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The University of North Carolina at Greensboro PH.D. 1982

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THE INFLUENCE OF SELECTED SOCIAL VARIABLES ON THE ACHIEVEMENT OF ELEMENTARY SCHOOL CHILDREN IN A TEXTILE MILL COMMUNITY

by

Clementine Elizabeth Barber Hansley

A Dissertation submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctorate of Philosophy

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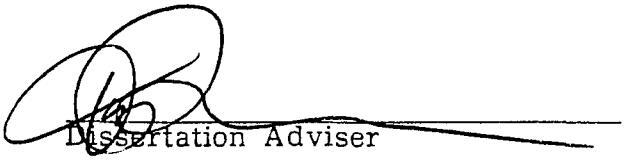

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ABSTRACT

HANSLEY, CLEMENTINE ELIZABETH BARBER. The Influence of Selected Social Variables on the Achievement of Elementary School Children in a Textile Mill Community. (1982)
Directed by: Dr. Thomas W. Draper. Pp. 71.

This study investigated the relationship between the achievement scores of elementary school children and selected social variables peculiar to a textile mill community. The subjects were 264 children in grades one through six. Thirty children were randomly selected from each grade and were classified as achievers or as low achievers according to their scores on the Prescriptive Reading Inventory (grades one through three) or on the California Achievement Test (grades four through six). Children who achieved scores above the mean were classified as achievers; those who scored below the mean were classified as low achievers. Achievers and low achievers were compared to children who were classified according to the special education guidelines as learning disabled or educable mentally handicapped. Data on the social variables were collected from the children's cumulative folders and from informal interviews with parents and teachers.

It was hypothesized that strong negative relationships would be found with the reading and mathematics achievement scores and (a) maternal employment where the father is absent and unemployed, (b) night shift employment of the mother and/or father, (c) after-school supervision away from home; (d) large family size,

and (e) middle child. It was further hypothesized that the classification of children as achievers, low achievers, learning disabled, and educable mentally retarded would be related to the employment shift of mother and/or father, the type of after-school supervision, the place of supervision, birth order, and family size. Race, sex, grade, and education of the mother and father were included among the independent variables.

The data were analyzed through a series of stepwise multiple regression equations and through a discriminant analysis. The findings did not support the hypotheses. The only variables found to be significantly related to achievement were sex and grade. Boys consistently scored lower than girls at every grade level and scores of both boys and girls declined as grade increased.

ACKNOWLEDGMENTS

During the course of this study, I have become indebted to far more individuals than I can possibly list here for their assistance, their suggestions, and their support. I am especially grateful to Dr. Thomas W. Draper for his time and patience in directing this study and to my dissertation committee Dr. Lynn Koester, Dr. Hyman Rodman, Dr. Rebecca M. Smith, Dr. J. Allen Watson, and Dr. Richard Weller for their cooperation and encouragement. I am also grateful to Mr. Henry E. Tann for his suggestions and constructive criticism of this study and to Karen E. Hansley and James F. Hansley, Jr. for their encouragement and support.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Dissertation Adviser _____

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17 July 1982
Date of Acceptance by Committee

7-12-82
Date of Final Oral Examination

TABLE OF CONTENTS

CHAPTER Page

V. DISCUSSION (continued)

LIST OF TABLES

CHAPTER I

INTRODUCTION

Problem Statement

The purposes of this investigation are (1) to study the relationship of reading and mathematics achievement scores of elementary school children in a textile mill community to eight selected social variables; and (2) to identify the social variables and their relationships which discriminate achieving, low achieving, learning disabled, and educable mentally handicapped children.

Definition of Variables

Achievement

The scores of the Prescriptive Reading Inventory (PRI) and the scores of the Prescriptive Mathematic Inventory (PMI) will be used to show the achievement levels of the first, second, and third grade children. The subtest scores for reading and mathematics from the California Achievement Test (CAT) will be used to show achievement levels of the fourth, fifth, and sixth grade children.

Special Education Classification

Learning disabled (LD) and educable mentally handicapped (EMH) will be the special education classifications studied. The children in these classifications are receiving special

education services. LD children have IQ's above 72 and EMH children have IQ's of 72 or below as measured by individual IQ tests.

Regular Class

All children who are not receiving special education services are regular class children. They will be studied in two categories: achievers and low achievers.

Achievers

Children will be classified as achievers if they attained grade-level scores or above in reading as shown by the PRI or the CAT.

Low Achievers

Children were classified as low achievers if they attained below grade-level scores in reading as shown by the PRI or the CAT.

Birth Order

The ordinal position of the child in the family was studied on four levels:

1. Only child, the one who is the only born in his/her family or the child who has no siblings under 19 years of age living at home;

2. youngest child, the child who has no younger siblings living at home, but has at least one sibling under 19 years living at home;

3. middle child, the child who has both younger and older siblings, under 19 years of age living at home;

4. oldest child, the child who has at least one younger sibling living at home but no older siblings over 19 years of age living at home.

Family Size

The size of the family will be determined by the number of children under 19 years of age, living at home. Family size will be studied on three levels:

1. one child family--one child living at home.

2. small family, two or three children under 19 years of age living at home;

3. large family, four or more children; 18 years of age and younger living at home and in high school.

After-school supervision

After school supervision will be studied according to the type of child care or supervision provided immediately after school and the place at which the care takes place.

Type of supervision will be studied on five levels:

1. supervision by parent(s)
2. supervision by adult relative(s)
3. supervision by adult non-relative
4. supervision by older sibling (14 years or older)
5. no adult present

Place of supervision will be studied on two levels:

1. at home
2. away from home

Family Structure

1. nuclear family
2. single parent, mother only
3. single parent, father only
4. extended family, parent and grandparent(s)

Employment Shift

Employment shift will be determined by the time the mother and/or father are employed away from home. Five levels of employment shift will be studied for each parent:

1. day, regular day employment or day shift employment
2. after-evening shift employment
3. night employment
4. rotation shift or other employment which requires the parent to be frequently away from home during the evening and night hours
5. unemployed

Parents' Education

The formal education of each parent will be studied on two levels:

1. Less than high school;
2. high school eompletion.

Hypotheses

H_1 There is a strong positive relationship between achievement scores in reading and maternal employment, employment shift of mother and/or father, type of after school supervision, birth order, and family size.

The strongest negative relationships between reading achievement scores and the independent variables are expected with

(1) maternal employment when the father is unemployed or absent

(2) night shift employment of the mother and/or father

(3) after-school supervision which is away from home

(4) large family size

(5) middle child

H_2 There is a strong positive relationship between achievement scores in mathematics and maternal employment, employment shift of mother and/or father, birth order, and family size.

a. The strongest negative relationship between mathematics achievement scores and the independent variables are expected with

(1) maternal employment when father is unemployed or absent

(2) night shift employment of the mother and/or father

(3) after-school supervision which is away from home and inconsistent

(4) large family size

(5) middle child

3. There is a relationship between the classification of children as achievers, low achievers, learning disabled, and educable mentally retarded and maternal employment, employment shift of mother and/or father, birth order, and family size.

Research Significance

Research shows that factors other than intellectual ability are related to academic achievement. Coleman, et al. (1966) suggested that the underachievement of children during the elementary school years may not be the result of ineffective academic programs and insufficient teaching materials, but may be the result of a variety of factors related to the social, nonacademic environment of individuals. Kelleghan (1977) found that home variables have a stronger relationship to the academic achievement of school-age children than to their intelligence. Many recent studies have investigated the relationship between specific home variables and achievement. Much attention has been focused on the effects of family structure (especially the single-parent, father-absent family) and the effects of maternal employment on school achievement. Fatherless families

and working mothers are of particular interest today because of their high rate of occurrence in our society. The literature on the effects of father absence and on the effects of maternal employment show that neither factor, when treated as a single variable, is related to the achievement of children. However, when studied in relation to other social variables, the findings vary.

Other social variables which have received much attention in relation to achievement are birth order and family size. The results are generally conclusive in these areas; early-born children show greater achievement than later-born children and children from small families usually show greater achievement than children from large families. Little attention has been given to the effects of the relationship of these variables with family structure, maternal employment, or to the effects of their interactions with other variables peculiar to specific populations. For example, the literature shows few studies which have investigated the effects of evening or night-shift employment of parents on the achievement of children. The effects of the type of supervision provided for the child after school during the absence of the working parents has also received little attention.

In a textile-mill community, one of the social variables peculiar to that population is shift employment and shift rotation. The purpose of this study is to analyze the relationship and interaction of shift employment and the type of after-school supervision with other social variables (family structure, family size, birth order, and maternal employment) to the achievement test scores and

educational classification of elementary school children. The findings will have implications for further research and will provide direction for the development of programs for the prevention and remediation of the achievement problems of this population and of other similar populations.

CHAPTER II

REVIEW OF LITERATURE

This limited review of literature on the effects of father absence, maternal employment, family size, and birth order on the academic achievement of children will show the complex and contradcitory findings of the studies which have been conducted with those variables. The need for research on the effects of their relationships with other social variables in the environment of children will be apparent.

