

## INFORMATION TO USERS

**This was produced from a copy of a document sent to us for microfilming. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the material submitted.**

**The following explanation of techniques is provided to help you understand markings or notations which may appear on this reproduction.**

- 1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure you of complete continuity.**
- 2. When an image on the film is obliterated with a round black mark it is an indication that the film inspector noticed either blurred copy because of movement during exposure, or duplicate copy. Unless we meant to delete copyrighted materials that should not have been filmed, you will find a good image of the page in the adjacent frame.**
- 3. When a map, drawing or chart, etc., is part of the material being photographed the photographer has followed a definite method in "sectioning" the material. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.**
- 4. For any illustrations that cannot be reproduced satisfactorily by xerography, photographic prints can be purchased at additional cost and tipped into your xerographic copy. Requests can be made to our Dissertations Customer Services Department.**
- 5. Some pages in any document may have indistinct print. In all cases we have filmed the best available copy.**

**University  
Microfilms  
International**

300 N. ZEEB ROAD, ANN ARBOR, MI 48106  
18 BEDFORD ROW, LONDON WC1R 4EJ, ENGLAND

8114589

HAYES, VIRGINIA B.

A STUDY OF THE RELATIONSHIP BETWEEN SELECTED LEARNING  
INDEPENDENCE CHARACTERISTICS OF THIRD-GRADE STUDENTS AND  
THEIR READING ACHIEVEMENT

*The University of North Carolina at Greensboro*

Ed.D. 1980

University  
Microfilms  
International 300 N. Zeeb Road, Ann Arbor, MI 48106

Copyright 1981

by

Hayes, Virginia B.

All Rights Reserved

A STUDY OF THE RELATIONSHIP BETWEEN SELECTED  
LEARNING INDEPENDENCE CHARACTERISTICS  
OF THIRD-GRADE STUDENTS AND  
THEIR READING ACHIEVEMENT

by

Virginia B. Hayes

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  
Doctor of Education

Greensboro  
1980

Approved by

*Barbara H. Stoodt, Phd.*  
Dissertation Adviser

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 Barbara D. Hoodt, PhD

Committee Members Lois V. Edinger  
Nancy White  
Ellen L. Spitzer

August 28 1980  
Date of Acceptance by Committee

August 28 1980  
Date of Final Oral Examination

HAYES, VIRGINIA B. A Study of the Relationship Between Selected Learning Independence Characteristics of Third-Grade Students and Their Reading Achievement. (1980)  
Directed by: Dr. Barbara D. Stoodt. Pp. 199

The purpose of this study was to develop a scale to measure the learning independence of third-grade students and to determine the relationships between the independence measure and the student variables which follow: reading performance, intelligence, sex, educational level of mother, and income level of parents. Another purpose of the study was to determine the relationship between personality traits of teachers and two variables: Learning Independence Scale (LIS) scores assigned to students by the teachers and reading scores obtained by students on a standardized reading test.

The subjects were 187 third-grade students and eight classroom teachers. Students were rated by their teachers on 23 indicators of independence. The classroom teachers were administered a personality profile. Demographic data obtained from school records included IQ, sex, educational level of mother, income level of parents, and reading scale score from the California Achievement Test.

Descriptive statistics were employed to describe the variables in terms of a measure of central tendency (mean) and variability (standard deviation). The analysis of variance procedure in conjunction with Duncan's Multiple Range Test was employed to test the significance of differences

between and among groups for the educational level of mothers and the income level of parents. Correlational statistics were used to obtain reliability coefficients and to determine internal consistency for the Learning Independence Scale. Regression analysis was employed to examine the relationship between the variables to determine whether combinations of the variables could be used to predict reading scores and learning independence.

The study revealed that there were significant relationships between total learning independence ratings assigned to students and such factors as the students' reading scores ( $p < .0001$ ) and intelligence quotients ( $p < .0001$ ), the educational level of the students' mothers ( $p < .0001$ ), and the income level of the students' parents ( $p < .001$ ). The study revealed that the intelligence quotients, sex, and educational level of the students' mothers can be combined to predict learning independence ratings of third-grade students; and that intelligence quotients, LIS ratings, and sex of students can be combined to predict the reading performance of students.

No significant correlation was found between the self-reported personality traits of teachers and the reading performance of students. A significant relationship was not observed between LIS ratings and sex of students.

In conclusion, the results indicate that teachers can reliably measure learning independence of third-grade

students. There is a significant relationship between this measured student trait and the reading performance of students, intelligence quotients, educational level of students' mothers, and income level of the parents.

## ACKNOWLEDGMENTS

I express my deepest gratitude to Dr. Barbara Stoodt, who provided unending guidance and encouragement in the preparation of this dissertation. My appreciation is also extended to Dr. Lois Edinger, Dr. Dale Brubaker, Dr. Nancy White, and the late Mary A. Hunter for their patience, support, and service throughout the doctoral program of studies. The friendship and assistance of Dr. H. T. Conner is acknowledged with sincere appreciation.

I am grateful to each of the eight classroom teachers whose cooperation and assistance enabled me to collect the data for this paper, and to each of the school systems, for their willingness to participate with me in this project.

I am deeply indebted to Mrs. Elizabeth Hunt for her assistance and competence in typing this manuscript, and to Carol Burke, for the help she gave in so many ways.

I am grateful to my children, Tommy and Beth, for their tolerance and sacrifices as I worked to complete this degree. Finally, I am deeply grateful to my husband, Art, without whose love and encouragement this paper could not have been completed.



## TABLE OF CONTENTS

	Page
APPROVAL PAGE . . . . .	ii
ACKNOWLEDGMENTS . . . . .	iii
LIST OF TABLES. . . . .	vii
CHAPTER	
I. INTRODUCTION . . . . .	1
Rationale. . . . .	1
Purpose of the Study . . . . .	3
Objectives of the Study. . . . .	3
Design . . . . .	4
Assumptions. . . . .	6
Limitations of the Study . . . . .	7
Operational Definitions of Terms . . . . .	8
Summary. . . . .	10
II. REVIEW OF RELATED LITERATURE . . . . .	12
Overview . . . . .	12
Personality Factors Contributing to Student Independence . . . . .	13
Student Independence and Reading Achievement	17
Parental Influences on Student Independence.	34
Teacher Personality and School Organiza- tional Influences on Student Independence and Reading Achievement. . . . .	43
Socioeconomic Status as an Influence of Student Independence and Reading Achieve- ment . . . . .	59
Summary. . . . .	66
III. PROCEDURES . . . . .	70
Development of the Learning Independence Scale. . . . .	70
Selection of Study Population. . . . .	74
Collection of Data . . . . .	77
Analysis of Data . . . . .	79
Summary. . . . .	82

TABLE OF CONTENTS (continued)

CHAPTER	Page
IV. FINDINGS . . . . .	83
Introduction . . . . .	83
Statistics Related to Development of Learning Independence Scale. . . . .	85
Descriptive Data Relative to Student Variables. . . . .	95
Relationship Between Students' Sex and Learning Independence Scale Scores . . . . .	99
Correlations Between Students' Reading and Learning Independence Scale Scores . . . . .	102
Correlations Between Students' Intelli- gence Test Scores and Learning Indepen- dence Scale Scores . . . . .	105
Relationship Between Students' Learning Independence Scale Scores and Educa- tional Levels of Mothers . . . . .	109
Relationships Between Students' Learning Independence Scale Scores and Income Levels of Parents. . . . .	123
Prediction of Learning Independence Scale Scores and Reading Scores with Selected Student Variables. . . . .	137
Relationship Between Personal Profile Scores for Teachers and Student Reading and Learning Independence Scale Scores . . . . .	142
Summary. . . . .	146
V. SUMMARY AND CONCLUSIONS. . . . .	150
Description of Study . . . . .	150
Development of the Learning Independence Scale. . . . .	152
Findings . . . . .	154
Summary of Testing the Hypotheses. . . . .	160
Conclusions. . . . .	162
Implications . . . . .	164
Recommendations for Further Study. . . . .	166
BIBLIOGRAPHY. . . . .	169

TABLE OF CONTENTS (continued)

	Page
APPENDIX A Draft of Learning Independence Scale . . . . .	180
APPENDIX B Panel of Jurors . . . . .	184
APPENDIX C Learning Independence Scale . . . . .	186
APPENDIX D Correlation Coefficients Between Students' Pre-test Scores and 23 Independent Variables . . . . .	190
APPENDIX E Correlation Coefficients Between Students' Reading Change Scores and 23 Independent Variables . . . . .	193
APPENDIX F Learning Independence Total Scores Obtained from Regression Equation with Intelligence Quotients, Educational Level of Mother, and Sex as Predictors . . . . .	196
APPENDIX G Reading Scores Obtained from Regression Equation with Intelligence Quotients, Learning Independence Scale Total Scores, and Sex as Predictors . . . . .	198

