--often reverberate right down into the day-to-day life of the individual family--the little picture--such as when the actions of an oil-producing cartel lead to unemployment that affects family relations. This model fits this study because this investigation is concerned with the relationship between child's verbal intelligence and maternal intelligence, maternal education, family size, poverty status, quality of the home environment, and neighborhood. Moreover, neighborhood influences are part of ecological models that view individuals in the context of a series of ecosystems such as, nuclear family, extended family, peer group, neighborhood, community, and institutions such as the school or the work place (Bronfenbrenner, 1979, 1989, 1993).

Based on the theoretical model and findings from past studies, the conceptual model for this study is as illustrated in Figure 1.



Conceptual model of verbal intelligence among children of adolescent mothers.
Figure 1.1

Chapter II

REVIEW OF THE LITERATURE

In the previous chapter the purpose of the study was discussed. As noted, the questions addressed in this study are indicated on page 4. This chapter reviews the literature concerning the relationship between children's verbal intelligence and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment, and neighborhood characteristics.

Individual differences in the achievement and attainment of children born to adolescent mothers

Studies have indicated that children born to adolescent mothers tend to lag behind their peers on measures of cognitive competence and school performance. Hayes (1987) found that the children of adolescent mothers are more likely to be behind grade, more likely to be assessed as needing remedial help, and less likely to be doing advanced academic work. Dubow and Luster (1990) focused on the behavioral and academic adjustment of children born to teenage mothers, and on risk and protective factors experienced by these families. The authors examined a subset of 721 children aged 8-15 from the National Longitudinal Survey of Youth (Center for Human Resource Research, 1987) who met the following criteria: (a) they were born to teenage mothers (19 years of age or less); (b) data were available describing the children's behavioral and academic adjustment; and (c) data were also collected on various characteristics

commonly assumed to be protective factors for children experiencing stress.

The mean age of the 721 children was 117.97 months ($SD = 16.23$, range = 97-183), and 51% of the children were males. 59% of the sample were minority members (16% Hispanic, 43% Blacks), and 47% were in poverty during 1986. The mothers' characteristics showed that 59% had achieved less than a high school education, and 47% were less than 17 years of age (mean = 17.10, $SD = 1.50$) when the index child was born.

Results suggested that specific risk factors may be associated with specific adjustment problems. The authors indicated that poverty and low maternal self-esteem were related to child behavior problems, while urban residence and low maternal educational level were related to all three child academic test scores, that is, the math, reading recognition, and reading comprehension sections of the Peabody Individual Achievement Test.

A similar study by Furstenberg, Brooks-Gunn and Morgan (1987) was carried out over a 17-year period. The sample comprised mostly Black, unmarried teenagers who sought prenatal care at Sinai Hospital, in Baltimore. Of the 404 pregnant women initially studied, 15 had children who died and 15 had children who were adopted early, leaving 374 potential adolescent respondents. Two hundred and ninety-six, nearly 79% or 74% of the original sample, participated in the 17-year follow-up.

Results showed that the impoverished lives of teenage mothers and the conditions in which their children grow up contribute to high rates of school failure. Further, the offspring of teenage mothers experience educational and emotional problems. The authors

indicated that over half of the Baltimore youth have repeated a grade in school.

Additionally, Luster and Brophy-Herb (in press) reviewed research that addressed several questions related to adolescent parenthood. They found that the children of teenage mothers appear to be at risk for cognitive developmental delays. Compared to the children of adult mothers, the children of early childbearers, on average, have lower Bayley scores at nine months of age, lower McCarthy scores at four years of age, and lower scores on achievement tests at seven years of age (Baldwin & Cain, 1980). A study conducted in Great Britain by Wadsworth, Taylor, Osborn, & Butler, (1984), indicated that 5-year-old children of adolescent parents scored significantly lower on vocabulary tests than the offspring of older mothers, even after controlling for other risk factors.

Further, Moore, Morrison, & Greene (1997) used the National Longitudinal Survey of Youth-Child Supplement and the National Survey of Children to examine the developmental differences between children born to women in their early teens (17 years of age or younger), children born to older adolescents (18-19 years), children born to women who were ages 20-21 at the time of delivery, and those children born to mothers age 25 years and older. Results indicated that children of younger teen mothers (17 years of age or younger) were at a disadvantage in terms of the quality of the home environment, cognitive development and academic achievement compared to children of older teen mothers and adult mothers. When Moore and her colleagues compared the children of teen mothers to the children of adult women, ages 25 and older, the differences in child outcomes were quite large, and children of teen parents were at a significant

disadvantage not only on cognitive assessments but also in teachers' ratings of school performance, the quality of the home environment, behavior problems, delinquency, academic achievement and psychological problems.

Hardy, Welcher, and Standley (1987) showed that children of adolescent parents had lower IQ scores and experienced more school difficulties and learning disabilities at ages seven and 12 years than did children of older mothers. Similarly, Brooks-Gunn and Furstenberg (1986) cited a study of 375,000 adolescents by Card (1977; 1981) which found that teenagers whose mothers had become pregnant with them as teenagers scored lower on tests of cognitive abilities and had lower educational goals than teens whose mothers had been older at their birth. In sum, both the female and male children of adolescent parents are more likely to drop out of high school than to the children of older mothers (Haveman, et al., 1997; Luster & Brophy-Herb, in press).

Maternal intelligence

Studies have indicated that children born to mothers who had fallen behind or dropped out of school before their first pregnancy have considerably poorer cognitive performance than children born to mothers who were in school or at grade level when they became pregnant or who continued school after their first child was born. A study by Moore and Snyder (1991) examined the effects of early childbearing and the mother's school progress on the cognitive test scores of their three to seven-year-old first born children. The authors utilized a sample of children born to young women in the National Longitudinal Survey of Youth. The sample consisted of 626 Whites, 376 African

Americans, and 240 Hispanics. The mother's cognitive attainment was measured by the Armed Forces Qualifying Test (AFQT), a subset of the Armed Services Vocational Aptitude Battery (ASVAB). Children's cognitive attainment was measured by the Peabody Picture Vocabulary Score (PPVT), a word knowledge measure. The authors conducted analyses separately for Whites, African Americans, and Hispanics "because the scores for these groups differ greatly and because cognitive tests can be unfair to racial or ethnic minorities because of cultural bias" (p. 615).