Father Absence

Although research shows the importance of the role of the father in the development of the child (Lamb, 1976), the literature also shows studies which report that the absence of a father makes no difference in the social, emotiona, or cognitive development of the child and has no relation to the academic achievement (Atkinson & Obston, 1974; Biller & Bahm, 1971; Herzog & Sudia, 1972). Studies which show a relationship between father absence and academic achievement indicate that not all aspects of achievement are affected in the same way and that father absence is more detrimental to achievement than to IQ scores (Jantz, 1975). Most studies have investigated achievement only in reading or other areas of the language arts because they are thought to be more closely related to social variables than mathematics. However, it has been found that achievement in

various areas differs in strength in relation to home variables (Kellaghan, 1977). Fowler and Richards (1977) reported that father absence had a greater effect on the achievement of quantitative skills of second-grade girls than on their achievement in reading. This finding supports earlier studies which showed that girls whose fathers had been absent or inconsistently present during their early years had deficits in their development of quantitative abilities (Hillenbrand, 1971; Landy, Rosenberg, & Sutton-Smith, 1969; Sciara, 1975).

Jantz and Sciara (1975) found significantly higher mean arithmetic scores among fifth-grade black children of both sexes who were living in male-headed households as compared with children who were living in female-headed households. Herzog (1974), in an investigation with father-present, father-absent, and partially father-absent boys six to 15 years of age also reported higher arithmetic scores for the father-present boys than for those in the other two groups. But the overall achievement scores for the three groups, who were all lower-class black boys, showed no significant difference. The achievement deficits were greater among the older boys suggesting the possibility that achievement levels decline with years of schooling among father-absent black males. Hartnagel (1970) found that the effects of father absence varied with the age of the child.

The presence of a male head-of-household seems to increase the likelihood of academic success for children, especially for boys, but Biller (1970) suggested that the quality of the mother-son interaction may be more significantly related to academic success for boys

than the presence of a father. Shinn (1978) suggested that the stress caused by the social, emotional, and economic conditions of some father-absent homes might have a more significant influence on achievement than father absence. Atkinson and Obston (1974) found that children of fatherless homes had more demands placed on them than children of two-parent families. When fatherless, disadvantaged, underachieving youth were removed from their homes and placed in an environment in which there were father images and male role models, Veasey (1974) found that achievement gains were made.

The consistency and duration of father absence is also related to school achievement. Blanchard and Biller (1971) compared the achievement levels of children, both lower-class and middle-class, in four categories of father relationships: (1) early father absence, before five years of age; (2) late father absence, after five years of age; (3) low father presence, less than six hours per week at home; (4) high father presence, more than six hours per week at home. The early-father-absent children of both sexes generally showed lower achievement levels than the late-father-absent children. The early-father-present children showed lower achievement levels than the late-father-absent children. The father-present children showed lower achievement levels than the high-father-present group, but higher than the early-father-absent children. Landy et al. (1969) also reported higher achievement scores for high-father-present children than for low-father-present children. Vroegh (1978) compared the pretest and posttest language achievement scores of

high-father-present and low-father-present, upper-middle-class fourth and fifth graders and found that the high-father-present children at both grade levels showed the greater gains.

Santrock (1972) studied the effects of father absence on lower-class white children in grades three and six and found a relationship between achievement and the age at which father absence occurred in the child's life. Father-absence due to divorce, disertion, or separation during the first two years of life showed more detrimental effects on the achievement of boys at both grade levels than father absence for the same reasons which occurred later. The effects were especially apparent at third grade. Boys for whom father absence took place during their first five years scored lower in achievement at sixth grade than those whose fathers left during the six-to-eleven-year-old period. For girls, the most detrimental period for father absence was the first five years. Girls who had experienced father absence because of divorce, desertion, or separation during that period showed lower achievement scores than father-present girls at both grades. This is consistent with Hillenbrand (1971) who reported lower achievement test scores for sixth-grade girls who had experienced early father absence because of military service than girls who had experienced later father absence.

The cause of father absence is also related to the effects it has on the achievement of children. Santrock (1972) found that the death of a father had the greatest effect on the achievement

of boys if it occurred when the boy was between six and nine years of age. No significant differences were found when the achievement scores of girls whose fathers had died and those whose fathers were absent because of divorce, desertion, or separation. Cresembini (1964) compared the achievement scores for children in grades two through six whose fathers had died with the scores of children in the same grades whose fathers were absent because of divorce, desertion, or separation. Higher scores were found among the children whose fathers had died. In an earlier study, Clark (1961) reported no significant difference in the achievement test scores of middle-class, suburban, white boys whose fathers were absent because of death, divorce, desertion, or separation and the boys from the same population whose fathers were present.

The presence of a stepfather in the home appeared to lessen the detrimental effects of father absence in the children studied by Santrock (1972). The influence of a stepfather was more positive for boys than for girls. Boys who had stepfathers showed no significant difference in achievement from the father-present boys. Girls with stepfathers scored significantly lower on achievement tests than the father-present girls.

The literature indicates that the relationship between father-absence and achievement is not as strong among black children as it is among white children (Shinn, 1978). Sciara (1975) reported that the most significant effect of father absence on the achievement on black children was found among the children with IQ's of

100 and above. The confluence model (Zajonc & Markus, 1975) which is supported by numerous other studies (Markus & Zajonc, 1977; Bernbaum & Moreland, 1980) relates achievement to the intellectual quality of the child's home environment, but it is not supported by studies with black children. According to the confluence model, children from father-present homes will have higher achievement levels than children from father-absent families with the same number of children. Fowler and Richards (1978) found no difference between the language achievement scores of father-present and father-absent, second-grade black children who had been predicted to be achievers and underachievers at the kindergarten level according to the confluence model. But higher scores in mathematics were found among the father-present children of both sexes. Wasserman (1972) studied the achievement of lower-class black boys and reported no significant overall differences between the father-absent and the father-present groups. Zajonc (1976) attributes the lack of support for the confluence model in studies with black children to the fact that the lower-class black families studied have been generally larger with children more closely spaced than in the white families studied.

The literature shows that father absence has a more detrimental effect on the achievement of boys than girls at all ages as shown by Fowler and Richards (1977) in a study with lower-class, second-grade children, Jantz and Sciara (1975) with lower-class, fourth-grade children, and Santrock (1972) with lower-class third-and sixth-grade children.

Inconsistent father absence and low availability of fathers show the same negative effects as father absence (Blanchard & Biller, 1971; Landy et al., 1969; Vroegh, 1978). Lambert and Hart (1976) related frequent periods of temporary father absence to low achievement in a study with British children. Landy et al. (1969) studied the effects of night-shift work on the achievement of girls and found that it had the same detrimental effects as complete father absence. The study was done with girls under nine years of age. The greatest effects were seen in the development of quantitative skills. Studies show that the first nine years are crucial in the development of quantitative skills in girls and that it is enhanced or hindered by the presence or absence of a father (Fowler & Richards, 1977; Landy et al., 1969). The effects of night-shift employment on children has received little attention in the literature. Studies are not available which show the effects on boys and the effects on girls at other age levels. Landy et al. (1969) suggested that studies on the effects of father absence include night shift employment as a point on the father-absent continuum.

Maternal Employment

The effects of maternal employment on the development and achievement of the child is another area which has received much attention in the recent literature. The percentage of working mothers with children under 18 years of age has nearly doubled from 1950 to 1980. Although other factors are involved, this increase has some

relationship to the fact that the percentage of children living in fatherless homes has increased from six to 12 percent for white children between 1960 and 1978, and from 20 to 40 percent for black children during the same time period (U.S. Bureau of Census, 1978).

Most research on the effects of maternal employment on children has been concerned with its effects on the development of infants and preschool children (Harrell & Ridley, 1975). The literature on the effects of maternal employment on the academic achievement of school-age children is limited. Conditions of employment, and attitudes toward employment are variables which have been shown to have probable influence on the mother's interactions with her family and possibly affect the academic achievement of her children (Etaugh, 1974). Methods of studying these variables are often unreliable because they frequently utilize interviews and questionnaires which can reflect defensiveness rather than honesty (Wallston, 1973). Most studies have also employed cross-sectional rather than longitudinal research designs which limit the formulation of correlations and possible causal relationships (Walberg & Marjoribank, 1975). This limited review of the literature revealed no investigations which indicated a relationship between maternal employment and underachievement when maternal employment was treated as a single variable (Howell, 1973; Hoffman, 1974). When mediating variables such as job satisfaction, marital status, sex, and age are considered, the findings vary.

Etaugh (1974) found that among school-age children, the effects of maternal employment on academic achievement are related to the mother's job satisfaction, the stability of substitute child care, and the quality of the interaction between mother and child during nonworking hours. These findings support the findings of Hoffman (1974) which showed that mothers who were satisfied with their jobs had a positive effect on their children. Those mothers tended to use milder forms of discipline and tried not to inconvenience their children because of their employment as compared with mothers who were dissatisfied with their employment. Children of satisfied mothers showed fewer behavior and school adjustment problems (Hoffman, 1974; Yarrow, Scott, DeLeeuw, & Heinig, 1962).

Farel (1980) investigated the effects of maternal employment on the competence and adjustment of kindergarten children and discovered no relationship when sociodemographic variables were held constant. The influence of maternal attitudes toward work on the child's competence and school adjustment were also examined. It was found that the children whose mothers' attitudes toward work and actual work behavior were congruent were less likely to have behavior and adjustment problems in school than children whose mothers' attitudes and work behavior were incongruent. This study revealed no evidence that maternal employment, per se, interferred with the development of cognitive skills in children at the kindergarten level.