## LIST OF TABLES

Table	Page	
1	Number of Students Enrolled in the Eight Classes Involved in Study. . . . .	76
2	Statistical Procedures . . . . .	86
3	Reliability Coefficients for Odd-Even Items on Learning Independence Scale for Eight Teachers and Total Number of Teachers . . . . .	88
4	Correlations Between Item Scores and Total Scores for the 23 Items in the Learning Independence Scale. . . . .	90
5	Intercorrelations Between the 23 Items Included in the Learning Independence Scale . . . . .	94
6	Number of Respondents and Mean and Standard Deviation for Variables Used in Study. . . . .	96
7	Correlation Coefficients Between Students' Sex and Learning Independence Scale Scores . . . . .	100
8	Correlation Coefficients Between Students' Reading Scores and Learning Independence Scale Scores . . . . .	103
9	Correlation Coefficients Between Students' Intelligence Test Scores and Learning Independence Scale Scores . . . . .	106
10	Correlation Coefficients Between Education Level of Students' Mothers and Learning Independence Scale Scores . . . . .	110
11	Analysis of Variance of Learning Independence Scale Scores by Educational Level of Mother. . . . .	113
12	F Values and Probabilities for Analysis of Variance of Learning Independence Scale Scores by Educational Level of Mothers and Duncan's Multiple Range Test. . . . .	118
13	Correlation Coefficients Between Income Level of Students' Parents and Learning Independence Scale Scores . . . . .	125

LIST OF TABLES (continued)

Table	Page	
14	Analysis of Variance of Learning Independence Scale Scores by Parental Income Levels. . . . .	127
15	F Values and Probabilities for Analysis of Variance of Learning Independence Scale Scores by Parental Income Level and Duncan's Multiple Range Test . . . . .	131
16	Intercorrelation Between Variables for Possible Predictors of Reading Scale Score and Total Learning Independence Scale Score . . . . .	136
17	Zero Order Correlations, Multiple Correlations, and the Regression Equation for Best Predictors of Total Learning Independence Scale Scores . . . . .	139
18	Zero Order Correlations, Multiple Correlations, and the Regression Equation for Best Predictors for Reading Scale Score. . . . .	141
19	Intercorrelations Between the Scale Scores on the Gordon Personal Profile for Teachers. . . . .	144
20	Correlations Between Self-Report Scores for Teachers on the Gordon Personal Profile, Students' Average Reading Scores, and the Average Total Learning Independence Scale Scores Assigned to Students . . . . .	145

CHAPTER I  
INTRODUCTION

Rationale

In recent years, educators have investigated the factors which contribute to academic achievement. Attention has been focused on the relationships of the influences in a child's life which might provide clues to the question of why some children are successful learners while others experience academic failure. By identifying the sources of academic success, researchers hope to make it possible to devise situations in the child's life that would diminish academic failure.

The relationship between intelligence and reading performance has been explored by Bond and Fay (1950) and Strang (1943). Home influences, such as socioeconomic status and parental behaviors, have been studied by Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York (1966). Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, and Michelson (1972) have also investigated the effect of the family in education. The influences of teacher personality and teacher behavior, as well as the organizational patterns of the school, have been examined as possible antecedents of academic achievement (Halpin & Croft, 1963; Lunenburg & O'Reilly, 1974; Turner & Denny, 1969).

Several studies have been conducted for the purpose of identifying student personality factors which contribute to reading achievement. Hallock (1958), for example, found eight personality traits to be related to reading success. McMurray (1963) found four types of personality behavior which correlated with reading performance. Studies conducted by Challman (1939), Barber (1952), Spache (1957), Frost (1965), and Cutts (1956) revealed that personality of students was significantly correlated with their reading performance.

Although few of the studies of student personality include the element of independence in the classroom as it relates to achievement in general, or to reading achievement specifically, several investigations have contributed to the definition of such independence (Barron, 1953; Heathers, 1953; Stith & Connor, 1962). If research such as the present study reveals a significant relationship between the degree of independence that students possess and their success in reading, steps should be taken to determine whether such behavior can be developed and improved.

In view of the paucity of literature concerning the relationship between student independence and reading achievement, the present study is warranted. If such a relationship is found, it may then be possible to combine certain student characteristics in order to predict reading performance. Such predictions would provide information regarding the

academic performance of students which would assist personnel in public education, higher education, and clinical settings.

#### Purpose of the Study

The major purpose of this study was to develop an instrument to measure the degree of learning independence of third-grade students, and to determine the interrelationships between the student learning variable and the following student characteristics: measured reading performance, intelligence scores, sex, educational level of the mother, and income level of the parents. A second purpose was to determine the relationship between four personality scores for teachers, the reading scores for their students, and learning independence scores assigned to students by their teachers.

#### Objectives of the Study

The objectives of this study were to investigate the following questions:

1. What is the relationship between learning independence and the sex of students?
2. What is the relationship between indicators of student independence and reading achievement for third-grade students?
3. What is the relationship between learning independence and intelligence quotients of third-grade students?



4. What is the relationship between learning independence of students and the educational levels of their mothers?
5. What is the relationship between learning independence of students and the income levels of their parents?
6. Are there combinations of student variables that can be used to predict learning independence of students?
7. Are there combinations of student variables that can be used to predict reading scores for students?
8. What is the relationship between personal profile scores of teachers and the learning independence ratings they assign to their students?
9. What is the relationship between personal profile scores of teachers and the reading achievement scores of their students?

#### Design

To achieve the objectives of the study it was necessary to develop a teacher-rating scale to measure independent behavior of students, to identify a student population, to collect pertinent demographic information for the subjects, to retrieve reading achievement scores from school records, and to analyze the information to test the hypotheses proposed for the study.

The sample population for the study was 187 third-grade students in eight classes and the teachers of the students. Each class was in a different school in a different school system in the Piedmont area of the State of North Carolina. Both metropolitan areas and rural areas were represented in the sample population.

Each teacher was asked to complete the Learning Independence Scale for every student in the class and to record information relative to the student's sex, reading scale score from the California Achievement Test, IQ, educational level of the mother, and income level of the parents. The teachers were administered the Gordon Personal Profile (1963) which yielded four personality scores: Ascendancy (A), Responsibility (R), Emotional Stability (E), and Sociability (S). These procedures are fully explained in Chapter III.

The hypotheses proposed for this study were tested through the use of correlational and analysis of variance statistical procedures. Duncan's Multiple Range Test, a supplement to the analysis of variance test, was employed to determine which categories of educational and income levels were actually related to differences in students' Learning Independence Scale scores and reading scores. Correlational analyses were employed to determine the interrelations between variables and to determine reliability and internal consistency of the Scale. When hypotheses of differences or relationships were accepted, correlational coefficients

or analysis of variance ratios (F) would have occurred by chance in 5 or fewer times in 100 times (.05 level of confidence).

#### Assumptions

This study was developed on the premise that a student's reading performance would be influenced to the degree that the student accepted responsibility for his or her own goals and actions. If independence on the part of the student could be identified and developed, the chance for improved reading performance could be enhanced through proper guidance and training from the school and the home. There was no belief on the part of the researcher that a study of this small scope would answer all of the questions relative to the effect of independence on reading performance. It was concluded, however, that the findings in this research, coupled with the knowledge obtained from other studies, might contribute to learning theory and teaching methodology.

The development of the instrument used in this study was influenced by the principles inherent in the construct, locus of control, which was researched by Rotter (1966) and others (Bialer, 1961; Crandall, Katkovsky, & Crandall, 1965; Phares, 1955, 1957). The present researcher concluded that this theory was closely related to the definition of independence that should be used in the present study. It follows,

therefore, that this report includes a review of literature that is related to locus of control, and that the principles in this concept influenced the content of many of the items that are included in the Learning Independence Scale.

#### Limitations of the Study

The population of this study was limited to students and teachers from eight third-grade classes in the Piedmont area of North Carolina. Care should be exercised in drawing conclusions for other grade levels for other areas of North Carolina or the nation. Whereas 187 students represents a relatively large student population, the sample of teachers is too limited to be representative.

Since the students involved in this study were enrolled in several school systems which administered different intelligence tests, a particular score on one test might vary somewhat from a score obtained on another test. The differences in these test scores should be considered in interpreting the findings that involved the use of intelligence scores.