Results showed that the cognitive achievement of young mothers is a significant predictor of the child's cognitive attainment among Whites and African-Americans. Results for Hispanics revealed that the AFQT variable becomes nonsignificant in multivariate models. The authors found that the effect of the AFQT is always significant for African-American and Whites even in models controlling for a disadvantaged maternal background, delinquency and drug use, low educational aspirations, and the child's early experiences. The authors also concluded that among children born to young mothers, there is no significant difference in the PPVT scores of children born to dropouts and mothers attending school but behind grade. In contrast, the scores of children born to women who were enrolled in a postsecondary education program are significantly higher for each group.

Maternal education

Several studies have found that a disproportionate number of teens who become parents have difficulties in school, drop out of school, and score poorly on measures of educational aptitude. Moreover, long-term studies of children born to adolescent mothers indicate that their children perform better in school and show better adjustment if their mothers have completed high school or obtained some postsecondary education.

Hayes (1987), who summarized most of the studies that have been done on adolescent sexuality, pregnancy, and childbearing, concluded that low scores on cognitive assessments by the children of adolescent mother are related to family structure, that is, single parenthood, maternal education, or mother's limited schooling, and larger family size. However, "mother's education has been shown to be most significant" (p. 135).

Furstenberg, Brooks-Gunn and Morgan (1987) in their 17-year study in Baltimore found that academic ability is one source of subsequent variability in the life course of both the teenage mother and her offspring. The authors concluded that adolescents mothers who do not have a high school degree were more likely than their peers to have a child who had failed a grade.

Similarly, Duncan and Brooks-Gunn (1997) suggested that mothers' education is a strong and consistent predictor of children's outcomes - from IQ test scores at age five through ages nineteen and twenty.

In a comprehensive review of research related to adolescent parenthood, Luster and Brophy-Herb (in press) proposed that mothers who achieved high levels of education may value education more than other mothers and create home environments that are

conducive to educational success. Moreover, high maternal education may contribute to higher levels of family income, and children in these families may be less likely to live in poverty, to live in neighborhoods with high concentrations of poverty, or to attend schools that are serving high numbers of economically disadvantaged children.

Family Size

Furstenberg, et al. (1987) conducted a 17-year comprehensive study in Baltimore. In this study, data from a sample of 5-year-old children of adolescent mothers were analyzed. The key measure used in the analysis was the Preschool Inventory. A score of 50 indicates that the student is ready for school. Observed scores ranged from 2 to 99 with a mean of 62.3.

Results showed that having a sibling decreased Preschool Inventory scores by 7.7 points. The authors also concluded that adolescents who have more siblings tended to repeat a grade in school.

Similarly, Duncan and Brooks-Gunn (1997) indicated that children born in larger families tend to have worse outcomes in academic ability than those in smaller families. Specifically, the authors suggested that providing a given level of quality education is more expensive in large families.

Luster and Brophy-Herb (in press) have indicated that children of teenage mothers are more likely than their peers to share the limited resources that are available in the family with closely-spaced siblings. Moreover, having several children is associated with lower HOME inventory scores (Luster & Dubow, 1990).

Studies also show that adolescent mothers who have rapid subsequent births are more likely than other adolescent mothers to be younger (Luster & Brophy-Herb, in press; Kalmuss & Namerow, 1994; Mott, 1986), low achieving students (Luster & Brophy-Herb; Kalmus & Namerow; Polit & Kahn, 1986), psychologically distressed (Musick, 1993), and have parents with low levels of education and incomes (Kalamuss & Namerow; Mott; Musick).

Poverty

One of the most significant stressors for adolescent mothers is poverty (Luster & Brophy-Herb, in press). A high proportion of adolescent mothers live in poverty particularly while their children are young (Hotz et al., 1997; Maynard, 1996). Moreover, poverty is associated with poor developmental outcomes in children born to adolescent mothers (Dubow & Luster, 1990; Furstenberg et al., 1987). Brooks-Gunn and Duncan (1997) examined the consequences of poverty for children. The authors analyzed data sets from the Panel Study of Income Dynamics (PSID), the National Longitudinal Survey of Youth (NLSY), children of the NLSY (the follow-up of the children born to the women in the original NLSY cohort), the National Survey of Families and Households (NSFH), the National Health and Nutrition Examination Survey (NHANES), and the Infant Health and Development (IHDP) study.

Results of analyses indicated that children living below the poverty level are 1.3 times as likely as nonpoor children to experience learning disabilities and developmental delays. The poorer children scored between 6 and 13 points lower on various standardized tests of IQ, verbal ability, and achievement. The authors suggested that these differences

are large from an educational perspective because a 6 to 13 points difference might mean the difference between being placed in a special education class or not. Moreover, the effects of poverty on children's cognitive development occur early.

Additionally, Griffore and Walker (1996) examined the relative influences of short-run poverty, long-run poverty, child characteristics, mother characteristics, the home environment and neighborhood characteristics on the cognitive ability of five-year-old children. The sample was comprised of 305 children from the NLSY 1986-92 child and mother data set. The analysis focused on children who were five-years-old in 1992. OLS regression was used to determine the effects of selected variables on PPVT-R Scores. The variables that were entered in the regression equation included: (1) Neither Black nor Hispanic (a created dummy variable), (2) Mother's Highest Grade in School, (3) Short-term poverty, and (4) Long-term poverty.

The results indicated that longer-term poverty has a significant negative effect on PPVT-R Scores. Further, mother's educational attainment and being neither Black nor Hispanic had a significant positive effects on PPVT-R Scores. In addition, when neighborhood problems was added to the model, the R² increased; however, neighborhood problems was not a significant predictor of PPVT-R Scores. The authors indicated that when a final variable, HOME inventory, was added to the model, the R² increased. All of the variables in the model, except for HOME and being neither Black nor Hispanic, became non-significant predictors.

The authors employed an additional regression analysis to predict HOME scores. The results showed that the mother's highest grade in school and being neither Black nor

Hispanic were significant predictors of HOME. Neighborhood problems was also a significant predictor. Based on the regression analysis, the authors concluded that HOME scores and being neither Black nor Hispanic are the best predictors of PPVT-R Scores. The authors indicated that the reason for this result may be because long-term poverty, short-term poverty, mother's highest grade in school and neighborhood problems indirectly influence PPVT-Scores through their effects on the HOME environment.

Similarly, Zill, Moore, Smith, Steif, and Coiro (1992) examined the circumstance of children in families that receive Aid to Dependent Children (AFDC) and compared them with children in other families. The sample included representative data on the home environments and development of national samples of welfare children through two federally sponsored data collection programs: the National Health Interview Survey on Child Health (NHIS-CH; National Center for Health Statistics, 1989) and the Child Supplement to the National Longitudinal Survey of the Labor Market Experience of Youth (NLSY-CS; Baker & Mott, 1989).