Gold and Andres (1978) compared the development of ten-year-old children of employed and unemployed mothers and found that

academic achievement is negatively related to maternal employment for boys and positively related for girls at that age. In an earlier study Gold and Andres (1977) examined the effects of maternal employment on children at three age levels; nursery school age, 10 years of age, and 15 years of age. Only a slight relationship was found between maternal employment and academic underachievement for boys at the ten-year-old level. Boys whose mothers were employed showed lower achievement levels than the boys whose mothers were unemployed. Poznanski, Maxie, and Marsden (1970) suggested the probability that the effects of maternal employment on the achievement of the child vary from one developmental stage to another. However, in a study with high school seniors (Banducci, 1967) reported that no difference was shown between the achievement, expectations, and aspirations of students with employed mothers and those with unemployed mothers.

The Roy (1963) study suggested a possible environmental influence related to the effect maternal employment has on the achievement of children. A comparison was made between the grades of urban and rural children by sex and status of maternal employment. Sons of employed mothers, both urban and rural, had lower grades than the sons of unemployed mothers. Daughters of urban employed mothers had lower grades than the daughters of urban unemployed mothers. No difference was found between the grades of the daughters of employed and unemployed rural mothers.

Kriesberg (1967) found no relationship between maternal employment and achievement among children of middle-class married mothers. But the children of the husbandless mothers in the same socioeconomic group showed higher achievement levels than the children of the married mothers. Cherry and Eaton (1977), in a longitudinal study with lower-class families, found that the children of working mothers showed higher achievement levels than the children of nonworking mothers when there was a father in the home. This study also found a relationship between achievement and the working mother's educational level. Children of working mothers who had more than eleven years of schooling made greater achievement gains in their early school years than the children of mothers with less than eleven years of education. In an earlier study, Jones, Lunsteen, and Michael (1967) found higher achievement levels in reading for sixth-grade-boys and girls whose mothers were emlpoyed in professional capacities than those whose mothers were employed in nonprofessional jobs.

Woods (1972) found a relationship between part-time employment of the mother and underachievement. Among lower-class fifth grade black children, higher IQ and achievement scores were shown for children of both sexes whose mothers were employed full-time than for children whose mothers were employed part-time or were not employed. In the same study which focused on the effects of the type of after-school supervision of urban lower-class black children with working mothers, it was shown that boys who were

unsupervised after school had no significant differences in achievement when compared with the boys who were supervised. But the girls who were unsupervised showed deficits in cognitive functioning and achievement levels when compared to the supervised girls.

The literature shows that little research has been done on the effects of the type of after-school supervision on the achievement of school-age children. Studies with white children, middle-class children, and rural children are lacking.

Birth Order and Family Size

Studies on the relationship between family size and achievement have shown much consistency in demonstrating that intelligence as well as achievement declines as family size increases. The confluence model (Zajonc & Markus, 1975) postulated that within families, later born children will have lower achievement levels than their earlier-born siblings. The intellectual growth of each family member is dependent upon the other members of the family and different family configurations affect the rate of development of each family member. The confluence model further postulated that increasing family size is associated with decreasing intellectual development and achievement. The addition of each child to a family further dilutes the intellectual quality of the environment causing a decrease in the IQ scores of its members; similarly, the departure of an adult from the environment dilutes the intellectual quality of that environment. According to the confluence model, children from large

families show lower achievement levels than children from small families and first-born children show higher levels of achievement than later-born children. But studies have shown that only children do not follow this pattern (Zajonc & Markus, 1975; Belmont & Marolla, 1973; Schachter, 1963; Breland, 1974). Belmont and Marolla (1973) found a relationship between birth order and intellectual functioning as measured by the Raven Progressive Matrice. Intellectual functioning declined with family size and with birth order. Only-born children showed levels similar to those of first-borns in families with four children. This discontinuity of the only child is postulated by Zajonc and Markus (1975) as the "teaching effect" which is also the handicap of the last-born child. Children who are without younger siblings lack the opportunity to serve as teachers and this is thought to be a slight impediment to their intellectual development. This is supported by Bernbaum and Moreland (1980) which also supports the confluence model as a predictor of achievement for individual children in a family.

Elder (1962), Miner (1968), and Bernstein and Gress (1975) found higher achievement among first-borns of both sexes and attribute these findings to the fact that first-born children have higher expectancy levels set by their parents than later-born children. Parents have a tendency to treat each child differently depending on their ordinal position in the family. First-borns receive more parental attention than their later-born siblings; they perform better on verbal tests, and they get higher grades in school. First-born children have

been described as highly socialized and motivated to achieve because of the aspiration levels set by their parents (Clausen, 1966; Bernstein & Gress, 1976).

Grygo (1976) used the reading scores attained by fifth graders on the California Test of Basic Skills to study the relationship between reading achievement, birth order, family size, and socio-economic status. Vocabulary scores were significantly related to birth order and family size. Comprehension scores were significantly related only to family size and socioeconomic status. The study found no relationship between achievement and the sex of the child or sibling spacing. Coleman, Campbell, Hobson, McPortland, Mood, Weinfeld, and York (1966) reported a more significant relationship between family size and achievement than between father absence and achievement in studies with male and female, white and black, rural and urban children from small families in both elementary and secondary schools. Baughman and Dahlstrom (1968) found a more significant relationship between school achievement and family size among southern rural white children than among southern rural black children.

The literature is rather consistent in demonstrating an inverse relationship between family size and achievement, but a few well-designed studies fail to support that relationship (McCall & Johnson, 1972). And, a few studies have found no significant differences between the achievement of first-born and later-born children. These inconsistencies indicate the probability that findings were

influenced by some uncontrolled variables in the environments of the populations studied.

Summary

The literature indicates rather consistently that children are likely to succeed in school if they are from small families or if they are the early-born children of large families. The absence of a father or the employment of the mother seem to have little relationship to academic achievement. The effects of father absence and the effects of maternal employment are not significant without studying the interactions and relationships of these variables with other social variables, such as birth order, family size, employment hours, and the type of after-school supervision. Studies on the effects of maternal employment have been generally concerned with the effects of full-time day employment of the mother, but some mothers are employed on an evening or night shift. Landy et al. (1969) found that night-shift employment of the father had the same negative effect on the achievement of girls under nine years of age as complete father absence. Does night-shift employment of the mother also have negative effects on children? Are the same negative effects found with boys as well as with girls?

Factory employees often work on rotation shifts and are often required to change work shifts each week. What effect does rotation shift employment of parents have on children? Woods (1972) reported lower achievement levels for children whose mothers were

employed part-time than for those whose mothers had full-time jobs. Does shift work of either parent have the same adverse effect on children as part-time employment? Booth (1977) reported that the husbands of employed wives were under less stress than the husbands of unemployed wives. The study did not, however, investigate the effects of night shift employment of the wife. Does night shift employment of the wife cause stress in the home which can have a detrimental effect on the school achievement of children?

Woods (1972) reported no adverse effect on achievement of black fifth grade ghetto boys related to the lack of supervision after school, but the girls from the same population who were unsupervised showed lower achievement levels than the girls who were supervised. Does after-school supervision or the lack of supervision have the same effect on children of different ages and on children in small town and rural areas?

The literature shows that little attention has been given to the influence of the social variables of a textile mill community on the school achievement of children. The findings of many studies on the influence of social variables on achievement cannot be generalized to the populations of small-town or rural communities such as those in which textile mills are located. This study was an attempt to answer the questions presented in this summary by showing the relationships of some of the variables common to textile mill communities to the academic achievement.

CHAPTER III

METHODOLOGY

Subjects

The subjects for this study were 264 elementary school children in the Madison-Mayodan School District located in north-central North Carolina, a textile mill area. It is classified as an urban-rural school district and serves approximately one thousand children at the elementary school level through one primary school for all kindergarten and first graders and two elementary schools for grades two through six. Special education services are provided in each school for children who have been identified as learning disabled (LD) and educable mentally handicapped (EMH). These services are provided by specially trained teachers in resource rooms in which the children spend a portion of each day.

The educational and economic levels of the parents of the community are generally low, but parental involvement in the schools is high as shown through attendance at PTA meetings, school board meetings, and volunteer services. Only slightly more than 50% of the parents have completed high school and only about three percent hold degrees and professional employment. The racial composition of the community is 82% white, almost 18% black, and less than one percent Native American, Mexican American, and Indian. The racial composition of the community is reflected in the total school population,

but the EMH and LD classifications show disproportionate numbers of black and white children. The EMH classification has nearly equal numbers of black and white children and the LD classification is almost exclusively white. This study includes a total of 184 white children and 80 black children which represents the racial composition of the classifications rather than the racial composition of the school population. The children who are classified as achievers and as low achievers were randomly selected from each grade to be compared with all the children in the EMH and LD classifications.

Many of the parents in the community are farmers or they are employed in one of the three textile mills in the community. The mills usually operate on shifts--day (first shift), afternoon-evening (second shift), night (third shift), and a rotation shift in which the workers are required to change shifts weekly or biweekly. In some families both parents are employed but on different shifts, which might allow one parent to be at home to supervise the children after school. In other families children must be supervised by relatives, sitters, or older siblings, either at home or away from home. In some cases children are without supervision or have inconsistent arrangements for after-school supervision.

Procedure

Subjects were studied in four categories: achiever, low achiever, LD, and EMH. Children were classified as achievers or

as low achievers according to their reading scores on the Primary Reading Inventory (PRI) or the California Achievement Test (CAT). Children who scored above mean for their grades were classified as achievers. Those who were below the mean, but were not identified as EMH or as LD were classified as low achievers. A total of 180 achievers and low achievers were randomly selected from grades one through six, 30 from each grade level. All LD and EMH children from each grade are included.