Both objective and subjective data were collected in this investigation. The reading and intelligence scores for students were obtained from school records of standardized tests, and these can be classified as objective data. The educational level of the students' mothers and the income levels of their parents were recorded by the teachers, and

although teacher judgment was based on information from school records, the evaluations were partially subjective. Finally, the ratings assigned to students on the Learning Independence Scale as well as the ratings the teachers assigned to themselves on the Gordon Personal Profile were the teachers' perceptions. Caution is necessary in interpreting the findings of studies using teacher ratings, since the findings may be confounded by the so-called "halo effect"; i.e., the students' reading abilities may influence the teachers' assessment of their personalities.

This investigation was primarily concerned with the relationship between the learning independence of third-grade students and student characteristics that included measured reading performance, intelligence scores, sex, educational level of mother, and income level of the parents. The findings of this investigation, coupled with the insights obtained from the review of literature, will be used for recommending additional studies. These recommendations are included in Chapter V.

#### Operational Definitions of Terms

To insure a better understanding of the findings of this study, selected terms that may be unfamiliar to the reader are defined. These definitions evolved from the reading and study of literature related to this investigation.

Independent Student: A student who does not rely on others for responsibilities he or she should accept, does not look to others for opinions or for guidance of conduct, and who shows a desire for freedom to make choices and absence of constraint.

Personality Traits of Teachers: Those characteristics that are described in the Gordon Personal Profile (1963).

1. Ascendancy--Trait of an individual who adopts an active role in a group, who is self-assured and assertive, and who tends to make independent decisions.
2. Responsibility--Trait of an individual who demonstrates perseverance and determination, and who can be relied on to fulfill an obligation.
3. Emotional Stability--Trait of an individual who is emotionally secure, relatively free from anxieties and nervous tension, and is generally well-balanced emotionally.
4. Sociability--Trait of an individual who likes to be with other people, and is gregarious.

Indicators of Independence: Student traits that are described in each item and the total score of the Learning Independence Scale that was developed for this study.

Personality Trait: "A characteristic of an individual revealed through recurring behaviors in different situations" (Kerlinger, 1973, p. 494).

Locus of Control: The propensity toward a belief that one controls events in one's life through personal behaviors and/or efforts, as opposed to a belief that outcomes in one's life are controlled by chance, luck, fate, or powerful others (Rotter, 1966).

Internal Orientation of Locus of Control: A personal belief that the outcomes of the events in one's life are contingent upon one's own behavior (Rotter, 1966).

External Orientation of Locus of Control: A personal belief that the outcomes of the events in one's life are controlled by chance, luck, fate, or powerful others (Rotter, 1966).

### Summary

The purpose of this study was to develop an instrument to measure the degree of learning independence with which third-grade students function in the classroom, and to determine the relationship between this variable and measured reading performance, intelligence, sex of students, educational level of the mother, and the income level of the parents. A second objective was to determine the correlation between selected personality traits of teachers and the independence ratings assigned to the students by the teachers. The relationship between teacher personality and reading achievement was also explored. Data to meet these purposes were collected about the participating students and

teachers and then analyzed to provide information to answer questions (objectives of the study).

This study was developed on the premise that a student's reading performance is related to the degree of independence with which he or she functions in the classroom. The locus of control construct from social learning theory provided background information for items on the Learning Independence Scale which was developed for the study.



CHAPTER II  
REVIEW OF RELATED LITERATURE

Overview

The major purpose of this study was to develop an instrument to measure the degree of learning independence of third-grade students and to determine the relationships between this variable and such student characteristics as reading performance, intelligence scores, sex, educational level of the mother, and income level of the parents. A thorough search of related literature was conducted to provide background for developing the theoretical framework of the study. The most pertinent findings are presented in this chapter. The studies obtained through this survey have been grouped and reported in the categories which follow:

(a) Personality Factors Contributing to Student Independence, (b) Student Independence and Reading Achievement, (c) Parental Influences on Student Independence, (d) Teacher Personality and School Organizational Influences on Student Independence and Reading Achievement, and (e) Socioeconomic Status as an Influence of Student Independence and Reading Achievement. A brief summary of the literature for each area is included at the end of each section, with a full summary of the five areas at the end of the chapter.

Personality Factors Contributing to  
Student Independence

There is little agreement among authors regarding a definition of independent behavior. Beller (1957, 1959) traced the developmental stages of an individual beginning with infancy, which he viewed as a totally dependent state of being. This researcher also examined differences in dependence/independence qualities of personality. According to Beller, dependency originates in the helplessness of the human infant and requires intervention by the parents for survival. This continual process becomes a physical necessity for the child and results in dependency drive which manifests itself in five dependency components: seeking help, attention, recognition, physical contact, and nearness to others. Conversely, autonomous achievement striving (independence) components are manifested through exploration of the environment in such behaviors as taking initiative, overcoming obstacles, deriving satisfaction from work, trying to do things alone, and completing an activity. The gradual process of relinquishing dependency and assuming more independence is postulated to involve considerable conflict for the child because of the multiplicity of situations and learning influences he or she encounters. As a result of these influences a child may learn emotional dependence in one situation while he or she is acquiring emotional independence in another.

Heathers (1953) defined elements of independence in a physically threatening situation as "coping with the situation without requiring reassurance or help." Self-reliance was another component of this author's definition of independence, and he noted that an individual may express independence in order to experience self-approval which comes from knowing that he has mastered a difficult or threatening situation. He further suggested that an individual may show independence as a way of winning approval from others or as a way of avoiding disapproval.

Stith and Connor (1962) used a time-sampling technique and predetermined categories to investigate the frequency and proportions of helpful and dependent behavior exhibited by preschool children. Their seven categories of helpful behavior included: offering information, giving help, giving reassurance, giving permission, giving praise, giving affection, and giving reward. Their seven categories of dependent behavior, on the other hand, included: seeking information, seeking help, seeking recognition, seeking praise, seeking affection, seeking reward, and seeking permission. The results of their study showed that helpful behaviors per child increased and dependent behavior responses decreased as age increased. Among older children, the proportion of dependent responses decreased while the proportion of helpful responses increased, supporting the notion that independence is related to age.

Barron's (1953) study of independence of judgment in adults led the researcher to describe independent individuals as valuing creativity, tolerating a certain degree of ambiguity, tending to be intrceptive rather than extrceptive. Independent individuals, according to this author, are not fond of taking orders. They place particular value upon the person as an individual and respond more to the inward integrity of another person than to superficially pleasing characteristics.

Another concept which relates to student independence is that of locus of control orientation. According to Lefcourt (1966),

Internal control refers to the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own behaviors in certain situations and therefore beyond personal control. (p. 207)

Numerous studies have shown the relationship between the internal-external control dimension and personality variables (James, 1957; Phares, 1955; Rotter, Seeman, & Liverant, 1962). Several of the locus of control studies have identified personality traits which help to clarify the definition of student independence. Rotter (1966) supported such a relationship:

Expectancies generalize from a specific situation to a series of situations which are perceived as related or similar. Consequently, a generalized expectancy for a class of related events has functional properties and makes up one of the important variables in personality description. (p. 2)

Liverant and Scodel (1960) hypothesized that behavior in a situation involving decision making under conditions of risk is influenced by a dimension of internal-external control. They conceptualized internally controlled persons (Is) as persons who attempt to maintain control in chance-dominated situations by cautious and planned selection of probabilities, whereas externally controlled persons (Es) decide according to "hunches" or previous outcomes.

Baron (1968) also considered the element of risk-taking behavior as it relates to locus of control orientation. He found that authoritarianism and belief in external control of reinforcement were positively related to conservative behaviors in risk-taking situations.

McKinney, Mason, Perkerson, and Clifford (1975) examined the behavioral correlates of academic achievement and assessed the predictive value of combinations of discrete behaviors at the beginning and end of the school year. The results of the study with second-grade children showed high frequencies of distractability, passivity, and dependency in the beginning to be associated with lower achievement, while high frequencies of constructive self-directed activity were predictive of higher initial achievement.

Tetenbaum and Houtz (1978) explored the relationships between locus of control orientation and other affective traits and performance on a variety of problem-solving tasks. They found a significant relationship between locus of control

and self-esteem. Locus of control and tolerance of ambiguity shared 46% of the variance with several creative and problem-solving tasks.

In summary, while several research studies have investigated the personality characteristics of the independent individual, there has not been general agreement on the definition of independence. Elements of this trait have included showing initiative, overcoming obstacles, deriving satisfaction from work, trying to do things alone, completing an activity. Other researchers have defined independence as coping with a situation without reassurance or help, and being self-reliant. Giving help to others has been added to the definition, as well as creative, intrceptive, cautious decision-makers, self-directed individuals. High self-esteem and tolerance of ambiguity may also be included to describe the independent person. Each of these personal attributes is worthy of consideration in the present study.