Results indicated that children in families that receive AFDC are significantly less healthy, more than twice as likely to fail in school, and more likely to present serious conduct and discipline problems to their teachers and parents than nonpoor children. The authors noted that poor children from families that did not receive welfare had equivalent levels of health and behavior problems and nearly as severe learning problems as those from AFDC families. The authors also conducted a study on school children aged 7 - 17 years old. Results indicated that 60% of those children from AFDC families were described by their parents as ranking in the bottom halves of their classes. Thirty-four

percent of the AFDC pupils had repeated a grade in school, compared with 15% of nonpoor pupils.

Further, Luster and Dubow (1990) indicated that Black adolescent mothers were more likely to be living in poverty than the other adolescent mothers, even though they completed more years of education, on average than White or Hispanic adolescent mothers. Luster and Brophy-Herb (in press) revealed that the high rates of poverty among teenage parents are also due in large part, to the disadvantaged backgrounds and characteristics, such as low academic aptitude, of many young mothers.

Quality of the home environment

Studies have suggested that there is an association between verbal intelligence and the home environment. In their study, Luster and Dubow (1992) tried to determine if the quality of the home environment is predictive of children's cognitive competence when maternal intelligence is controlled. Secondly, the authors examined the relationship between home environment, maternal intelligence and verbal intelligence for two groups of children, preschoolers (ages 3 to 5) and children in the early elementary school (ages 6 to 8). The above study was based on analyses of the National Longitudinal Survey of Youth (NLSY) merged mother-child data set (Baker & Mott, 1989). The authors utilized a sample consisting of 2,168 children. There were 1,336 preschoolers, (M age = 52.46 months, SD = 10.19) and 832 early elementary school children (M age = 87.15 months, SD = 10.52). In each age group, separate analyses were also conducted for African American, Hispanic, and White children.

The home backgrounds of the children showed that 65% came from two-parent

households, and 85% of the mothers completed high school. The mean family income was \$18,061, and 38% of the families were living below the poverty line. Maternal intellectual ability was measured by the Armed Forces Qualification Test (AFQT). The quality of the home environment was measured by the Home Observation for Measurement of the Environment (HOME-SF) inventory. The child's level of intellectual ability was measured with the Peabody Picture Vocabulary Test-Revised (PPVT-R).

Results indicated that for the total sample of 3 to 6 years old, the correlation between home environment and child PPVT-R was the same magnitude as the correlation between maternal intelligence and child PPVT-R ($r_s = .47$ and $.46$, respectively). For the total sample of 6 to 8 year olds, the correlation between maternal intelligence and child PPVT-R was larger in magnitude than the correlation between home environment and PPVT-R ($r_s = .56$ and $.36$ respectively). Multiple regression analyses showed that in each ethnic group, both maternal intelligence and quality of the home environment are related to child's verbal intelligence for each age group.

Similarly, Griffore and Phenice (1997) examined environmental variables that may be associated with the cognitive development of young children. The sample comprised 1, 864 cases extracted from the NLSY and child variables from 1992 and previous years. Data were selected for children aged 72 months to 119 months. The dependent variable was the child's PPVT-R Score. The predictor variables were assessed with the following measures: the Home Observation for Measurement of the Environment Standard Score (HOME), the total number of years in poverty, the highest grade in school completed by the child's mother and neighborhood problems.

The results indicated that families influence the developmental outcomes of their children. Further, a substantial proportion of the PPVT variance was explained by the HOME inventory. The authors found that some additional variance was explained by perception of neighborhood problems. However, very little additional variance was explained by family poverty and mother's educational attainment.

Duncan and Brooks-Gunn (1997) looked at whether the effects of mother's education and family income are mediated by the child's home environment. Results of their study showed that variations in the provision of cognitive and emotional stimulation in the home reduced the effects of the income-to-needs ratio on all of the child's cognitive measures at each developmental period; however, income continued to be a significant explanatory variable.

Neighborhood

Previous studies have indicated that the impact of living in stressful neighborhoods and communities derives from the impact of that stress on parents, most notably on mothers. Garbarino and Kostelny (1993) examined the ways in which conditions within impoverished communities shape the lives of families within those communities. A structured interview was conducted with 20 mothers: 10 who lived in a high rise public housing development and 10 residents of a nearby community. In the public housing sample, all 10 mothers named shooting as the most serious danger for their children. There is an indication that all the children in the public housing sample had experienced first-hand encounters with shooting by age 5. However, the nonhousing development mothers reported a perception of danger in keeping with U.S. parents generally, that is,

revealing concerns with kidnaping, drugs, and auto accidents. The authors suggested that despite their low-income status, the nonpublic housing mothers lived in a world more like mainstream United States than the isolated housing development parents.

Furthermore, the mothers living in public housing believed that their children were aware of the dangers, and described their children's behaviors showing this belief. In sum, the authors suggested that neighborhoods and communities differ significantly and dramatically in the degree to which they challenge parents and children to cope with environmental violence. Additionally, neighborhood characteristics were predictive of child outcomes (Duncan, Brooks-Gunn, & Klebanov, 1994; Luster & Brophy-Herb, in press).

Moreover, adolescent mothers who lived in neighborhoods that were rated by family advocates as being unsafe and low in quality of life consistently received low scores on various measures of parenting quality (Luster, in press).

Summary

The literature review has supported Bronfenbrenner's (1989) theory that the environment has an impact on human development at all levels and in different ways. The literature has indicated that there are individual differences among children of adolescent mothers. Earlier studies using the NLSY data set did not study the effects of neighborhood problems on the verbal intelligence of children of adolescent mothers. It is important to study the effects of the neighborhood problems because the neighborhood context is likely to influence family life which, in turn, influences the development of children. Neighborhood characteristics may also have an effect on children's development

that is not mediated by home environment. The present study differs from previous studies because the effects of neighborhood problems is part of the study. In addition, this study is needed because few studies have been done on verbal intelligence among older children of adolescent mothers.

Chapter III

METHODOLOGY

The methods used to address the questions raised previously are described in this chapter. The chapter is divided into the following sections: 1) Sample Selection, 2) Sample Description, 3) Instruments, 4) Data Analyses.