Data on race, parents' education, family structure, family size, birth order, and after-school supervision were gathered from the children's cumulative folders which are kept in the offices at the schools. Verification and missing information were obtained from the demographic summaries included with the PRI and the CAT results. The information on these summaries was obtained from questionnaires completed by the parents prior to the tests. Fourteen children were selected for whom the needed data were not readily available through the random procedure. The parents of those children were interviewed informally. The interviews were brief (usually about ten minutes) and the parents were generally friendly and very cooperative. They were informed that their children had been selected randomly to be a part of a study on the influence of factors such as family size, birth order, after-school supervision, and parents' working hours on achievement. They were assured that their children would not be required to actively participate in the study and that they would not be identified in

any way. Some of the needed data which could not be obtained through other sources were readily supplied by the teachers since the community is small and many of the teachers live in close proximity to the children they teach.

Measuring Instruments

The reading and the mathematics scores included in this study are from the PRI and from the Primary Mathematics Inventory for children in grades one through three and from the reading and mathematics subtests of the CAT for children in grades three through six. The children's most recent scores were used. These tests were administered to all children in the schools as part of the state-wide testing program.

Research Design

A series of multiple regression (stepwise) analyses were made to study the relationship of achievement scores in reading and mathematics to the social variables. In separate analyses reading and mathematics scores served as dependent variables and were regressed on the independent variables: sex, race, parental education, family structure, mother's employment shift, father's employment shift, type of after-school supervision, place of supervision, birth order, and family size. A discriminant analysis was made to discriminate achievers, low achievers, LD, and EMH children. Data for male and for female were analyzed separately since some

exogeneous categories are almost exclusively dominated by one sex (e.g., LD).

The independent variables are nominal-scale variables so a set of dummy variables was created for each level of each variable to allow the insertion of the variables into the regression equations. The dummy variables were designed to include all expected levels of each variable by providing a dummy variable for the expected levels as well as a dummy variable referred to in the study as "other" to include levels of a particular variable which were not expected. The dummy variables used were as follows:

Sex

male

female

Race

white

black

Mother's education

high school graduate

nongraduate

Father's education

high school graduate

nongraduate

Family structure

nuclear

mother only

father only

extended

Employment shift of father

day

2nd shift

3rd shift

rotation

unemployed

Employment shift of mother

day

2nd shift

3rd shift

rotation

unemployed

After-school supervision

parents

relative

nonrelative

older sibling

no supervision

other or inconsistent

Place of supervision

home

away

inconsistent

Birth order

only child

youngest

middle

oldest

Family size

small

large

Classification

achiever

low achiever

LD

EMH

A discriminant analysis used the variables significant to the overall analysis to statistically discriminate the groups and to show the strength of the relationship of the variables to each classification.

CHAPTER 4

RESULTS

The data were analyzed for boys and girls together across grades, for boys and girls separately across grades, and for boys and for girls separately by grade. A separate set of analyses included only children with absent or unemployed fathers. All data were analyzed in three steps. First, the Pearson product-moment correlation coefficients were computed between the achievement scores and each variable. Second, all variables which were significantly ($p < .10$) related to the scores were entered into a series of stepwise multiple regression equations. Third, the variables which were significantly ($p < .10$) related to the scores of the total group (boys and girls across grades) were entered into a discriminant analysis with the reading and mathematics to statistically discriminate the four classifications.

Correlations

The correlation coefficients between the reading and mathematics scores and the variable for which there were five or more cases are presented in Tables 1, 2, 3, and 4. Male and grade show significant negative relationships to reading and mathematics achievement across grades. Male also shows a negative relationship to the scores of children with absent or unemployed fathers. The strongest

Table 1

Correlation Coefficients Between the Achievement Scores and the Variables for Boys and Girls Across Grades

	Boys & Girls			Boys			Girls		
Sex	# of Cases	Read	Math	# of Cases	Read	Math	# of Cases	Read	Math
Male	153	-.48*	-.54*						
Female	111	.48*	.54*						
Race									
White	187	.05	.08	114	.02	.03	73	.02	.07
Black	77	-.05	-.08	39	-.02	-.03	38	-.02	-.07
Mother's Education									
Non-Graduate	109	-.07	-.05	65	-.05	-.04	44	-.17*	-.50*
High School Graduate	151	.07	.05	85	.05	.04	66	.17*	.50*
Missing Data	4	--	--	3	--	--	1	--	--
Father's Education									
Non-Graduate	101	-.10	-.01	64	-.01	.00	37	-.01	-.08
High School Graduate	109	.10	.01	57	.01	.00	51	.01	.08
Missing Data	54	--	--	32	--	--	23	--	--
Family Structure									
Nuclear Family	175	-.04	-.03	106	.10	.11	69	-.01	.02
Mother Only	64	.02	-.04	33	-.14	-.09	32	-.10	-.14
Father Only	5	-.06	-.05	5	-.06	.05	0	--	--
Extended Family	17	.18*	.17*	8	-.02	-.05	9	-.10	.10
Missing Data	3	--	--	2	--	--	1	--	--
Father's Employment									
Day	119	.07	.08	66	.03	--	53	.09	.11
2nd Shift	13	-.05	-.05	8	.08	.05	5	-.07	-.08
3rd Shift	16	-.06	-.03	9	.02	.03	7	-.11	-.07
Rotation	21	.08	.05	12	-.02	-.02	9	.12	.09
Unemployed	28	-.07	-.07	20	.11	.07	8	-.07	-.05
Missing Data	66	--	-	38	--	--	28	--	--

Table 1 (continued)

	Boys & Girls			Boys			Girls		
Mother's Employment	# of Cases	Read	Math	# of Cases	Read	Math	# of Cases	Read	Math
Day	124	.09	.06	68	-.13	-.11	56	.10	.05
2nd Shift	19	-.07	-.07	11	-.02	-.03	8	-.13	-.12
3rd Shift	23	-.08	-.05	12	.03	.01	11	-.15	-.12
Rotation	6	--	.02	2	--	--	4	--	--
Unemployed	87	.00	.00	56	.13	.12	31	-.09	.11
Missing Data	5	--	--	4	--	--	1	--	--
After-School Supervision									
Parents	130	-.02	.01	82	.08	.05	48	.01	.04
Relative	40	.00	-.03	20	.00	-.01	20	-.09	-.05
Non-Relative	20	.11	.09	12	-.06	-.06	8	.20*	.19*
Sibling	35	-.05	-.04	19	.09	.08	16	-.10	-.09
No Supervision	34	.00	.01	19	-.15	-.09	16	-.02	.01
Inconsistent	5			1	--	--	1	--	--
Place									
Home	223	-.04	-.04	136	.10	.12	87	.02	.04
Away	31	.06	.04	13	-.13	-.13	18	-.01	-.04
Inconsistent	10	.00	.01	4	--	--	6	.00	.00
Birth Order									
Only Child	10	.17*	.14*	4	--	--	6	-.13	.14
Youngest	90	.01	.01	52	.09	.06	38	.00	.02
Middle	112	-.01	.00	62	-.03	.02	47	.00	.02
Oldest	52	-.10	-.12*	32	-.05	-.04	20	-.14	.17
Family Size									
Small	136	.06	.07	66	.08	-.14*	70	.00	.02
Large	128	-.06	-.07	87	-.08	-.14*	41	.00	-.02

Table 1 (continued)

	Boys & Girls			Boys			Girls		
	# of Cases	Read	Math	# of Cases	Read	Math	# of Cases	Read	Math
Grade									
First	45	.26*	.35*	23	.15	.27	20	.44*	.45*
Second	38	.27*	.30*	20	.10	.05	18	.51*	.50*
Third	47	.12	.16	30	-.08	.04	17	.28	.33
Fourth	48	-.25*	.18	29	-.47	-.15	19	.25	.35
Fifth	43	-.29*	-.09	26	-.46*	-.15	17	.27	.08
Sixth	43	-.26*	-.02	23	-.41*	-.10	20	.24	.15
Classification									
Achiever	94	.49*	.38*	44	.46*	.37*	50	.53*	.35*
Low Achiever	86	.03	.16*	50	.09	.18	36	-.06	.13
LD	24	-.17	-.21	20	-.18	-.21	4	-.08	-.13
EMH	60	-.48*	-.46*	39	-.44*	-.43*	21	-.56*	-.54*

*$p < .10$

(Correlations were computed only for variables which showed five or more cases.)