#### Student Independence and Reading Achievement

Several studies have examined the relationship between successful reading achievement and personality characteristics of a student, although few have focused on student independence per se. There is a considerable body of literature, however, supporting the relationship between intellectual achievement responsibility (i.e., the perception of personal responsibility for academic successes and failures versus

the perception of outer forces as being responsible for academic successes and failures) and academic achievement. Both areas will be reviewed, and the relationship between internal orientation of locus of control and student independence as it has been defined for this study will be shown.

Warner (1969) explored the effect of encouragement of pupil judgment on reading achievement. Experimental and control groups were established with 275 first-grade children in six classrooms which encouraged decision making on the part of the pupils and six which followed a reading program directed by the teacher. Pupils in the two groups were matched on the basis of an intelligence test, and teachers were compared on the basis of professional preparation and experience in general as well as in the teaching of reading. Chi square using Yates' correction revealed no significant differences among teachers.

The experimental group demonstrated significantly greater gains between pre and post testing of the Gates Primary Reading Test than the control group (analysis by t test). The researcher concluded that the experimental group had opportunities to formulate judgments and make decisions which (1) increased their ability to derive greater meaning from learning experiences, (2) facilitated their ability to discuss the aspects of the learning situation, (3) helped them evaluate correctness and appropriateness of answers, and (4) encouraged them to explore ideas and concepts within

the materials used for reading instruction. The researcher also noted evidence of benefits the students derived in other curriculum areas, particularly social studies and science, showing implications for application of this approach to teaching and learning in subjects other than reading.

Cobb (1972) studied a method of predicting achievement from coded observations of the child's overt classroom behavior. Observations were made in five classrooms of fourth grade students in two middle-class elementary schools. Data were collected on task-oriented and non-task-oriented behaviors over a nine-day period. One week later the children were administered the reading and mathematics subtests of the Stanford Achievement Test. For each school, multiple regression equations were computed using rates of specific behaviors as the independent variables and standardized achievement scores as the dependent variables.

The highest predictor of academic success for both reading and math was the task-oriented behavior, "talk-to-teacher-positive," in which the student talks to the teacher about academic material. The behavior, "talk-to-peer-positive," was also a consistently high predictor for academic success in reading and spelling, and across samples for arithmetic. The researcher concluded that the child who talks about academic material to his teacher and/or his peers as well as



attends to his work, is more likely to successfully achieve than one who attends without interacting with others.

Personality characteristics which are related to reading achievement have been identified by other research. Hallock (1958) isolated eight factors associated with reading success: family relationships, self-reliance, antisocial tendencies, feelings of belonging, withdrawing tendencies, school relations, nervous symptoms, feeling of personal worth. Of these eight factors, self-reliance is most closely related to student independence. McMurray (1963) designed a checklist of 35 items to be rated by teachers and found several personality traits significant for unsuccessful readers (.01 level of confidence): lacks energy, short attention span, has difficulty assuming responsibility, daydreams, and is seldom relaxed.

Case study or clinical techniques were used by Challman (1939), Barber (1952), Spache (1957), and Frost (1965) to study children with serious reading disabilities. All of these researchers reported personality problems of varying natures and degrees in their subjects. Challman found nervousness, withdrawal, aggression, defeatism, and chronic worry to be characteristic of the retarded readers examined. Barber studied 23 retarded readers and found that the children lagged in all areas of behavior and showed marked anxiety about themselves. Spache (1957) found five personality characteristics in common with 60% of the 125 poor readers

he investigated: hostile or aggressive, defensive, withdrawing, adjustive (seeking to be inoffensive), and peacemaking. Of the 40 retarded readers examined by Frost, teacher ratings labeled 40% maladjusted, 40% unsettled, and 20% well adjusted.

Interview techniques were used by Cutts (1956) with 12 matched pairs of good and poor readers selected from 280 children in grades two to five. No significant differences in total, personal, or social adjustment were found. The superior readers, however, functioned more independently in nearly all activities, while poor readers were more dependent, complacent and submissive in their daily activities. They displayed few leadership tendencies, but were more often followers.

The independent student, then, possesses the ability and the self-confidence which will enable him or her to formulate judgments and make decisions, as well as to interact with teachers and peers about academic information. The independent student is self-reliant, has feelings of personal worth, is able to assume responsibility, and displays leadership qualities.

Behavioral psychologists have for many years been concerned with man's ability to control his personal environment. Efforts to describe the degree to which an individual is able to control the events of his life have utilized concepts such as competence, helplessness, and mastery. Adler (Ansbacher & Ansbacher, 1956) has written extensively about

the overcoming of helplessness and the development of mastery. His concern was for man's becoming more effective in controlling his personal world. White (1959) supports Adler's views with constructs he labels competence and effectance. Both of these theorists emphasize instrumentality, the strength of contingency between acts and their effects. Another construct, internal-external locus of control, has facilitated the study of this problem between act and effect.

The concept of locus of control has evolved from social learning theory. The earliest attempt to measure the internal-external control dimension as a personality variable was reported by Phares (1955). Using a 13-item scale to measure a general attitude or personality characteristic of attributing the occurrence of reinforcements to chance rather than to oneself, Phares reported successful predictions of the frequency of shifting and unusual shifts. (Shifting and unusual shifts are the changes which occur in risk-taking or betting situations used to measure an individual's tendency toward attributing success to skill or chance.) According to Rotter (1966),

In social learning theory, a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by the reinforcement in the future. Once an expectancy for such a behavior-reinforcement sequence is built up, the failure of the reinforcement to occur will reduce or extinguish the expectancy. (p. 2)

Rotter further noted that a generalized attitude or belief about the relationship between behavior and its

consequences could influence a variety of behavioral choices in many life situations, and that this belief will result in individual differences in skill-chance situations.

Since the personality characteristics of the individual who has internal orientation of locus of control are similar to those which describe the independent student (i.e., judgment making, goal oriented, creative, persistent, problem solving, etc.) it appears logical to equate internality with independence. Before a person can demonstrate independent behavior it seems necessary for that individual to perceive personal control for the events of his or her life. This relationship needs to be explored but it is not the purpose of this paper to do so.

One's personal belief in his or her ability to control the outcomes of life situations (internal orientation of locus of control) has been examined as a personality dimension in several studies. Odell (1959) found that subjects high in internality showed less tendency to conform. Crowne and Liverant (1963) supported this view and reported that high internal subjects were also more confident than high external subjects.

According to Gilmor (1978), an internal control orientation is often associated with effectiveness and instrumentality with respect to gaining desired goals, while external control is associated with ineffectiveness or powerlessness. Others have included the ability to assess the implications

of particular courses of action and to make appropriate judgments (Strickland, 1972, 1973; Walls & Smith, 1970) in the concept of internality.

Personality variables such as persistence (Altshuler & Kassinove, 1975; Dweck & Reppucci, 1973) and creativity (DuCette, Wolk, & Friedman, 1972) have been associated with high internal orientation of locus of control. Wolk and DuCette (1973) also studied the relationship between locus of control and an individual's ability to use information and concluded that internals are more sensitive to and better able to utilize environmental stimuli which bear on their performance than externals.

In view of these reports, it is appropriate in the present study to consider investigations of the relationship between internality and reading achievement. Pressman (1977) examined the interaction effects of several variables upon reading scores of seventh- and eighth-grade students. Seeking to determine whether differences in the reading scores of the subjects were based upon differences in locus of control orientation or if they were the result of differences in socioeconomic status, intelligence, and sex interacting with locus of control, she reported a significant relationship between locus of control and reading scores. The findings suggested that internal orientation influenced reading achievement and accounted for more of the variance than socioeconomic status, even when intelligence was a variable.

Clifford and Cleary (1972) examined relationships between internal-external locus of control and children's performance on spelling, vocabulary, and math tests constructed for the study by the researchers. The Academic Achievement Accountability (AAA) developed for the study is similar to the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, and Crandall (1965) in that it attempts to measure locus of control as it related to academic performance. The correlation of AAA with total performance in spelling, vocabulary and math was powerful and supported the speculation that internality may be useful as a predictor of academic achievement.

Culver and Morgan's (1977) findings support the relationship between internality and reading achievement. In a study of 100 college freshmen enrolled in a reading improvement program, these researchers correlated results from two measures of locus of control (Rotter's I-E Scale, 1966; and Levenson's I, P, and C scales, 1973) and two independent measures of reading achievement (Form C and Form D of the Nelson-Denny Reading Test). Although the Rotter Scale produced no significant relationships to any measure of reading achievement, Levenson's Internal Scale produced a significant positive relationship with reading comprehension scores. A significant negative correlation was demonstrated between Levenson's Chance Scale and total reading scores. The researchers concluded that internality is a significant

variable related to reading achievement and should be considered in developing strategies for instruction.