Sample Selection

The Center for Human Resource Research (CHRR) at the Ohio State University and National Organization for Research Center (NORC) at the University of Chicago were responsible for the design, collection, and dissemination of the National Longitudinal Survey of Youth (NLSY) data set. The sample of the NLSY is a multistage stratified random sample, identified through random selection of counties, and enumeration of districts-block groups, and then a screening of 75,000 dwellings. Of the 12,781 civilian youth identified for the original sample in the fall of 1978, 90% (11,406) were interviewed in 1979. The NLSY has one of the highest retention rates of any national sample. The retention rate is above 90% over the subsequent 10 years. A total of 11,406 youth (5,828 women and 5,578 men) who were 14-21 years of age on January 1, 1979, constitute the civilian sample, and this includes a nationally representative cross-sectional sample (n=6,111) and a supplementary sample (n=5,295), representative of Black, Hispanic, and low-income White youths.

Of the 5,828 civilian women originally in the NLSY sample, 3,053 were identified as having had 5,236 children by the 1986 round of the survey. Approximately 96% (n=4,952 boys) of these children were assessed in 1986, with the vast majority reassessed in 1988 and 1990. The ages of the children at each point ranged from less than 1 year to about 15 years in 1986, 17 years in 1988, and 19 years in 1990.

The 1992 data set is the 14th round of the NLSY data collection. Tests were administered in the mother's and child's home. A total of 4,535 women were interviewed in 1992. Six thousand, five hundred and nine children were assessed in 1992. The number of children age ten and over was 2,079 in 1992. Twenty-three percent of these children were Black. Please see Appendix B for The Human Subject Approval letter.

Sample Description

Table 1 presents a description of the sample used in this study and descriptive statistics for key variables in the study. In this section, the discussion will focus mainly on the child, maternal and family characteristics.

Table 1: Sample Characteristics

Variables	N	Mean	SD	%
<u>Child characteristics</u>				
Age (months)	228	191.76	14.85	
Gender	228			
Male	119			52%
Female	109			48%
Peabody Picture Vocabulary Test (PPVT) standard score	195	78.75	14.68	
<u>Maternal characteristics</u>				
Age (years) of mother at first birth	228	16.14	1.29	
Age (years) of mother at interview in 1992	228	32.59	1.58	
Number of Children of the mother	228	2.95	1.44	
Educational Background	228	11.75	5.91	
Armed Forces Qualifying Test (AFQT) Score	221	443.39	181.34	
HOME Total Standard Score	220	81.85	15.52	
Neighborhood Problems Scale	201	17.44	5.56	
<u>Family characteristics</u>				
Marital Status				
Never married	81			35.5%
Married	59			25.9%
Other (divorced, separated, or widowed)	88			38.6%
Poverty				
% in poverty	102			55.7%
% not in poverty	81			44.3%
Residence				
Lived in Urban area				77%
Lived in Rural area				23%

Poverty status was coded as follows: 0 = not in poverty, 1 = poverty

Gender of child was coded as follows: 0 = female, 1 = male

Marital status was coded as follows: 1 = never married, 2 = married, 3 = other (divorced, separated or widowed)

Residence was coded as follows: 0 = rural, 1 = urban

Frequencies and descriptive analyses indicated that there were 228 children of African American adolescent mothers in the sample. Fifty-two percent were male and 48% female. The mean age was 191.76 months, ($SD= 14.85$). The children's mean score on the Peabody Picture Vocabulary Test-Revised (PPVT-R) was 78.75 ($SD= 14.68$). Only 195 children of the 228 in the sample took the test.

Analyses of the maternal characteristics showed that there were 228 African American adolescent mothers in the sample. The mean age of the mother at first birth was 16.14 ($SD= 1.29$). The mean age of mother at the 1992 interview was 32.59 ($SD= 1.58$). The average number of children of the mother was 2.95 ($SD= 1.44$). The average number of years of education completed by mothers was 11.75 ($SD= 5.91$). The mean on the Armed Forces Qualifying Test (AFQT) was 443.39 ($SD= 181.34$). Only 201 of the 228 mothers in the sample completed the AFQT.

The mean of the HOME total standard score was 81.85 ($SD= 15.52$). Data on the home was collected for 220 of the 228 adolescents in the sample. The average score on the neighborhood problems scale was 17.44 ($SD= 5.56$). Two hundred and one mothers responded to the items on the neighborhood problems scale.

Analyses of family characteristics indicated that 35% of the mothers were never married, 25% were married and 38.6% were other (divorced, separated, widowed). Fifty-five percent of the mothers were in poverty and 44% were not in poverty. The mean income level for the sample was \$30,709.93 ($SD= \$8,683.54$). Seventy-seven percent

lived in urban areas, and 23% lived in rural areas.

Instruments

The dependent variable, children's verbal intelligence, was measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R) (Dunn & Dunn, 1981). The PPVT-R is a word knowledge measure. This is a receptive vocabulary test. The examiner reads each word aloud and the child is asked to choose which of four pictures best illustrates the word. Other studies have indicated that the PPVT-R is widely recognized as one of the most reliable and valid measures of verbal intelligence (Moore & Snyder, 1991). The PPVT was standardized with a mean of 100 and a standard deviation of 15.

The independent variable, maternal intelligence, was measured by the Armed Forces Qualifying Test (AFQT). The AFQT is part of the Armed Services Vocational Aptitude Battery (ASVAB), an instrument used by the military to determine eligibility for specific military positions. The AFQT is the sum of four subtests of the ASVAB (word knowledge, arithmetic reasoning, paragraph comprehension, and part of the numeric operations subtest). The AFQT was administered to the NLSY sample in 1980. The mean of the AFQT was approximately 600 and the standard deviation was 220 for the mothers in the NLSY.

The independent variable, maternal education, was computed based on the number of years of education completed by the mother by 1992. The National Longitudinal Study of Youth (NLSY) is the source of this measure. The independent variable, family size, was determined in an interview with the mother in the 1992 round of the NLSY.

The independent variable, poverty status, was computed based on Federal guidelines regarding level of total family income and family size. Poverty status is coded as 1 if the family is in poverty and 0 if the family is not in poverty.

The independent variable, quality of the home environment, was measured by the Home Observation for Measurement of the Environment-Short Form (HOME-SF). This measure is a modification of the HOME inventory (Caldwell & Bradley, 1984). Each item was scored as 0 (indicating the absence of quality stimulation) or 1 (indicating the presence of quality stimulation). A score is computed by counting the number of items scored "yes." Higher scores indicated more supportive home environments. The mean of the HOME total standard score was 100 and the standard deviation was 15. A copy of the instrument can be found in Appendix A.