Table 2

Correlation Coefficients Between the Variables and the Achievement Scores of Boys by Grade

Variables	1st Grade (n=25) # of Cases	Read	Math	2nd Grade (n=20) # of Cases	Read	Math	3rd Grade (n=30) # of Cases	Read	Math	4th Grade (n=29) # of Cases	Read	Math	5th Grade (n=26) # of Cases	Read	Math	6th Grade (n=23) # of Cases	Read	Math
Race																		
White	20	-.22	-.20	14	.00	-.02	25	.20	.22	18	-.07	-.14	22	.00	.00	15	.05	.02
Black	5	.22	.20	6	.00	.02	5	-.20	-.22	11	.07	.14	4	--	--	8	-.05	-.02
Mother's Education																		
Non-Graduate	6	-.18	-.09	8	-.06	-.07	16	-.09	-.06	12	-.38*	-.38*	11	-.15	.04	12	-.55*	-.40*
High School Graduate	18	.18	.09	12	.06	.07	13	.09	.06	17	.36*	.38*	14	.15	-.04	11	.55*	.40*
Missing Data	1	--	--	0	--	--	1	--	--	0	--	--	1	--	--	0	--	--
Father's Education																		
Non-Graduate	11	-.24	-.18	10	-.09	-.06	16	-.13	-.20	13	.00	.15	7	-.63*	-.46*	10	-.71*	-.50*
High School Graduate	11	.24	.18	9	.09	.06	9	.13	.20	11	.00	-.15	7	.63*	.46*	7	.71*	.50*
Missing Data	3	--	--	1	--	--	5	--	--	5	--	--	12	--	--	6	--	--
Family Structure																		
Nuclear	20	.10	.00	17	-.28	-.34	24	.17	.14	19	.16	.11	14	-.02	-.16	12	.32	.30
Mother Only	4	--	--	1	--	--	2	--	--	5	-.26	-.22	11	-.02	.12	10	-.29	-.29
Father Only	0	--	--	0	--	--	2	--	--	2	--	--	1	--	--	0	--	--
Extended Family	1	--	--	1	--	--	2	--	--	3	--	--	0	--	--	1	--	--
Missing Data	0	--	--	1	--	--	1	--	--	0	--	--	0	--	--	0	--	--
Father's Employment																		
Day	12	-.21	.00	11	-.13	-.22	12	-.25	-.18	12	.25	.33*	10	.13	.06	9	.27	.31
2nd Shift	1	--	--	2	--	--	2	--	--	3	--	--	0	--	--	0	--	--
3rd Shift	2	--	--	1	--	--	1	--	--	2	--	--	2	--	--	1	--	--
Rotation	2	--	--	1	--	--	3	--	--	2	--	--	2	--	--	2	--	--
Unemployed	4	--	--	4	--	--	8	.09	-.01	2	--	--	0	--	--	2	--	--
Missing Data	4	--	--	1	--	--	4	--	--	8	--	--	12	--	--	9	--	--

*p < .10

Table 2 (continued)

Variables	1st Grade (n=25) # of Cases	Read	Math	2nd Grade (n=20) # of Cases	Read	Math	3rd Grade (n=30) # of Cases	Read	Math	4th Grade (n=29) # of Cases	Read	Math	5th Grade (n=26) # of Cases	Read	Math	6th Grade (n=23) # of Cases	Read	Math
Mother's Employment																		
Day	8	-.29	-.18	8	-.23	-.26	8	-.33*	-.49*	18	.18	.09	15	.00	.00	11	.00	.00
2nd Shift	3	--	--	0	--	--	6	.08	.20	1	--	--	0	--	--	1	--	--
3rd Shift	2	--	--	2	--	--	3	--	--	0	--	--	2	--	--	3	--	--
Rotation	0	--	--	0	--	--	1	--	--	1	--	--	0	--	--	0	--	--
Unemployed	12	.12	.05	9	.11	.13	10	.20	.20	9	.28	.15	8	-.25	-.13	8	.17	-.13
Missing Data	0	--	--	1	--	--	2	--	--	0	--	--	1	--	--	0	--	--
After-School Supervision																		
Parents	16	-.13	-.23	12	.12	.16	17	.14	.04	15	-.03	.07	10	-.14	.01	12	-.01	-.14
Relative	3	--	--	3	--	--	4	--	--	3	--	--	3	--	--	4	--	--
Non-Relative	0	--	--	1	--	--	7	.24	.22	1	--	--	3	--	--	0	--	--
Older Sibling	6	-.05	.10	4	--	--	1	--	--	6	-.07	-.08	0	--	--	2	--	--
No Supervision	0	--	--	0	--	--	0	--	--	4	--	--	10	-.04	.11	5	-.06	-.03
Inconsistent	0	--	--	0	--	--	1	--	--	0	--	--	0	--	--	0	--	--
Place																		
Home	24	-.12	-.15	19	.48*	.41*	24	.05	-.05	27	.00	.00	22	-.18	.04	20	-.10	.00
Away	1	--	--	0	--	--	5	-.16	-.04	2	--	--	3	--	--	2	--	--
Inconsistent	0	--	--	1	--	--	1	--	--	0	--	--	1	--	--	1	--	--
Birth Order																		
Only Child	0	--	--	1	--	--	0	--	--	0	--	--	2	--	--	1	--	--
Youngest	14	-.08	-.18	7	.21	.27	11	-.07	-.22	8	-.27	-.18	6	-.14	-.14	6	.30	.33
Middle	8	.11	.22	8	.14	.10	14	.38*	.39*	13	.09	.00	11	.24	.19	11	-.42*	-.48*
Oldest	3	-.03	-.05	4	--	--	5	-.29*	-.25	8	.17	.17	7	-.20	-.09	5	.15	.22
Family Size																		
Small	14	-.04	-.11	10	-.22	-.26	11	-.18	-.04	10	.50*	.51*	14	.36*	.18	7	.43*	.38*
Large	11	.04	.11	10	.22	.26	19	.18	.04	19	-.50*	-.51*	12	-.36*	.18	16	-.43	-.38

*$p < .10$ (Correlations were computed only for variables which showed five or more cases.)

Table 3

Correlation Coefficients Between the Variables and the Achievement Scores--Girls By Grade

Variables	1st Grade (n=20) # of Cases	Read	Math	2nd Grade (n=18) # of Cases	Read	Math	3rd Grade (n=17) # of Cases	Read	Math	4th Grade (n=19) # of Cases	Read	Math	5th Grade (n=17) # of Cases	Read	Math	6th Grade (n=20) # of Cases	Read	Math
Race																		
White	14	.11	.24	12	.22	.27	10	.07	.07	12	.31	-.35	9	.11	-.22	13	.29	.36
Black	6	-.11	-.24	6	-.22	-.27	7	-.07	-.07	7	-.31	.35	8	-.11	.22	7	-.29	-.36
Mother's Education																		
Non-Graduate	11	-.60*	-.50*	6	-.48*	-.42*	4	-.34	-.44*	8	-.52*	-.45*	6	-.58*	-.49*	9	-.01	-.38*
High School Graduate	9	.60*	.50*	12	.48*	.42*	13	.34	.44*	11	.52*	.45*	10	.58*	.49*	11	.01	.38*
Missing Data	0	--	--	0	--	--	0	--	--	0	--	--	1	--	--	0	--	--
Father's Education																		
Non-Graduate	6	-.26	-.18	5	-.62*	-.52*	4	-.58*	-.32	3	-.52*	-.44*	9	-.54*	-.38	10	-.04	-.23
High School Graduate	8	.26	.18	10	.62*	.52*	11	.58*	.32	9	.52*	.44*	5	.54*	.38	8	.04	.23
Missing Data	6	--	--	3	--	--	2	--	--	7	--	--	3	--	--	2	--	--
Family Structure																		
Nuclear	10	.27	.08	12	.20	.17	12	-.15	.02	9	.33	.23	14	-.07	.15	12	-.05	-.14
Mother Only	6	.02	-.05	3	--	--	3	--	--	9	-.36	.21	2	--	--	8	.05	.14
Father Only	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--
Extended Family	3	--	--	3	--	--	1	--	--	1	--	--	1	--	--	0	--	--
Missing Data	0	--	--	0	--	--	1	--	--	0	--	--	0	--	--	0	--	--
Father's Employment																		
Day	12	-.02	.03	9	.05	.02	8	.35	.33	7	.40	.17	9	.54*	.24	8	.23	.21
2nd Shift	0	--	--	1	--	--	1	--	--	1	--	--	0	--	--	2	--	--
3rd Shift	1	--	--	0	--	--	3	--	--	0	--	--	3	--	--	0	--	--
Rotation	0	--	--	3	--	--	1	--	--	1	--	--	1	--	--	3	--	--
Unemployed	1	--	--	1	--	--	2	--	--	2	--	--	2	--	--	1	--	--
Missing Data	6	--	--	4	--	--	2	--	--	8	--	--	2	--	--	6	--	--

*$p < .10$

Table 3 (continued)