Many of the studies which support the relationship between locus of control and achievement have been based on a questionnaire developed by Crandall, Katkovsky, and Preston (1962) and Crandall, Katkovsky, and Crandall (1965). The Intellectual Achievement Responsibility Questionnaire (IAR) is composed of 34 forced-choice items, each describing either a negative or a positive achievement experience which could routinely occur in a child's life. The format of the test is such that a person chooses the reason he or she feels a particular event would have happened.

Example:

If a teacher passes you to the next grade, would it probably be

- a. because she liked you, or
- b. because of the work you did?

Separate subscores may be obtained for beliefs in internal responsibility for successes (I+ score) and for failures (I- score) as well as a Total I responsibility score (sum of I+ and I- subscores).

Results of a study using the instrument with 923 students in grades 3-12 showed that self-responsibility is already established by third grade, that older females are more internally oriented than older males, and that children from one-or-two child families are more self-responsible than

those from larger families. Moderate relationships were found between both self-crediting and self-blaming responses and intelligence. Social class accounted for only a small portion of the variance in the scores. The researchers concluded that this was due to the fact that the instrument contains items directly related to school-associated activities which could be affected by classroom encouragement of academic efforts.

For younger children, total I scores correlated positively with achievement test measures but were only occasionally related for students in grades 6-12. However, there was a significant relationship between Total I and report card grades for older students.

Numerous studies have supported similar findings (Messer, 1972; Powell, 1971; Vincenzi & Maraschiello, 1978), although a study by McGhee and Crandall (1968) found no consistent prediction of achievement test scores using the IAR for students in grades 6-12. There was, however, substantial support for using the IAR as a predictor of academic achievement for children in grades 3-5. Barnett and Kaiser (1978) found that the IAR was a better predictor of school-related performance measures for males than females, conflicting with the results of the original study.

Differences in achievement-locus of control relationships between males and females have been noted by other researchers. Gordon (1977) found that locus of control was



related to one measure of achievement for boys (grades) and to a different measure for girls (achievement test scores). He speculated that these relationships in girls may be attenuated by conflicting role demands.

Eisenman and Platt (1968) found that firstborn males were significantly more external than firstborn females. They found that females made better grades than males, and they speculated that this could be attributed to a desire for social recognition, reflecting a kind of conforming dependency. Nowicki and Walker (1973) also postulated that girls are socialized into the role of being nurturant, obedient, responsible, and dependent on others. To test the hypothesis that social desirability was a significant mediator of the locus of control-achievement relation for females, they administered the Nowicki-Strickland Personal Reaction Survey (1973) and the Crandall Social Desirability Scale (1965) to 78 third-graders. Results of the analysis of variance for achievement scores (Stanford) showed significant three-way interaction among sex, locus of control, and social desirability, with internal females who scored low on the social desirability scale producing higher achievement scores than external females who scored low on social desirability. The investigators concluded that inconsistent results in prior studies concerning the relationship between locus of control and achievement for females may have been due to the failure to include social desirability as a variable.

Another consistent correlate of generalized locus of control expectancies in achievement situations is age. Nowicki and Duke (1974) constructed a cartoon-type locus of control scale for use with preschool and primary-age children. In earlier research and test construction (Nowicki & Roundtree, 1971; Nowicki & Strickland, 1973), these researchers had developed instruments for measuring locus of control orientation in older children and secondary students. The Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965) has comparable forms available for older subjects to as young as third-graders. Gilmore (1978) speculated that the developmental change in locus of control as an individual matures reflects the gradual independence from parental dominance and increased exploration of the environment. Bialer (1961) also found that internality increased with age.

There has been some conflict in the reports of studies with older students, however. Eisenman and Platt (1968) found no relationship between internal locus of control and academic achievement with college-age subjects. Hjelle (1970) reported a relationship significant only at the .25 level for college students. Yet Nowicki and Roundtree (1971) found a significant relationship between achievement and locus of control for male twelfth-graders as well as college-age males. Lao's (1978) cross-cultural study also found that males in both cultures felt more control over their lives than females but

that they were more susceptible to the influence of powerful others.

In an effort to show that inconsistent results with regard to the relationship between locus of control, school achievement, and intelligence may be attributed to the different methods used to measure locus of control, Reimanis (1973) examined the interrelationship among three measures of locus of control: Battle and Rotter's (1963) questionnaire, Bialer's (1961) Locus of Control Scale, and Crandall et al.'s (1965) IAR.

The results showed that the best locus of control predictor of school achievement was the Intellectual Achievement Responsibility Questionnaire. The Bialer scale showed significant relationship between locus of control and math and reading achievement. These researchers concluded that measures of locus of control orientation cannot be used interchangeably in all situations.

Another facet of the locus of control/achievement relationship which merits attention is that of achievement motivation. Lefcourt (1976) noted that the most commonly observed achievement activity is that which occurs within the school. Academic achievement requires that a student persist at activities such as reading when he might prefer to be playing, daydreaming, or socializing with friends. Delayed gratifications from scholastic efforts may not be obvious to the student, since skill development requires drill which produces

little pleasure and interferes with activities which do. School achievement, like other areas of personal development, requires self-discipline, conscious effort, and the sacrifice of immediate pleasures for the sake of future accomplishments. This sacrifice is not likely to occur if an individual doubts his own potential effectiveness.

Achievement motivation theory and locus of control theory are similar, according to Wolk and Ducette (1973), since in each there is a "basic relationship of probability and value of reinforcement, and in each there is a personality disposition which affects this function in a specific way" (p. 60 ). These researchers investigated the possibility that locus of control variables might improve the predictability of achievement-motivation theory in relation to several dependent variables: performance on classroom tests, preference for intermediate risk, and estimation of the chances for success. The study consisted of three phases: personality tests, an in-class experiment, and a test of course achievement and confidence were administered to 53 college students. Product-moment correlations were computed between achievement motivation and various behaviors for the total sample as well as the internal and external subjects.

The moderating effect of locus of control on the relationship between achievement motivation and several dependent variables was evident (preference for intermediate risk, estimation of future success, and classroom test performance).

With only one exception, the internal subjects demonstrated significant relationships between the variables studied. The data support the idea that recognition of locus of control orientation along with achievement motivation variables can substantially increase prediction concerning many of the variables considered to be important in both theories.

The implications of the research on locus of control and achievement motivation have been further examined by Chan (1978). This author suggests that the child who believes that the results of his or her academic efforts are due to luck or to the whims of other individuals is not likely to invest much personal effort, to continue trying to solve problems, or to change behavior in order to achieve success. If a student believes that grades depend on chance, that student will not exert much effort to improve the results. The externally oriented child may see no reason to make an effort to achieve, since that child's reinforcements, gratifications, or pleasures are not perceived as being linked to personal actions.

Children with high achievement motivation attribute success to their own ability and effort. These children respond to success with pride and internal pleasure, viewing rewards with personal satisfaction. Conversely, children with low achievement motivation view success or failure as externally controlled, not a product of their ability or effort. Weiner,

Frieze, Kukla, Rest, and Rosenbaum (1971) suggest that these children can take only limited personal pride in their accomplishments or personal responsibility for their failures, since both outcomes are the result of external forces.

This review of the literature of student independence and reading achievement has focused on student behaviors, such as formulating judgments and making decisions as well as interacting with others. Evidence of the relationship between student independence and internal orientation of locus of control was presented, and investigations of the achievement/locus of control relationship were reviewed. Studies of the similarities of internal locus of control and achievement motivation theory were also reviewed.

In general, the findings have shown that there is a significant relationship between the student behaviors which are characteristic of independence and reading achievement. Numerous studies have supported the relationship between internal orientation of locus of control and academic achievement. Research shows that self-responsibility is established as early as third grade and that this trait increases with age. Inconsistent findings in achievement/locus of control relationship between males and females were observed. Studies supporting the notion that there is a significant relationship between internal locus of control and achievement motivation theory have led to the conclusion that internally oriented students persist when failing, whereas

externals stop working when unsuccessful. High achievement motivation students respond positively to appropriate classroom challenges and are able to select realistic academic tasks. Finally, the internally oriented, high achievement motivation students respond to success with pride and internal pleasure, while the externally oriented students feel only limited pride or responsibility for success or failure.

#### Parental Influences on Student Independence

Since so much of the shaping of a child's personality is attributed to parental factors, the literature relative to this influence merits attention in the study of student independence in the classroom. The review which follows explores the relationship between parental factors and children's locus of control in academic achievement situations. Several of the studies which are reported employ children's recall of parental behaviors, while others are based on self-reports by the parents, both of which provide subjective data.