The independent variable, neighborhood, was measured by the neighborhood problems scale. The National Longitudinal Study of Youth (NLSY) is the source of the neighborhood problems scale. A sample item is "neighborhood people don't respect rules/law." The 9 items of this scale were summed to produce a total neighborhood problems scores with higher scores reflecting more problems. A copy of the instrument can be found in Appendix A. The reliability estimate for the neighborhood scale is shown in Table 2.

Reliability Estimates for the Neighborhood Problems Instrument

A reliability analysis for the neighborhood problems instrument was conducted. The results are presented in Table 2. The results indicated a reliability coefficient of .87.

Table 2: Reliability Estimates for the Neighborhood Problems Item

Item	Corrected item Total correlation	Squared Multiple Correlation	Alpha If item deleted
Crime and violence	.7134	.5662	.8518
People don't care	.5979	.4163	.8616
People can't find jobs	.5796	.3589	.8630
Not enough police protection	.7316	.5776	.8509
People don't respect rules/law	.7765	.6746	.8456
Run down buildings	.5120	.3454	.8682
Children's supervision	.7801	.6295	.8451
Not enough transportation	.2378	.2385	.8904
Neighborhood rating	.6867	.5656	.8576
Reliability Coefficients	9 items		

Alpha = .8736 Standardized item alpha = .8778

Data Analyses

The present study is a correlational study. Pearson Product Moment Correlations were computed to address the questions regarding the relationship between verbal intelligence and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment, and neighborhood characteristics. Also, zero-order correlations were computed to examine the relation among the predictor variables. Multiple regression equations were computed to examine the combined effect of the predictor variables on verbal intelligence. Multiple regression analysis was also conducted with HOME-SF scores as the dependent variable. The independent variables in this analysis were maternal intelligence, maternal education, family size, poverty status and neighborhood characteristics. This analysis was conducted to explore the possibility that quality of the home environment mediates the relation between some of the predictor variables and PPVT-R scores.

Chapter IV

RESULTS

Introduction

The results of the statistical analyses are presented in this chapter. The results will be presented in four parts. First, the relation among the predictor variables will be presented. Second, the relation between the dependent and predictor variables are examined. Third, the combined effect of the predictor variables on verbal intelligence will be discussed. Finally, the possibility that quality of home environment mediates the relation between PPVT scores and the other predictor variables will be explored.

Relations among the Predictor variables

First, the zero-order correlations among the predictor variables were computed. The results of these analyses are reported in Table 3. The results showed that there is a strong association between maternal intelligence and maternal education. Mothers with higher scores on the AFQT tended to obtain higher levels of education. A relationship also exists between maternal intelligence and HOME standard scores. Mothers with higher scores on the AFQT are likely to score higher on the HOME inventory. There was a negative association between maternal intelligence and neighborhoods problems. Mothers with lower scores on the AFQT are likely to live in neighborhood with many problems. A negative relation was also observed between maternal intelligence and poverty status. Mothers with lower scores on the AFQT appear to live in poverty. There was no relation between maternal intelligence and family size.

The results indicated that there is an association between maternal education and HOME. Mothers with higher levels of education obtained higher scores on the HOME. There was also a relation between maternal education and neighborhood characteristics. Mothers with higher levels of education tended to live in neighborhoods with fewer problems. A negative relationship existed between maternal education and poverty status. Mothers with fewer years of education were more likely to live in poverty. A moderate relationship existed between maternal education and family size. Mothers with higher levels of education have fewer children on average. There was no relation between neighborhood characteristics and family size. A relation existed between poverty status and family size. Mothers in poverty tended to have more children.

Relations between verbal intelligence and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment and neighborhood characteristics.

Second, Pearson Product Moment Correlations were computed to determine the relations between the adolescents' PPVT scores and maternal intelligence, maternal education, family size, poverty status, the quality of the home environment, and neighborhood characteristics. The results of these analyses are reported in Table 4. The results showed that there is a moderate association between adolescents' verbal intelligence and maternal intelligence. Adolescents with higher scores on the PPVT tended to have mothers who scored higher on the AFQT.

Table 3: Zero- Order Correlations: Relations Among The Predictor Variables

	Maternal intelligence (AFQT)	Maternal education	HOME standard scores	Neighbor- hood problem scale	Poverty status	Number of children
Maternal intelligence (AFQT)	1.000					
Maternal education	.61**	1.000				
HOME standard score	.27**	.27**	1.000			
Neighbor- hood problem scale	-.33**	-.35**	-.16*	1.000		
Poverty status	-.37**	-.45**	-.26**	.38**	1.000	
Number of children	-.11	-.28	-.08	.15	.27*	1.000

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

There was no relation between HOME and neighborhood characteristics. The mothers scores on the HOME standard scores do not appear to be affected by the neighborhood characteristics. A moderate relationship exists between HOME and poverty status. These results indicated that mothers who lived in poverty tended to score lower on the HOME inventory. The mothers score on the HOME standard score is not associated with the number of children of the mother. There is a relation between neighborhood characteristics and poverty status. The results indicate that neighborhood problems are associated with poverty status.

Table 4: Correlations between adolescents' verbal intelligence and maternal intelligence, maternal education, family size, poverty status, the quality of home environment, and neighborhood characteristics.

	Maternal intelligence (AFQT)	Maternal education	HOME score	Neighbor- hood problem	Poverty status	Number of child
PPVT score	.47**	.45**	.23**	-.31**	-.30**	-.19**

**** p < .01**

A relationship also exist between adolescents' verbal intelligence and maternal education. Adolescents with higher scores on the PPVT are likely to have mothers with higher levels of education. There is a modest association between adolescents' verbal intelligence and the quality of the home environment. Adolescents who scored higher on the PPVT tended to be reared in advantaged home environments. There is a negative relationship between adolescents' verbal intelligence and neighborhood problems. Adolescent children who scored lower on the PPVT were likely to be reared in neighborhoods with more problems. A negative association was shown to exist between verbal intelligence and poverty status. Adolescents who scored lower on the PPVT are more likely to be living in poverty. There is a negative relation between verbal intelligence and family size. Adolescents who scored lower on the PPVT tended to have more siblings.

Combined effect of the predictor variables on verbal intelligence

The third step in the analyses was to examine the combined effect of the predictor

variables on adolescents' verbal intelligence. A multiple regression analysis was conducted to examine the combined effect of the predictor variables on verbal intelligence. The result of this analysis are reported in Table 5. Results indicated that maternal intelligence was a highly significant predictor of PPVT scores.