Variables	1st Grade (n=20) # of Cases	Read	Math	2nd Grade (n=18) # of Cases	Read	Math	3rd Grade (n=17) # of Cases	Read	Math	4th Grade (n=19) # of Cases	Read	Math	5th Grade (n=17) # of Cases	Read	Math	6th Grade (n=20) # of Cases	Read	Math
Mother's Employment																		
Day	12	-.11	-.15	10	.47*	.22	12	.44*	.41*	4	.20	.40*	6	.42*	.30	12	.11	.16
2nd Shift	0	--	--	1	--	--	1	--	--	3	--	--	1	--	--	2	--	--
3rd Shift	0	--	--	1	--	--	2	--	--	4	--	--	4	--	--	0	--	--
Rotation	1	--	--	0	--	--	0	--	--	2	--	--	0	--	--	1	--	--
Unemployed	7	.13	.13	6	-.30	-.08	2	--	--	6	.07	-.15	5	-.39	.15	5	-.33	-.34
Missing Data	0	--	--	0	--	--	0	--	--	0	--	--	1	--	--	1	--	--
After-School Supervision																		
Parents	11	-.07	-.01	7	-.09	.04	6	-.44*	-.51*	9	.31	.23	9	-.50*	-.22	6	-.19	-.27
Relative	4	--	--	2	--	--	2	--	--	6	-.24	-.15	1	--	--	5	.07	.13
Non-Relative	2	--	--	3	--	--	1	--	--	1	--	--	1	--	--	0	--	--
Older Sibling	2	--	--	2	--	--	8	.40	.46*	3	--	--	1	--	--	0	--	--
No Supervision	1	--	--	3	--	--	0	--	--	0	--	--	5	.44*	.15	6	.14	.00
Inconsistent	0	--	--	1	--	--	0	--	--	0	--	--	0	--	--	3	--	--
Place																		
Home	15	-.13	-.03	15	.13	-.12	12	-.29	-.06	13	.27	-.31	15	-.15	-.14	17	.02	-.13
Away	3	--	--	3	--	--	3	--	--	5	.15	-.13	1	--	--	3	--	--
Inconsistent	2	--	--	0	--	--	2	--	--	1	--	--	1	--	--	0	--	--
Birth Order																		
Only Child	3	--	--	2	--	--	0	--	--	1	--	--	0	--	--	0	--	--
Youngest	8	-.31	-.30	6	.16	.32	5	.15	.23	9	.33	-.21	8	.14	.22	2	--	--
Middle	7	.44*	.41*	8	.36	-.25	10	-.31	-.02	5	-.13	-.11	8	-.14	-.22	9	.00	.05
Oldest	2	--	--	2	--	--	2	--	--	4	--	--	1	--	--	9	-.12	-.08
Family Size																		
Small	15	-.22	-.27	10	.08	.27	12	.34	.42	13	.47*	.15	9	.22	.24	11	.03	-.14
Large	5	.22	.27	8	-.08	-.27	5	-.34	-.42	6	-.47*	-.15	8	-.22	-.24	9	-.03	.14

*$p < .10$ (Correlations were computed only for variables which showed five or more cases.)

Table 4

Correlation Coefficients Between the Variables and the Achievement Scores of Children with Absent or Unemployed Father

	Boys (n=54) # of Cases	Read	Math	Girls (n=40) # of Cases	Read	Math	Total (n=94) # of Cases	Read	Math
Sex									
Male	54	--	--	--	--	--	54	-.43*	-.48*
Female	--	--	--	40	--	--	40	.43*	.48*
Race									
White	37	-.25*	.19	25	.11	.04	62	-.15	-.18
Black	17	.25*	.19	17	-.11	.04	32	.15	.18
Mother's Education									
Non-Graduate	30	-.16	-.32*	23	-.35*	-.20	53	-.07	-.03
High School Graduate	24	.16	.32*	17	.35	.20	41	.07	.03
Missing Data									
Father's Education									
Non-Graduate	19	-.08	-.06	9	-.27*	.00	28	-.09	-.07
High School Graduate	12	.08	.06	6	.27*	.00	18	.09	.07
Missing Data	23	--	--	25	--	--	48	--	--
Family Structure									
Nuclear	19	.22	-.12	8	-.16	-.21	27	-.07	-.05
Mother Only	34	-.21	.10	31	.15	.19	65	.08	.06
Father Only	--	--	--	--	--	--	--	--	--
Extended Family	1	--	--	1	--	--	2	--	--

Table 4 (continued)

	Boys (n=54) # of Cases	Read	Math	Girls (n=40) # of Cases	Read	Math	Total (n=94) # of Cases	Read	Math
After-School Supervision									
Parents	29	.16	-.28*	19	-.05	-.04	48	-.05	.09
Relative	5	-.06	.00	8	--	.08	13	-.04	-.04
Non-relative	3	--	--	0	--	--	3	--	--
Other Sibling	4	--	--	4	--	--	8	-.04	-.03
No Supervision	13	-.10	.10	6	-.05	.00	19	-.03	-.02
Inconsistent	--	--	--	--	--	--	--	--	--
Place of Supervision									
Home	51	-.31*	-.14	29	-.22	-.19	80	-.06	-.06
Away	2	--	--	9	.22	.19	11	-.01	-.01
Inconsistent	1	--	--	2	--	--	3	--	--
Birth Order									
Only Child	3	--	--	1	--	--	4	--	--
Youngest	15	-.10	-.08	14	.10	.00	29	-.08	-.08
Middle	28	-.02	.12	18	-.09	.00	46	.14	.13
Oldest	9	-.08	.20	6	--	--	15	-.14	-.13
Family Size									
Small	23	.02	.26	19	.21	.23	42	.13	.14
Large	28	-.02	-.26	20	-.21	-.23	48	-.13	-.14

(Correlations were computed only for variables which showed five or more cases.)

positive correlations with reading achievement for boys and girls studied together across grades are with the extended family, supervision by a nonrelative, and only child. Significant positive relationships are shown between mathematics achievement and the extended family, only child, and oldest child.

Significant positive relationships for girls across grades are shown between reading achievement and supervision by a nonrelative. Mathematics achievement for girls is significantly related to the mother's education and to supervision by a nonrelative. The small family is significantly related to mathematics achievement for boys across grades. Significant correlations were not found with reading achievement.

Education of the mother shows significant relationships to the reading achievement of boys at fourth and at sixth grades. Father's education shows significant relationships to the reading achievement of boys at fifth and at sixth grades. Day employment of the mother shows a significant negative relationship to the reading achievement of boys at third grade and supervision at home has a significant positive relationship to reading for second-grade boys. Middle child shows a significant positive relationship to reading achievement of third-grade boys and a significant negative relationship to the reading achievement of sixth-grade boys. Oldest child has a significant negative relationship to reading at third grade. Reading achievement for boys in fourth, fifth, and sixth grade is positively related to the small family.

Mathematics achievement is significantly related to the mother's education for boys in fourth and in sixth grades and to the father's education in fifth and sixth grades. Day employment of the father shows a positive relationship to mathematics achievement for fourth grade boys, and day employment of the mother is negatively related to the mathematics achievement of third-grade boys. Supervision at home is positively related to mathematics for second grade boys and the middle child shows a positive relationship for third grade. A negative relationship is shown with middle child at sixth grade. The small family is positively related to mathematics achievement for fourth, fifth, and sixth grades.

The reading scores of boys with absent or unemployed fathers are significantly related to race and the mathematics scores to mother's education. A negative relationship is shown with supervision by parents and a positive relationship with the small family. The reading scores of the girls are significantly related to mother's education and to father's education.

Reading and mathematics achievement show positive relationships to grade for boys and girls at first and second grade. Significant negative relationships are shown with reading achievement for boys and girls at fourth, fifth, and sixth grades. The correlations between grade and achievement in reading and in mathematics are significant and positive for girls in first and second grades. The relationships to other grades are positive but not significant. The correlations between mathematics achievement of boys and

grade are not significant at any grade. The correlations between reading achievement of boys and grade are significant only at fifth and sixth grades with negative relationships for each grade.

The achiever classification has significant positive relationships to reading and to mathematics achievement for both girls and boys and the EMH classification has significant negative relationships for both areas. The mathematics achievement of the low achievers shows significant positive relationships to classification across grades. The correlations with low achiever and reading and with LD, reading and mathematics are not significant.

Regression Analysis

The significant variables (p .10) were entered into regression equations. In order to develop the best equation for predicting reading and mathematics achievement, using the least possible number of variables, each variable entered into the equation had to have an F-ratio of 1.00 or greater. The final equation had to be significant at the .05 level or lower. A new equation was not accepted unless it demonstrated an increase of at least .01 in R^2, the coefficient of determination, over the previous equation. The SPSS (1975) multiple regression subprogram using the stepwise procedure performed the analysis. Variables in the equations are presented in Table 5.

Grade shows a significant negative relationship to the reading and mathematics achievement of children across grades. Female has a positive relationship to achievement in both areas. The same

Table 5

Relationships of the Variables on Achievement

Influences of the Achievement of Boys and Girls Across Grades	beta
Reading	
Grade	
Sex (female)	-.35
Mult R = .38, R^2 = .15	.15
Mathematics	
Grade	
Sex (female)	-.28
Mult R = .32, R^2 = .10	.15
Influences on the Achievement of Boys	
Reading	
Across Grades	
No significant relationships were shown	
First Grade	
No significant relationships were shown	
Second Grade	
Place of supervision, home	.48
Mult R = .48	
Third Grade	
Day Employment of Mother	-.44
Mult = .44, R^2 = .20	
Fourth Grade	
Small Family	.38
Mother's Education, High School Graduate	.22
Mult R = .51, R^2 = .26	
Fifth Grade	
Father's Education, High School Graduate	.61
Small Family	.17
Sixth Grade	
Mother's Education, High School Graduate	.50
Middle Child	-.35
Mult R = .65, R^2 = .42	

Table 5 (continued)

	beta
Mathematics	
Across Grades	
Small Family	.14
Mult R = .14	
First Grade	
No significant relationships were shown	
Second Grade	
Place of Supervision, Home	.41
Mult R = .41	
Third Grade	
Day Employment of Mother	-.57
Mult R = .57, R^2 = .33	
Fourth Grade	
Small Family	.56
Day Employment of Father	.41
Mult R = .62, R^2 = .40	
Fifth Grade	
Father's Education, High School Graduate	.59
Mult R = .59, R^2 = .35	
Sixth Grade	
Middle Child	-.50
Mother's Education, High School Graduate	.35
Mult R = .65, R^2 = .42	
Influences on the Achievement of Girls	
Reading	
Across Grades	
Mother's Education, High School Graduate	.50
Mult R = .50, R^2 = .37	
First Grade	
Mother's Education, High School Graduate	.48
Middle Child	.24
Mult R = .58, R^2 = .34	
Second Grade	
Father's Education, High School Graduate	.42
Mother's Education, High School Graduate	.29
Mult R = .61, R^2 = .37	