The relationship between independence training practices of parents and locus of control orientation in children and adolescents was investigated by several researchers. Wichern and Nowicki (1976) examined this relationship in children in grades two and seven. Children's reports of parental behavior and a questionnaire completed by the mothers were

employed in the study. The results showed that mothers of internally oriented individuals had reported significantly earlier ages for independence training than mothers of externally oriented individuals. Mothers of internals also reported significantly earlier ages for allowing independence. The researchers concluded that intentional training with skills to make a child self-reliant and able to function alone are linked to the development of internal orientation of locus of control.

Parental independence training practices were also investigated by Chance (1965) using interviews with the mothers of children in grades 3-7 as well as an adapted form of the Winterbottom Independence Training Attitude Questionnaire. This instrument presents 20 behaviors (mastery, achievement, and self-help) and asks the mother to give the age by which she would want her child to be able to accomplish that behavior. Twenty additional items were added to the original twenty. Students were measured with the Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965), and other data were retrieved from school records. Results showed that the stronger the child's belief that he or she controlled outcomes in the area of academic achievement, the better that child performed on both general intelligence tests and achievement tests. Among males in the study, internal orientation was positively related to permissive maternal attitudes as well as expectation of early independence and mastery behavior from the child.



Other researchers have agreed that maternal influences were strongly related to children's internal orientation of locus of control. Katkovsky, Crandall, and Good (1967) conducted two studies to determine the antecedents of a child's beliefs in internal or external control. Using the Intellectual Achievement Responsibility Questionnaire (IAR) from their earlier research as the measure of I-E control, they performed simple correlations with the Parent Behavior Rating Scales (Baldwin, Kalhorn, and Breese, 1949) in the one study, and the Parent Reaction Questionnaire in the other. The latter instrument was designed by the researchers to assess the parents' reported reaction to their child's achievement behaviors in four areas: intellectual, physical skills, mechanical, and artistic. It consists of 48 items, each describing a typical situation in which a child exhibits an achievement behavior which is likely to elicit an evaluative response from the parent. Each item is followed by several alternatives from which the parent selects the two most typical of his or her own reactions and ranks the two showing which reaction is more often used.

The relations which are most evident in the two studies are between children's beliefs in internal control of reinforcements and the degree to which their parents are protective, nurturant, approving, and nonrejecting. There appears to be a difference between the sexes in the characteristics of the parent-child relationships which influence

the child's internal-external tendency. Maternal love and support appear to influence boys toward internal orientation, while girls seem more likely to develop external orientation if they experience parental rejection and authoritarian control.

Solomon, Houlihan, Busse, and Parelus (1971) investigated determinants of achievement within a lower-class Negro sample, including antecedent factors such as parental child-rearing behaviors and attitudes, parent-child interactions, and the child's personality characteristics. Observations of parent-child interactions in the home as well as some indices of child behavior served as the measure of parent behavior. Child personality characteristics were measured in group sessions at school. The Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965) was also used as a portion of the child personality measures. Student achievement was assessed by the California Achievement Test and the Lorge-Thorndike verbal and non-verbal IQ tests. Children's achievement striving behavior was measured in several types of classroom sessions and by observations of problem-solving tasks.

The results of the study showed numerous negative relationships between parent behavior and child achievement for both boys and girls. The strongest relationships between parent behavior and child achievement were: (1) between fathers' encouragement of independent achievement efforts

and girls' convergent task striving and (2) between mothers' warmth and girls' general academic achievement. The child's sense of intellectual achievement responsibility (internal or external) was positively related to several achievement factors, most strongly to boys' general academic achievement and perseverance.

The importance of maternal antecedents in fostering internal control beliefs was supported through the results of Levenson's (1973) research, also. Three new scales were constructed for the study to measure belief in chance (C) as separate from expectancy for control by power others (P) and perceived mastery over one's personal life (I). Factor analysis of the responses of 329 college males showed that parent-child antecedents were significantly related to locus of control. Internality was associated with positive independence-oriented behavior on the part of the mother. Externality was associated with demanding, punishing parental behavior.

Scheck (1978) studied the possible interaction effects of perceived parental child-rearing dimensions upon the formation of internal-external locus of control in adolescent females. The child-rearing dimensions examined were parental support, parental control, and parental consistency. A questionnaire was administered to 513 white female ninth-graders to collect information on parent-child dimensions, internal-external locus of control dimensions, and social class. The

correlation between social class and locus of control was not statistically significant. Analysis of variance for maternal child-rearing dimensions showed that subjects who received high support were significantly more internally oriented than subjects who received low support. Subjects whose parents were more consistent were likewise more internally oriented than those whose parents were less consistent.

Several research efforts have focused on the parents' own locus of control orientation as an antecedent of the child's locus of control. Davis and Phares (1969) conducted such a study to examine parents' stated child-rearing attitudes, children's reports of parental behavior, and parents' own internal-external attitudes as they affect the development of the child's internal-external orientation. The results of a 2 x 2 x 3 analysis of variance (sex, parent, and three levels of locus of control orientation--internals, externals, middles) suggested that fathers of internals tended to be more indulgent and less protective than mothers of internals. The opposite pattern of attitudes was found among parents of externals.

No significant relationship was found between parent locus of control scores and child locus of control scores. It was found, however, that a significant relationship existed between the degree of locus of control congruency (parent and child) and discipline attitudes of the parents. Rejection attitudes of fathers and indulgence attitudes of mothers were

also directly related to the degree of locus of control similarity. Parents of externally oriented children were reported to be more inconsistent disciplinarians than parents of internally oriented children. In situations where there was a high degree of locus of control congruency between the parents and child, the parents were reported to be less authoritarian and more indulgent than the parents whose locus of control was different from that of their child.

A number of researchers have used the child's perception of parental locus of control as a variable in examining antecedents of internal-external locus of control. Nowicki and Segal (1974) administered the Nowicki-Strickland Personal Reaction Survey (1973) to 112 white high school seniors to measure the subjects' locus of control orientation. Perceived parental locus of control was evaluated by having students complete an adult form of the survey as they believed each of their parents would complete it. Perceived parental nurturance was assessed by a modified form of the Parent-Child Interaction Rating Scale (Heilbrun, 1964). Grade point averages, number of extracurricular activities, and achievement test scores were obtained from school records.

Correlational analyses supported the relationship between internality and nurturance, although differences were found for males and females. For females, internality was associated with greater perceived paternal affection, physical contact, trust, and security. Greater perceived maternal

physical contact, trust, and security also contributed toward internality for females. For males, internality was associated with greater perceived maternal affection, supporting the findings of Katkovsky et al. (1967). Internality was related to higher achievement for males and to higher grade point average for females. Internality was also related to a greater frequency of extracurricular activities for females. Both males and females perceived their parents as having the same locus of control orientation as their own. Perceived parental locus of control orientation was found to be related more to female than to male academic achievement behavior.

MacDonald (1971) also studied the relationship between perceived parent influences and a student's internal-external locus of control orientation. Subjects (427 university students from intact families) recorded their recollections of their parents' behavior during their childhood. The Rotter Internal-External Locus of Control Scale (Rotter, 1966) was the measure of the students' locus of control. Results showed that internally controlled subjects described their parents as being warm, consistent, and as encouraging their children to try to control their own reinforcement. Externally controlled subjects described their parents as being overprotective, depriving privileges, and using affective punishment. Paternal physical punishment was positively related to internal orientation among males but not among females, supporting the findings of Solomon et al. (1971).

To summarize the literature of parental influences on student independence, the independence training practices of parents have been found to affect locus of control orientation of children. Specifically, training children with skills to help them become self-reliant increases internality. Maternal influences have been found to be powerful, especially in determining male locus of control orientation (Chance, 1965; Katkovsky et al., 1967; Levenson, 1973; Scheck, 1978). Maternal warmth was also found to affect general academic achievement for girls (Solomon et al., 1971). Parents' own locus of control orientation has not been found to be related to children's locus of control (Davis & Phares, 1969), although a significant relationship exists between parent and child congruent locus of control and parental discipline attitudes. Finally, studies of perceived parental locus of control have shown that both male and female students believe their parents to have the same orientation as their own. For females, internality was associated with a perception of paternal affection, physical contact, trust, and security. For males, internality was associated with greater perceived maternal affection. Internally controlled individuals described their parents as warm, consistent, and encouraging their children to try to be independent (MacDonald, 1971).

If one equates the internally oriented individual with the independent individual, then it is possible to say that

parental independence training toward self-reliance, warm and nurturing maternal influences, and congruent parent/child locus of control are consistent with the independent person. Parental authoritarianism, overprotection, and rejection appear to be characteristic of the dependent individual. It seems logical to assume that the child who is protected, whose decisions are made by others, will not have much opportunity to become self-reliant and independent.