Table 5: Multiple Regression Analyses: Predictors of PPVT Scores

Predictors	Standardized Coefficients Beta	t	Sig.
Maternal intelligence (AFQT)	.299	3.291	.001
Maternal education	.198	2.042	.043
Number of children	-.073	-.911	.364
HOME score	.152	2.013	.046
Poverty status	-.088	-1.015	.312
Neighborhood scale	-.040	-.498	.619

Dependent Variable: Peabody Picture Vocabulary Test Score (PPVT score)

Note. Betas presented are standardized betas.

Maternal education and HOME were also significant predictors of PPVT scores. Number of children, Poverty status, and neighborhood problems were not significant predictors of PPVT scores when other factors were controlled. Together, the predictor variables explained 33% of the variance in PPVT scores. The F value for the overall model was 10.01 ($p < .001$).

Combined effect of the predictor variables on the quality of home environment

Multiple regression were also conducted to examine the combined effect of the predictor variables on home environment. The results of this analyses are reported in Table 6. Contrary to expectations, none of these predictor variables was significantly related to home environment scores when other factors were controlled. These results do not support the hypothesis that quality of the home environment mediates the relation between some of the predictor variables and PPVT scores.

Table 6: Multiple Regression Analyses: Predictors of Home Scores.

Predictors	Standardized Coefficients Beta	t	Sig.
Maternal intelligence (AFQT)	.054	.541	.589
Maternal education	.171	1.607	.110
Poverty status	-.101	-1.048	.297
Neighborhood scale	-.069	-.788	.432
Number of children	.038	.444	.658

Dependent Variable: HOME standard score.

Note. Betas presented are standardized betas.

Because of missing data, the analyses for HOME score was done on 148 subjects.

Chapter V

DISCUSSION AND IMPLICATIONS

The main objective of the present study was to determine the relationship between adolescents' verbal intelligence and maternal intelligence, maternal education, poverty status, the quality of the home environment, and neighborhood characteristics. To begin this chapter, findings regarding each of the research questions presented on pages 4 - 5 are summarized and discussed.

The first question involved examining the relationship between adolescents' verbal intelligence and maternal intelligence among 14 to 18 year old children of African American adolescent mothers. Results of the analyses indicated that there is a significant relationship between adolescents' verbal intelligence and maternal intelligence. Adolescents' who scored higher on the PPVT are likely to have mothers with higher levels of intelligence.

The data from this study are consistent with Moore and Snyder's (1991) study which indicated that "the cognitive achievement of young mothers is a significant predictor of the child's cognitive attainment among Whites and African Americans" (p. 621). The authors noted that the effect of maternal intelligence is always significant for African Americans and Whites, even in models controlling simultaneously for a disadvantaged maternal background, delinquency and drug use, low educational aspirations and the child's early experiences. Similarly, Luster & Brophy-Herb (in press) suggested that the

mother's cognitive ability is more important than maternal age for predicting the cognitive outcomes of White and African American children of teen mothers.

The second question was to examine the relationship between adolescents' verbal intelligence and maternal education. Results of the regression analyses indicated that a relationship exists between adolescents' verbal intelligence and maternal education, when other factors are controlled. The zero-order correlations indicated that the relations between PPVT scores and maternal intelligence and maternal education are of similar magnitude. This result supports the hypotheses that adolescents who score higher on the PPVT appears to have mothers who have higher levels of intelligence and higher levels of education.

The data from this study are consistent with a comprehensive study conducted by Furstenburg, Brooks-Gunn and Morgan (1987). Their study concluded that children perform better in school and show better adjustment if their mothers have completed high school or obtained some postsecondary education.

The third question examined the relationship between adolescents' verbal intelligence and family size (number of children of the mother). Multiple regression analysis showed there was no relation between adolescents' verbal intelligence and family size, when other factors were controlled. This finding is not consistent with past research. However, many of the earlier studies focused on educational attainment rather than PPVT scores as the outcome.

The fourth question involved examining the relationship between adolescents' verbal intelligence and poverty status. The zero-order correlations showed that a negative

relationship exists between adolescents' verbal intelligence and poverty status. However, in the multiple regression analysis poverty was not a significant predictor of PPVT scores. The possible reason why poverty was not significant in the multiple regression analysis may be because many of the children who were not living in poverty lived in families with relatively low income levels. If more high income families had been included in the sample, the effects of poverty may have been more striking.

The fifth question was to examine the relationship between adolescents' verbal intelligence and the quality of the home environment. Results of the correlational analyses showed that there is a modest association between adolescents' verbal intelligence and the quality of the home environment. HOME scores were also predictive of PPVT scores when the other predictor variables were controlled. This findings is consistent with Luster and Dubow's (1992) results showing that HOME scores predicted the PPVT scores of younger children when maternal intelligence was controlled.

The sixth question examined the relationship between adolescents' verbal intelligence and neighborhood problems. A negative association was found between adolescents' verbal intelligence and neighborhood problems in the bivariate analyses, but the relation was not significant in the multiple regression analysis. The possible explanation why neighborhood problems did not predict PPVT scores could be because many of the families in the sample lived in neighborhoods with many problems. If more families from neighborhoods with few problems had been included in the sample, the effects of neighborhood characteristics may have shown a different result. Many questions remain regarding the extent to which neighborhood characteristics affect child

development and the process by which neighborhood characteristics influence family processes and child outcomes.

The seventh question was to determine if the quality of the home environment mediate the relation between the other predictor variables (e.g., neighborhood characteristics) and PPVT-R scores.

This study also tried to determine which of the predictor variables were significantly related to PPVT-R scores when the other variables were controlled. Three variables were significantly related to PPVT scores in the regression analysis - - maternal intelligence, maternal education, and HOME scores. Adolescents tended to have higher PPVT scores if their mothers had higher scores on the AFQT, achieved higher levels of education, and provided relatively supportive home environments. However, the analyses did not support the model as it was drawn in Figure 1. That is, the HOME did not mediate the relation between the PPVT and the other predictor variables. Path analysis was not used to test the conceptual model shown in Figure 1 because none of the other predictor variables was predictive of HOME scores in the regression analysis.

Conclusions

This study has shown that there is an association between adolescents' verbal intelligence and maternal intelligence, maternal education and the quality of the home environment. Adolescents, who scored higher on the PPVT, were likely to have mothers who had higher levels of intelligence, higher levels of education and provided relatively supportive home environments.