Table 5 (continued)

	beta
Third Grade	
Supervision by Parents	-.36
Day Employment of Mother	.44
Mult R = .71, R^2 = .56	
Fourth Grade	
Mother's Education, High School Graduate	.43
Small Family	.33
Mult R = .62, R^2 = .39	
Fifth Grade	
Mother's Education, High School Graduate	.38
Day Employment of Father	.38
Father's Education, High School Graduate	.25
Mult R = .75, R^2 = .57	
Sixth Grade	
No significant relationships were shown	
Mathematics	
Across Grades	
Mother's Education, High School Graduate	.39
Mult R = .39, R^2 = .15	
First Grade	
Mother's Education, High School Graduate	.38
Middle Child	.28
Mult R = .51, R^2 = .26	
Second Grade	
Father's Education, High School Graduate	.41
Mult R = .41, R^2 = .16	
Third Grade	
Supervision by Parents	-.49
Day Employment of Mother	.34
Mult R = .61, R^2 = .38	
Fourth Grade	
Day Employment of Mother	.26
Mult R = .26, R^2 = .07	

Table 5 (continued)

	beta
Fifth Grade	
Mother's Education, High School Graduate	.38
Mult R = .38, R^2 = .48	
Sixth Grade	
Mother's Education, High School Graduate	.38
Mult R = .38	
Influences on the Achievement of Children with Absent or Unemployed Fathers	
Reading	
Grade	-.25
Sex (male)	-.11
Mult R = .27, R^2 = .07	
Mathematics	
Grade	-.18
Sex (male)	-.12
Mult R = .21, R^2 = .04	

relationships are shown with the achievement of children with absent or unemployed fathers.

The reading achievement of boys across grades and at first grade show no significant relationships to the variables. The reading achievement of second-grade boys is positively related to place of supervision (home), at fourth grade by small family and mother's education (high school graduate), at fifth grade by father's education and small family, and at sixth grade by mother's education (high school graduate). Significant negative relationships are shown on the reading achievement of third-grade boys by day employment of the mother and on the reading achievement of sixth-grade boys by middle child.

The mathematics achievement of boys across grade shows a significant positive relationship to the small family. No significant influences are shown by the variables on the mathematics achievement of first grade boys. Significant positive relationships are shown between the mathematics achievement of boys by place of supervision at second grade, by small family and day employment of the father at fourth grade, by father's education (high school graduate) at fifth grade, and by mother's education (high school graduate) at sixth grade. Day employment of the mother has a significant negative relationship to the mathematics achievement of third-grade boys and middle child has a significant negative relationship to the mathematics achievement of sixth-grade boys.

The reading achievement and mathematics achievement of girls across grades are significantly related to the education of the mother. The reading achievement of girls is positively related to mother's education and middle child in first grade, by father's education and mother's education in the second grade, by day employment of the mother in third grade, by mother's education, day employment of the father, and father's education in fifth grade. No significant relationships are shown with the reading achievement of sixth grade girls and the variables. Supervision by parents has a significant negative relationship to the reading achievement of third grade girls.

The mathematics achievement of girls is positively related to the mother's education and middle child at first grade, by father's education at second grade, by day employment of the mother at third grade and at fourth grade, and by mother's education at fifth grade and sixth grade. Supervision by parents has a significant negative relationship to the mathematics achievement of third grade girls.

Discriminant Analysis

The SPSS (1975) subprogram, Discriminant was used to statistically discriminate the four classifications (achiever, low achiever, LD, and EMH) and to show the strength of the relationships of the significant variables to each classification. The Wilks' method which develops the strongest discriminant functions by selecting the best combination of the variables to minimize lambda and to maximize

the F-ratio. Reading achievement mathematics achievement, grade, and sex (male) were the discriminant variables entered. Table 6 shows the strength of the relationship of each of the variables to each classification. The coefficients are unstandardized so the relative importance of the variables cannot be determined.

Table 6

Classification Function Coefficients

	Classification			
Variable	Achiever	Low Achiever	LD	EMH
Reading	.31	.27	.13	.16
Math	.98	.57	.98	.10
Grade	.16	-.50	-.67	-.83
Male	2.46	2.89	3.80	2.97

Reading shows the strongest relationship to the achiever classification. Mathematics shows strong relationships to both the achiever classification and to the LD classification. Grade shows the strongest relationship to the EMH classification and male has the strongest relationship to the LD classification.

Three discriminant functions were developed through the Wilks' method to statistically discriminate the groups. The discriminating power of each function is shown in Table 7.

Table 7

Discriminating Power of Discriminant Functions for Classifications

Discriminant Function	Eigenvalue	Canonical Correlation	Wilks Lambda
1	.76	.66	.50
2	.12	.33	.88
3	.02	.12	.99

Function 1 has the greatest amount of discriminating power as indicated by its largest eigenvalue and canonical correlation and smallest lambda.

The relative contributions of the four discriminating variables are presented in Table 8.

Table 8

Standardized Canonical Discriminant Function Coefficients

	Function 1	Function 2	Function 3
Reading	1.32	-1.84	.16
Mathematics	-.25	2.14	.09
Grade	-.52	.11	-.05
Male	-.15	-.03	.99

The first function primarily represents reading, the second mathematics, and the third male.

The statistical distinctions between the four classifications are shown by the canonical discriminant functions evaluated at the means of each group (Table 9). The discriminant functions accurately predicted 62.5% of the cases. The classification results are presented in Table 10.

Table 9

Canonical Discriminant Functions
at Group Means

Group	Function 1	Function 2	Function 3
Achiever	.98	-.22	-.04
Low Achiever	.004	.48	.04
LD	-.80	-.45	.33
EMH	-1.23	-.16	-.13

Table 10

Classification Results

Actual Group	No. of Cases	Predicted Group Achiever	Low Achiever	LD	EMH
Achiever	94	76 (80.9%)	17 (18.1%)	0	1 (1.1%)
Low Achiever	86	11 (12.8%)	69 (80.2%)	5 (5.8%)	1 (½%)
LD	24	3 (12.5%)	12 (50%)	3 (12.5%)	6 (25%)
EMH	60	3 (5%)	27 (45%)	13 (21.7%)	17 (28%)

The greatest accuracy in classification was among the achiever and the low achiever classifications with 80.9% for the achiever and 80.2% accuracy for the low achievers. The greatest amount of error occurred in classified LD and EMH cases. Fifty percent of the LD cases were incorrectly classified as low achievers and 45% of the EMH cases were incorrectly classified as low achievers.

CHAPTER V

DISCUSSION

Evaluation of Hypotheses

It was hypothesized that there would be a strong relationship between achievement in reading and in mathematics and maternal employment, employment shift of the mother and/or father, type of after-school supervision, birth order, and family size. The strongest negative relationship between the achievement scores and the independent variables were expected with (1) maternal employment when the father is unemployed or absent, (2) night shift employment of the mother and/or father, (3) after-school supervision which is away from home, (4) large family size, and (5) middle child.

The relationship between the achievement scores in reading and mathematics for children with absent or unemployed fathers and maternal employment was not significant. Therefore, the prediction of a negative relationship was not supported. The only variables which showed significant relationships to the reading and mathematics scores of children with absent or unemployed fathers were grade and sex. Children in the lower grades showed higher achievement scores in both areas than children in the upper grades. Across grades girls achieved higher scores in both areas than boys. The correlations the achievement scores of the children with absent or unemployed fathers, shown in Table 2, indicate a significant relationship between

race and mathematics scores for boys and girls across grades. A positive relationship is shown for black children.

The relationship between achievement in reading and in mathematics and night shift employment of the mother and/or father was not significant. The number of cases of night shift employment at each grade and across grade was not sufficient to make any claims about supporting the prediction of a negative relationship.

The place of after-school supervision was not significant. Only for first-grade boys was there significant positive relationships shown between both reading and mathematics scores and supervision at home. The relationships between the place of after-school supervision and achievement of boys and girls at other grades and across grades were not significant. Therefore, the general prediction was not supported.

In each analysis in which family size was significant, the small family was positively related to achievement. A positive relationship between reading and the small family was shown for fourth-grade boys and girls and for fifth-grade boys. The mathematics scores of boys across grades had a significant positive relationship to the small family. The prediction that a large family size would be negatively correlated with reading and mathematics scores was therefore supported.

The middle child is negatively related only to the achievement of sixth grade boys. The significant negative relationship is shown for both reading and mathematics. Therefore, the prediction of a

negative relationship with reading and mathematics across grades and sexes was not supported.

It was also hypothesized that there would be a relationship between the four classifications of children: (a) achievers, (b) low achievers, (c) learning disabled, and (d) educable mentally handicapped and the variables--maternal employment, employment shift of the mother and/or father, birth order, and family size, but this hypothesis was not supported.