Teacher Personality and School Organizational  
Influences on Student Independence  
and Reading Achievement

This section of the review of literature will focus on teacher behaviors, teacher characteristics, and instructional practices within the learning environment which influence the dependent/independent aspects of student behavior. Several studies which examine influences of the learning environment on student behavior will be reviewed as well as studies which relate teacher personality and behavior to reading achievement. Teacher/student personality congruency will be considered, and student perceptions of instructional styles.

Teacher classroom behaviors were observed by Turner and Denny (1969) in their study of teacher characteristics, teacher behaviors, and pupil characteristics. Subjects for the study were 788 children and their teachers from 30 sixth-grade classrooms in Indiana. The five teacher characteristics



examined were: warmth-spontaneity, involvement, educational viewpoint (child-centered vs. subject-centered), organization, and stability. Seven teacher behaviors were observed: teacher-pupil relationship, motivational climate (threatening vs. reinforcing behavior), encouragement of unusual pupil responses, teacher initiative in control of instruction vs. pupil initiative, variation in materials and activities, adaptation to individual pupils, and teacher approach. Four pupil characteristics were identified for the study: redefinition (ability to redefine uses), spontaneous flexibility, ideational fluency, and sensitivity to problems.

The results showed that teacher characteristics are distinctly associated with changes in pupil characteristics as well as with the teacher's behavior in the classroom. Teachers characterized as warm and spontaneous and teachers characterized as child-centered tend to bring about greater positive changes in pupil creativity. Four teacher behaviors appear to encourage pupil creativity: positive reinforcement of pupil responses, adapting activities to individual pupils, attention to individuals, and providing variation in activities and materials. Teachers having a high degree of organization tend to depress changes in pupil creativity, possibly because they are too businesslike or overcontrolling in their relationships with pupils.

Teacher dogmatism and the organizational climate of the classroom as they affect pupil control ideology (custodial or

humanistic) were examined by Lunenburg and O'Reilly (1974). Three instruments were administered to 978 teachers and principals in 53 elementary schools. The researchers constructed a scale to measure pupil control ideology, while Rokeach's (1960) Dogmatism Scale and the Organizational Climate Description Questionnaire developed by Halpin and Croft (1963) assessed the other variables. As predicted, open-minded teachers were more humanistic in their pupil control ideology than close-minded teachers. Support was also found for the relationship between pupil control ideology and the organizational climate of the classroom.

The authors concluded that the open-minded person is not easily threatened, has no need to value personal authority, and possesses a high degree of tolerance. This personality type appears to be consistent with humanistic control ideology as well as a more open classroom climate. They postulated that the solution is not a matter of increasing or decreasing the autonomy of the elementary teacher, but rather one of encouraging the personal, affective, and emotional traits of teachers which will result in humanistic control ideology.

Kifer (1977) examined whether successful or unsuccessful school achievement of students in second, fourth, sixth, and eighth grades was related to the students' personality characteristics. The results of the study showed that students appeared to enter the school setting undifferentiated

on the affective variables, but as they encountered the demands of the classroom, they began to be identifiable in terms of how well they accomplished the academic tasks given to them. As the students experienced more and more success or failure in school, it became increasingly simple to tell, by looking at their developing personality characteristics, how they had been affected by the demands and expectations of the classroom.

In recent years a great deal of attention has been focused on the open classroom and its effect on students and their achievement. The informal instructional environment has been compared to the traditional setting, and several of the studies are related to the present investigation, since the teacher is the creator of the learning environment and determines the modus operandi in the classroom.

Barth (1972) noted that "open educators assume that opportunities to explore, to try and fail in the absence of threat, contribute to a sense of mastery and the development of a child's knowledge" (p. 21 ). According to Farrall and Thaller (1976), open education emphasizes helping the child structure his or her own learning experiences rather than giving the child experiences that are primarily teacher controlled and initiated. Bruner (1960) referred to the phenomenon of pupil motivation through reinforcing of problem-solving, decision-making behaviors as well as the right

to make errors. Since error is sometimes the result of the judgmental process, mistakes should be expected and pupils given the opportunity to learn from their errors. Learning which occurs through guided self-discovery, as is characteristic of the open classroom, involves assimilation in the very process of its emergence, through opportunity for appraisal and judgment.

An investigation of differences in personality traits between children in open classrooms and children in traditional classrooms was conducted by Farrall and Thaller (1976). The Children's Personality Questionnaire (Porter & Cattell, 1968) was used to measure personality traits. This instrument, a standardized group test designed for children through 12 years of age, consists of 14 scales, each measuring a relatively independent personality trait. Each trait is defined in terms of two extremes: obedient--assertive. Several of the traits are consistent with student independence: expedient vs. conscientious, obedient vs. assertive, shy vs. venturesome, casual vs. controlled. Results showed that children in the open classroom were more sociable, intelligent and thinking, independent and autonomous, expressive and playful, responsible, open and sensitive than students in traditional classrooms. It was noted, however, that boys in the open classroom experienced more stress than boys in traditional classrooms.

Other writers have added to the definition of characteristics of the open classroom. Stretch (1970) noted that

classroom management of the open setting requires that students are expected to pursue learning in an orderly fashion, doing things for themselves and using materials in a constructive way. The children are not coerced to raise their hands to ask questions, to stay in their seats, to maintain silence for long periods of time. Rather they are allowed to behave in accordance to their physical and mental stage of development, in a setting that is relaxed and non-threatening, where errors are permitted.

In contrast, the traditional classroom operates on the "assumption that learning must be imposed on children by adults, that learning is not something one does by and for oneself, but something designated by a teacher" (Stretch, 1970, p. 76).

According to Foshay (1975), while the open classroom is described as "child centered," i.e., created to meet the needs and interests of the students, the traditional classroom connotes more structure, discipline, and authority imposed by the teacher. This environment might be called the "teacher centered" classroom. In such a setting, the curriculum and learning goals are set up before the class arrives, and the students are evaluated against their performance of these standards. Teaching the subject matter is given great emphasis, rather than assisting students in learning how to learn. "Students do not take part in planning their learning nor are their motives considered" (p. 373).

Motivational and cognitive characteristics of fourth-grade students in three traditional classrooms and three open classrooms were examined by Solomon and Kendall (1976). The major focus of the investigation was to ascertain whether certain characteristics of individual children may interact with the classroom types to create a combined influence on educational outcomes. As a part of the data, teachers were asked to rate individual children on a 30-item scale and to make the ratings relative to the other children in the class. This scale contained such items as "likes to initiate own tasks," "is willing to compromise," and "highly involved in class activities."

The results of the study showed that students in the open setting were more likely to work together, carry on academic discussion among themselves, initiate their own tasks, work without teacher attention, make choices, and influence decisions about classroom activities than the students in the traditional classrooms. Cluster analysis was used to identify child types for individual profiles on the students. Children in the first cluster showed the highest mean level of prior achievement and the lowest of compliance and conformity. The researchers concluded that "these students seemed to have an independent and internally motivated approach to achievement." From this it appears that some individuals require openness and freedom from adult authority to work most effectively, and the degree of internal

motivation one possesses has a direct influence on his or her academic achievement.

Wilson, Stuckey, and Langevin (1972) concluded from their study that pupils in the open plan schools demonstrated an obvious self-discipline, maturity, and absorption in their activities. Discipline problems were rare because this philosophy of teaching advocates permissiveness, not license. According to these investigators, "the child is granted independence but he is not permitted to abuse it" (p. 118). This does not mean that the student who needs guidance does not have access to it, but rather that the teacher allows each student to function with as much self-direction as is productive for that student.

Several studies have examined the locus of control/achievement relationship in open and traditional classrooms. Seidner, Lewis, Sherwin, and Troll (1978) investigated the interplay between the child's sense of personal control and the learning environment. Attitude questionnaires and the Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965) were administered to 83 sixth graders from an open space school and 54 from a traditional school. The teachers participating in the study completed the Walberg and Thomas Teacher Questionnaire (1971), which assesses the congruence of the behavior of the teacher with the tenets of open education. No significant differences were found in achievement associated with type of school. Pupils in the

open school displayed more positive attitudes toward their school and their teachers than students in the traditional school. Boys with external orientation scored higher on self-evaluations than girls, a difference not found for internally controlled students. The researchers concluded that pupils who view their academic successes and failures as more dependent on others than on themselves may simply be more aware of the presence and actions of others than pupils who feel that they have more personal control over their destiny.

Bell, Abrahamson, and Growse (1977) examined the difference in academic achievement and internal-external control as it affects responsibility for achievement, as a function of open versus traditional classrooms. The Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965) was administered to 40 fourth-grade students from traditional classrooms and 40 from open classrooms. Results of previous readiness and achievement tests were available, and socioeconomic status was based on parental occupations. This longitudinal data was based on students who had been enrolled in the research from pre-school through fourth grade.