This study also showed that poverty was not predictive of PPVT scores in the

regression analyses. This finding is surprising and it is not clear why the results of this study differ from the findings of other studies that have examined the relation between children's cognitive competence and poverty. As noted earlier, if more high income families had been included in the sample, the effects of poverty may have been more striking. Another surprising finding is that neighborhood problems did not predict PPVT scores. Results also indicated that there was no relation between adolescents' verbal intelligence and family size, when other factors were controlled. As noted earlier, this finding may not be consistent with earlier studies because the present study focused on PPVT scores instead of educational attainment.

The finding that none of the other predictor variables was significantly related to scores on the HOME inventory in the regression analysis is also inconsistent with many earlier studies. The reason this results differ from earlier studies could be because most earlier studies focused on younger children. Another reason may be that the HOME inventory was developed for children in the elementary grades and may not be ideally suited for high school students. The findings in this study will be of interest to researchers, educators, and policy makers.

Implications

In light of the above conclusions, this study supports the Panel on Adolescent Pregnancy and Childbearing (Hayes, 1987) which recommended: (1) Educational support and remediation to help teenage parents complete high school, and (2) parenting education to enhance the teenage parent's ability to provide a supportive environment in the home. The findings from this present study linking maternal intelligence, maternal

education and quality of the home environment to adolescents' PPVT scores provide additional support for these recommendations.

Limitations

This study focused on African American families. Therefore the generalizability of the current study may be limited. It would have been useful to utilize more information provided by the adolescents, for example, adolescents' perceptions of their neighborhoods and their perceptions of school. It would have been helpful to have a version of the HOME inventory developed specifically for high school students. Additional information about the adolescents' experiences in the home would also have been helpful. Other aspects of parenting, such as how closely the parents monitor their children's activities and work with them on their homework, may also be important for predicting the cognitive competence of the adolescents.

The HOME inventory was measured at only one point in time for this study, 1992. Different results might have been obtained if earlier assessments of the HOME had been utilized. Poverty was also measured at one point in time. Given that families move in and out of poverty, the duration of poverty may be more predictive of developmental outcomes in children than poverty measured at a single point in time.

Suggestions for Future Research

It would be interesting to determine in future studies if the same relationships among variables that were found in this present study will be found with other ethnic groups. It is recommended that other outcomes, such as high school completion be examined with the NLSY as more of the adolescents in the survey reach young adulthood.

It would also be interesting to examine the relationship between cognitive ability and father's presence in the home in future studies.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Baker, P.C., & Mott, F.L. (1989). NLSY child handbook 1989: A guide and resource for the National Longitudinal Survey of Youth 1986 child data. Columbus: Center for Human Resources Research, The Ohio State University.
- Baldwin, W., & Cain, V. (1980). The children of teenage parents. Family Planning Perspectives, 12, 34-43.
- Bronfenbrenner, U. (1979). The ecology of human development, Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1989). Ecological systems theory. In R. Vaster (Ed.), Annals of child development-Six theories of child development: Revised formulations and current issues. Greenwich, CT:JAI Press, Inc.
- Bronfenbrenner, U. (1993). The Ecology of Cognitive Development: Research Models and Fugitive Findings. In R. H. Wozniak and K. W. Fischer (eds.), Development in Context: Acting and Thinking in Specific Environments. Hillsdale, N.J.: Erlbaum.
- Brooks-Gunn, J., & Duncan, G. J. (1997). The Effects of Poverty on Children. The Future of Children. Center for the future of children. Vol. 7, No. 2.
- Brooks-Gunn, J., & Furstenberg, F. (1986). The children of adolescent mothers: Physical, academic, and psychological outcomes. Developmental Review, 6, 224-251.
- Brooks-Gunn, J. & Chase-Landsdale, P.L. (1995). Adolescent parenthood. In M. Bornstein (Ed.), Handbook on parenting (Vol. 3) (pp. 113-149). Mahwah, NJ: Erlbaum.
- Caldwell, B.M., & Bradley, R.H. (1984). Home Observation for Measurement of the Environment. Little Rock: University of Arkansas.
- Card, J.J. (1981). Long-term consequences for children of teenage parents. Demography, 18 137-156.
- Card, J.J. (1977). Long-term consequences for children born to adolescent parents. Final report to NICHD, American Institutes for Research, Palo Alto, CA.

- Center for Human Resource Research. 1992. NLSY Handbook 1992. The National Longitudinal Surveys of Labor Market Experience. Columbus: Ohio State University.
- Chase-Lansdale, P., Mott, F.L., Brooks-Gunn, J., & Phillips, D. (1991). Children of the National Longitudinal Survey of Youth: A Unique Research Opportunity. Developmental Psychology, 27, 918-931.
- Dubow, E.F., & Luster, T. (1990). Adjustment of children born to teenage mothers: The contribution of risk and protective factors. Journal of Marriage and the Family, 52, 105-119.
- Duncan, G.J., & Brooks-Gunn, J. (1997). Consequences of Growing up poor. Russell Sage Foundation, New York.
- Duncan, G.J., Brooks-Gunn, J., & Klebanov, P.K. (1994). Economic deprivation and early childhood development. Child Development, 65, 296-318.
- Dunn, L., & Dunn, L. (1981). Peabody Picture Vocabulary Test-Revised. Circle Pines, MN: American Guidance Service.
- Dunn, Lloyd, & F. Markwardt. (1970). Peabody Individual Achievement Tests. Circle Pines, MN: American Guidance Service.
- Furstenberg, F.F., Brooks-Gunn, J., Morgan, S.P. (1987). Adolescent mothers in later life. New York: Cambridge University Press.
- Garbarino, J., & Kostelny, K. (1993). Neighborhood and Community Influences on Parenting. In T. Luster & Okagaki, L. (Eds.), Parenting: An ecological perspective. (pp.203-226). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Griffore, R.J., & Phenice, L.A. (1997). Cognitive gains: A small window to a big picture. National Head Start Association Research Quarterly, 1, 50-52.
- Griffore, R.J., & Walker, R. (1996). Poverty and cognitive ability of five-year olds. Third Beatrice Paolucci Symposium. East Lansing, Michigan State University, March 22.
- Hardy, J.B., Welcher, D.W., & Standley, J. (1987). Long-range outcome of adolescent pregnancy. Clinical Obstetrics and Gynecology, 21, 1215-1232.
- Haveman, R., Wolfe, B., & Peterson, E. (1997). Children of early childbearers as young adults. In R. A. Maynard (Ed.), Kids having kids: Economic costs and social consequences of teen pregnancy, (pp. 257-284). Washington, DC: The Urban

Institute Press.