Grade and Sex

The best predictors of achievement were grade and sex. Girls achieved higher scores than boys in both reading and mathematics. The achievement scores of both boys and girls were higher in the lower grades than in the upper grades. Several factors may contribute to these findings. First, boys tend to show lower levels of readiness to learn the basic academic skills than girls when they enter school. As a result, they experience difficulties during their early school years and show low levels of achievement. This often causes boys to lag behind girls in achievement for the remainder of their elementary school years. Early school failure frequently influences teacher expectations. Teachers tend to expect low achievement from children who have demonstrated low achievement. Teachers also usually expect lower achievement by boys than girls, especially in reading and in other areas of the langauge arts. Boys are expected to achieve more in mathematics than in reading. Teacher expectations often become "self-fulfilling prophecies" (Rosenthal, 1968).

Early school failure is also related to a decrease in the motivation to achieve. Children who are aware of their own incompetencies sometimes lose the desire to try to learn. Achievement deficits are cumulative. Children who are only slightly underachieving in the lower grades usually show significant levels of underachievement by the time they reach the upper grades.

Second, the decline in achievement which occurs as the number of years of schooling increases may be related to parental involvement in the schools and to teaching methods. In discussions with principals, teachers, and parents, it became evident that parental involvement in schools is greater among the parents of children in the early grades than among the parents of children in the upper grades. More than half the parents who rendered volunteer services in the schools during the past year had children who were either in kindergarten or in first grade. The number of parent volunteers per grade decreased with each successive grade. Most parents of children in the early grades attend PTA meetings regularly. The attendance by parents of children in the upper grades is usually small. The school principals and teachers have indicated the existence of a definite relationship between parental involvement in the schools and the achievement of children. The children whose parents are actively involved in the school show higher achievement than the children whose parents seldom or never participate in school activities. The fact that parental involvement is greater among the parents of children in the early grades than in the later grades may have some

relationship to maternal employment. Mothers of children in the upper grades are more likely to be employed than the mothers of children in lower grades.

Many opportunities are provided for parental involvement in the lower grades. Teachers usually supplement classroom instruction with class trips and other learning activities which often require additional adult supervision. Although most of the first, second, and third grade classes are a part of the Primary Reading Program and have classroom aides, teachers often call upon parents to assist and to participate in activities with their children.

Teachers in the Primary Reading Program are required to attend frequent workshops and classes to increase their teaching skills and to acquaint them with the use of effective teaching materials and equipment. Children have the use of ample teaching materials and equipment and are usually taught through a variety of methods. Most children in the primary grades spend a portion on the school day in an open classroom setting in which they learn through manipulation, exploration, and discovery. Learning at other times takes place in large groups, small groups, or in individual tutoring situations.

When children reach fourth grade they must leave the rich educational classrooms of the Primary Reading Program and usually must adjust to traditional classrooms, traditional teaching methods, and fewer supplies and equipment. The decline in achievement which is shown at the fourth grade may be caused by the failure of some

children to make the necessary adjustment to a different type of setting for learning.

Third, the decline in achievement in the upper grades as shown by two different standardized achievement tests may be a reflection of a slight difference in the norming groups used rather than an actual decline in achievement.

Father's Education

Father's education showed a strong relationship to the achievement of girls in the early grades and to the achievement of boys in the later grades. These relationships may reflect the changing role of the father in the family and some of the values and traditions of the community. As a result of the increased number of working mothers and the increased acceptance of nontraditional responsibilities by men, fathers are frequently not simply the provider of income for the family, but an active family member who participates with the family in many activities. The relationship of the father's education to the achievement of young girls may be influenced by the father's increased participation in childrearing and household responsibilities. This increases the father's availability for communication and for activities with the young daughters.

The relationship of the father's education to the achievement of boys is not significant until the upper grades. At that time the father's involvement with boys is likely to be greater than

in the early grades. The values and traditions of the community encourage and support parent-child relationships and family unity. The community has few of the commercial types of recreation. There are no movie theaters, skating rinks, video game rooms, or bowling alleys. Most of the local recreation is provided by community, school, or church activities. Many of these activities are developed for participation by the entire family, by mothers and daughters, or by fathers and sons. Most of the father-son activities are more appropriate for participation by upper-grade boys than by lower grade boys. This increases the involvement of fathers and sons at that time. Fishing and hunting are important activities for the men and most fathers teach these skills to their sons at an appropriate age, usually in the upper elementary grades. Some families farm as the main source of income. Boys usually begin to assist their fathers with the farming responsibilities by the time they reach the upper elementary grades. This also provides an opportunity for father-son interaction which is available to boys in the upper grades but not to younger boys.

The relationship of the father's education to the achievement of young girls and to older boys suggests a difference in the way that fathers relate to girls and to boys in the early grades and in the upper grades. It is possible that the relationship of the father's education to the achievement of girls in the lower grades is the result of the availability of the father to the girls in the home and that the relationship of the father's education to the achievement of

boys in the upper grades is a result of the increased involvement with the boys in activities away from home.

Mother's Education

Mother's education showed strong relationships to both the reading and mathematics achievement of girls. This supported the findings of Cherry and Eton (1977) that the education of the mother positively influenced the early achievement of children. This also was probably influenced by the community values and traditions which dictate that mothers pass on to their daughters the values and traditions which were passed on to them by their mothers. The church, the schools, and the community provide many opportunities for mothers and daughters to work and play together. Fund-raising activities as well as recreational activities such as picnics, church suppers, and bazaars are often planned and set up by the women of the community. Daughters usually participate along with their mothers beginning at an early age. Mothers are role models for their daughters. The activities and behaviors of mothers are usually imitated by their daughters. This is an important part in the development of achievement in girls. The achievement motivation shown by girls is usually a reflection of the standards for accomplishment, the encouragement, and the acceptance by their mothers. Mothers who are high school graduates are likely to set high standards for their daughters. They are also likely to have high levels of involvement in the schools and in the other activities of their daughters.

The achievement of older boys was also related to the education of the mother. This relationship is very likely the reflection of the aspirations and the goals which mothers have for their sons and a reflection of the mother's involvement in activities with their sons. The achievement of boys as well as girls is influenced by the availability of the mother, her warmth, her acceptance, and her praise for accomplishments.

Employment of the Mother

Employment of the mother showed a strong positive relationship to the achievement of third grade girls and a strong negative relationship to the achievement of boys at the same grade. Only day employment was used in the analysis because there were too few parents working on other shifts due to the economic recession. The achievement of second grade boys was positively related to supervision at home. The relationship between the place of supervision and the achievement of girls was not significant. These findings indicate that in the early grades the employment of the mother influences some boys and girls differently. Third-grade boys seemed to have benefited from having nonworking mothers who were at home after school and girls seemed to have benefited from having mothers who were at work during after-school hours. The positive influence of the working mother on the achievement of girls is probably related to the education of the mother. Mothers who are employed are likely to be high school graduates and are

likely to have high aspirations for themselves. Working mothers are often more organized with their activities than nonworking mothers because they must attend to employment responsibilities as well as to their domestic responsibilities. Since mothers serve as models for their daughters, the daughters tend to imitate the behavior of their working mothers. Organization, aspirations for achievement, and pride in accomplishments are likely characteristics of the working mother which are imitated by their daughters and contribute to their daughters' success in school. Mothers are not the role models for boys so the positive influences of the working mother are not imitated by boys.

These findings are consistent with the findings of Gold and Andres (1978) which reported slightly lower achievement among ten-year-old-boys with working mothers than among boys the same age with nonworking mothers. The achievement of girls with working mothers was higher than the achievement of boys with working mothers.

Family Size and Birth Order

Small family size was positively related to the mathematics achievement of boys across grades and to the reading achievement of fourth-and-fifth-grade boys and fourth-grade girls. In each analysis in which family size is significant, the small family has a positive relationship to achievement. This finding supports the confluence model (Zajonc and Markus, 1975) which predicts higher

achievement from children of small families than children from large families.

The relationships of birth order to achievement are inconsistent. A strong positive relationship with middle child and achievement in reading and mathematics was shown for first-grade girls and a strong negative relationship was shown between middle child and achievement in both areas for sixth-grade boys. Possible influences on these relationships are not clear. It may stem from the difference in the relationship of parents to their young daughters and to their older sons.

Summary

Generally, girls showed higher achievement than boys, and children in the lower grades showed higher achievement than children in the upper grades. Both boys and girls whose mothers and fathers were high school graduates were more likely to be achievers than children whose parents were not high school graduates. The achievement of both boys and girls was positively influenced by the small family. Employment of the father was positively related to the achievement of both boys and girls in the upper grades. The employment of the mother had a positive relationship to the achievement of third-grade girls and a negative relationship to the achievement of boys in the same grade.

The findings may simply be a reflection of a chance occurrence which sometimes results when a large number of correlations are computed. They may also be spurious findings.

It is not readily possible to generalize the results of this study to other communities due to the particular geographic and economic situation of the community studied. The study nevertheless provides information about a small southern textile mill community in a recessionary economic climate. The findings are relevant to other such communities.

Recommendations

The low number of parents employed on second, third, and rotation shifts did not allow a true test of the hypothesis about the shift on which the parents were employed. A study on a population in an area in which the industries are less hard hit by economic conditions might show the influence of employment shift on the achievement of children. The influence of shift employment might also be shown by a study using test scores and the employment variables which existed at earlier times when production in the mills was at a higher level.

Further study is needed to find specific reasons for the decline in achievement scores from the early grades to the later grades. The findings of such studies would have implications for curriculum improvement and for possible changes in teaching techniques.

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