- Hayes, C. (Ed.) (1987). Risking the future: Adolescent sexuality, pregnancy, and childbearing Vol. 1. Washington, DC: National Academy Press.
- Hotz, V.J., McElroy, S.W., & Sanders, S.G. (1997). The impacts of teenage childbearing on the mothers and the consequences of those impacts for government. In R.A. Maynard (Ed.), Kids having kids: Economic costs and social consequences of teen pregnancy (pp. 55-94) Washington, DC: The Urban Institute Press.
- Klamuss, D.S., & Namerow, P.B. (1994). Subsequent childbearing among teenage mothers: The determinants of a closely spaced second birth. Family Planning Perspectives 26, 149-159.
- Luster, T., & Dubow, E.F. (1990). Predictors of the Quality of the Home Environment that Adolescent Mothers Provide for their school-aged children. Journal of Youth and Adolescence, 19, 475-495.
- Luster, T., & Dubow E.F. (1992). Home Environment and Maternal Intelligence as Predictors of Verbal Intelligence: A Comparison of Preschool and School-Age children. Merrill-Palmer Quarterly, 38, 151-175.
- Luster, T., & Okagaki, L. (1993). Parenting: An ecological perspective. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Luster, T., & Brophy-Herb, H. (In press). Adolescent Mothers and their children. In J. Osofsky & H. Fitzgerald (Ed.) The WAIMH Handbook of Infant Mental Health (Vol. IV): Infant Mental Health in Groups at High Risk.
- Luster, T. (In press). Individual differences in the caregiving behavior of teenage mothers: An ecological perspective. Clinical Child Psychology and Psychiatry.
- Maynard, R. A. (1996). Kids having kids: A Robin Hood Foundation special report on the costs of adolescent childbearing. New York: The Robin Hood Foundation.
- Moore, K.A. & Snyder, N.O. (1991). Cognitive Attainment Among Firstborn Children of Adolescent Mothers. American Sociological Review, 56, 612-623.
- Moore, K.A., Miller, B.C., Glei, D., & Morrison, D.R. (1995). Adolescent sex, contraception, and childbearing: A review of recent research. Washington, DC: Child Trends, Inc.
- Moore, K. (1996). Facts at a glance. Washington, DC: Child Trends, Inc.

- Moore, K.A., Morrison, D.R., and Green, A.D. (1997). Effects on the children born to adolescent mothers. In R.A. Maynard (Ed.), Kids having kids: Economic Costs and social consequences of teen pregnancy, (pp. 145-180). Washington DC: The Urban Institute Press.
- Mott, F. (1986). The pace of repeated childbearing among young American mothers. Family Planning Perspectives, 18, 118-124.
- Musick, J.S. (1993). Young, poor, and pregnant: The psychology of teenage motherhood. New Haven: Yale University Press.
- Patzer, G.L. (1995). Using Secondary Data in Marketing Research: United States and Worldwide. Quorum Books.
- Plomin, R. (1989). Environment and Genes: Determinants of Behavior. American Psychologist 44:105-11.
- Polit, D.F., & Kahn, J.R. (1986). Early subsequent pregnancy among economically disadvantaged teenage mothers. Family Planning Perspectives, 76, 167-171.
- Thomas, R.M. (1996). Comparing theories of child development. Brooks/Cole Publishing.
- U.S. Department of Defense. (1982) Profile of American Youth: 1980 Nationwide Administration of the Armed Services Vocational Aptitude. Washington, DC: Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics).
- U.S. National Center for Health Statistics. (1997). Vital Statistics Report, vol. 43, No. 12. The National Data Book.
- Wadsworth, J., Taylor, B., Osborn, A., & Butler, N. (1984). Teenage mothering: Child development at five years. Journal of Child Psychology and Psychiatry, 25, 305-313.
- Zigler, E.F. (1987). "Head Start and Legislative Approaches to promoting Healthy families. Talk given at the National Institutes of Health, Bethesda MD.
- Zill, N., Moore, K.A., Smith, E.W., Steif, T., and Coiro, K.N. (1993). Children in welfare families. Children and Youth Services Review 14: 7-27

APPENDIX A

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 items that were not included on the original versions of the HOME but were added to the HOME-Short Form for the National Longitudinal Survey of Youth. The subscales from which the items were taken are also included.

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 members 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 item is: All visible rooms in the house are reasonably clean and minimally cluttered. This item was divided into two items for the HOME-Short Form)

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-Short Form).**

*** About how often does your child read for enjoyment?**

*** All visible rooms in the house are minimally cluttered (see item 55).**

MEASURES OF NEIGHBORHOOD CHARACTERISTICS

The National Longitudinal Study of Youth (NLSY) is the source of the neighborhood problems scale. Sample items are listed below. These 9 items were summed up to produce a total neighborhood problems scale with high score reflecting more problems.

The Neighborhood Problems Scale

1. How would you rate your neighborhood as a place to raise children?
5 Excellent 4 Very good 3 Good 2 Fair 1 Poor
2. Too many parents don't supervise children
3 Big problem 2 Somewhat of a problem 1 Not a problem
3. Crime and violence
3 Big problem 2 Somewhat of a problem 1 Not a problem
4. People don't care what goes on in neighborhood
3 Big problem 2 Somewhat of a problem 1 Not a problem
5. Lots of people who can't find jobs
3 Big problem 2 Somewhat of a problem 1 Not a problem
6. Not enough police protection
3 Big problem 2 Somewhat of a problem 1 Not a problem
7. Neighborhood people don't respect rules/law
3 Big problem 2 Somewhat of a problem 1 Not a problem
8. Abandoned or run-down buildings
3 Big problem 2 Somewhat of a problem 1 Not a problem
9. Not enough public transportation
3 Big problem 2 Somewhat of a problem 1 Not a problem

APPENDIX B

MICHIGAN STATE UNIVERSITY

March 25, 1998

TO: Tom Luster
101 Morrill Hall

RE: IRB#: 98-146
TITLE: COGNITIVE ATTAINMENT AMONG OLDER CHILDREN OF
ADOLESCENT MOTHERS: ENVIRONMENTS AND OUTCOMES
REVISION REQUESTED: N/A
CATEGORY: 1-E
APPROVAL DATE: 03/23/98

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

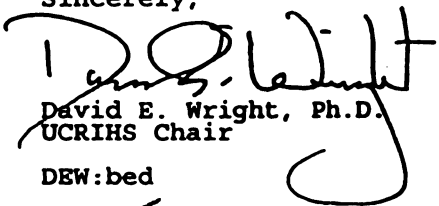
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

**PROBLEMS/
CHANGES:**

Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,


David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Patience Adibe



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University Committee on
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(UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

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