Multivariate analysis showed that students from traditional classrooms were superior in reading and mathematical problem-solving, but were less willing to accept responsibility for academic failures, than students from informal, open-space classrooms.



The researchers' impressions from regular classroom observations were that children who were not self-motivated or who lacked essential skills and interest wasted much time, were distracted by the activities of other students, and spent time socializing without useful purpose. They further observed that teachers in open classrooms spent far more time and effort in holding the attention of the students than teachers in traditional classrooms.

There have been some conflicting reports concerning social and personal adjustment of students in open and traditional schools, however. Hudson (1973) found no support for the hypothesis that personal and social adjustment of students in the two settings would show significant differences. Fourth-grade students in the open setting were better adjusted regarding self-reliance, sense of personal worth, freedom from withdrawing tendencies, freedom from nervous symptoms and social skills, while at the fifth-grade level, students in the traditional school were better adjusted on these factors.

Several studies have investigated teacher expectations and teacher behaviors as influences of reading achievement. Classroom observations were used by Durkin (1979) to examine instructional practices in reading comprehension and social studies. The study of grades 3-6 investigated teacher behaviors as well as student activities in a three-pronged design concentrating on fourth grade, differences in schools,

and individual children. In each of the sub-studies the classrooms were visited on three consecutive days approximately every three weeks from September through May. Effort was made to observe normal classroom activities of the best teachers in each school, omitting holidays and beginning and ending days of the school year. Behavioral categories measured included various aspects of teaching comprehension, study skills, oral reading, phonics, structural analysis, and word meaning, as well as non-instructional activities, transitional activities, and activities related to assignments.

The major findings of the research showed that almost no comprehension instruction was observed, nor were other kinds of reading instruction evident with any frequency. The researcher concluded that comprehension instruction was not neglected because teachers were too busy teaching other aspects of reading. Teachers spent the largest percentage of time assessing rather than teaching; i.e., interrogating, assigning ditto sheets and workbooks. Sizeable amounts of time were also given to transitional and non-instructional activities. The teachers observed did not perceive the social studies period as a time to teach comprehension skills, but rather a time to cover the content of the subject and to have children master facts.

The researcher noted that in every classroom there were certain children who did the assigned written work

promptly and in business-like ways, while others used a variety of avoidance techniques which led to discipline problems and chastisement. "Mentioning" rather than thorough instruction of information and concepts led to student confusion and necessitated interruptions of reading groups for additional instructions. Skimpy attention to new vocabulary created problems for poor readers since they were unable to recall words which had only been identified or mentioned once. These evidences of student weakness in academic achievement would appear to foster dependency, yet they also appear to be rooted in the behavior of the teacher.

In a longitudinal study of urban black children from kindergarten through their second-grade year, Rist (1970) examined the effects of teacher expectations concerning learning. Frequent classroom observations led the researcher to conclude that the "expectations of the kindergarten teacher had a profound causative influence upon the subsequent reading achievement of the children in the class," and that this influence could be observed in the children's performance in second grade.

Entwisle and Webster (1972, 1973) examined the effect of lessened expectations on academic performance and whether manipulating children's expectations would increase participation in academic activities. Groups of four children were engaged in a relatively easy questioning session with an adult. One child, an average participant in the first phase,

was selected for the second phase of the study, which consisted of a task similar to that used in Phase 1, with a conscious effort to praise the child and to build confidence. The other three children listened to a story, to control for effects of attention. The third phase of the study returned to the group of four children and used a similar task to Phase 1, but with a new examiner who was unfamiliar with the results of Phases 1 and 2. The behavior being measured was the change in the selected child's frequency of volunteering answers in comparison with a matched control child's frequency of giving answers. The findings indicated that children's willingness to respond can be raised through manipulations designed to increase their confidence.

Similar studies designed to manipulate the racial and socioeconomic characteristics of the adult examiners have shown that not all adults are equally effective in raising children's expectations.

The researchers concluded that children's expectations could be a significant factor toward altering academic achievement by increasing their willingness to respond in academic situations which would in turn affect teachers' evaluations so that the children are viewed more positively.

The effect of teacher expectations on first-graders' reading achievement levels was the focus of an investigation by Robinson (1976). Data collected included a teacher-rating instrument, readiness test scores, sex, race, order

of birth, area of residence, parent occupation, socioeconomic level, attendance in kindergarten, age at entry to first grade, and scores of Gates-MacGinitie Reading Test. Results showed that students were generally more successful in learning to read with teachers who had higher expectations for performance, although students with low readiness ratings fared better with teachers who had lower expectations for performance. Sex, socioeconomic level, parent occupation, area of residence, and race were associated with reading achievement regardless of teacher expectations.

Jones (1967) reported the results of a study of teacher/student interaction and its role in learning. Teacher personalities were evaluated through clinical interviews, and teacher/student interactions were assessed through classroom observations during the reading period. Reading tests, IQ tests and social maturity tests were administered to the 60 seven-year-old students. Post-administrations of the reading test were also given. No significant differences were found between experimental and control groups in reading achievement. "Teacher interaction findings suggested that a firm, understanding teacher aids the learning process more than an overly permissive, personal one" (p. 152). It should be noted that the sample population of students was drawn from lower socioeconomic families.

Teacher/student congruency and its relationship to reading achievement in grades 4-6 were explored by Steig (1972).

Students rated themselves on 21 traits, and their teachers rated them on the same scale. Scores from the Iowa Test of Basic Skills were used to establish good and poor reading groups (upper and lower 27%). Results showed that good readers were more congruent with their teachers than poor readers generally. Self-perceptions of good and poor readers showed fewer differences than their teachers' perceptions of them.

Rich and Bush (1978) conducted a study to determine the relationship between student locus of control orientation and the degree of control exercised by faculty instructional styles. Rotter's Internal-External (I-E) Scale (1966) was administered to 57 college students to establish locus of control orientation. Students were asked to evaluate high and low faculty control instructional styles daily on seven questions dealing with aspects of the classroom and the instruction. High faculty control was evidenced when the instructor lectured, directed, or provided information more than 60% of the class period. Low faculty control was evidenced by verbal or physical student participation either alone or student/student more than 60% of the class period.

Analysis of variance results showed a significant F value for the interaction of student locus of reinforcement with faculty control, confirming the hypothesis that the average evaluation elicited for congruent faculty/student combinations (high control style with externally reinforced

students, low control style with internally reinforced students) would exceed the evaluations of incongruent faculty/student matchings.

The researchers concluded that "the belief that a faculty member can be equally effective with all students fails to acknowledge that classrooms are environments within which teachers and students differentially interact in ways that influence student evaluation of instruction" (p. 197).

In general, the preceding studies indicate that there is a relationship between students' behavior and the personality and behavior of their teachers. Similarly, there is a correlation between the classroom environment which is created by the teacher and the independence behaviors exhibited by the students (i.e., self-reliance, decision-making, problem-solving, working alone). Results of studies that were concerned with the relationship between an open educational setting and student behavior suggest that students in the open classroom function more independently. Students in the open classroom were found to have a better attitude about school and their teachers than their counterparts in traditional environments. Teacher characteristics have been found to be related to changes in student behavior. Warm and spontaneous teachers tend to foster student creativity, while teachers who are dogmatic or who have a high degree of organization tend to depress creativity. Teacher expectations and teacher behaviors have also been found to influence reading achievement.

Socioeconomic Status as an Influence of Student  
Independence and Reading Achievement

Several studies have shown that socioeconomic factors contribute to reading achievement and to internal orientation of locus of control. These are pertinent to the present investigation since the researcher has hypothesized their relationship to student independence. Coleman et al.'s (1966) comprehensive study of disadvantaged students concluded that "schools bring little influence to bear on a child's achievement that is independent of his background and general social context" (p. 325). He further noted that the lack of an independent effect causes the inequalities imposed on children by home, neighborhood, and peer environment to be carried into adult life and perpetuated in the next generation.

Seitz (1977) notes difficulties in attempts to study the relation between socioeconomic status and reading: the difficulty of defining socioeconomic status, the difficulty of showing how the elements of socioeconomic status (SES) acquire significance as predictors of reading achievement, and the difficulty of defining reading skill. Despite these problems, however, the fact remains that economically disadvantaged children have been shown to perform more poorly in reading than advantaged children. The review which follows describes socioeconomic status correlates of reading achievement and internal/external locus of control.

There is a considerable body of literature which indicates that internality is a function of the socioeconomic



status of the individual; i.e., higher SES individuals generally score as internals while lower SES individuals tend to score as externals. Lefcourt (1966) suggested that the lack of internality could be a by-product of poverty and racial and cultural barriers. Franklin (1963), using a national, stratified sample of 1000 subjects, found a significant relationship between high SES and internality. His results showed that high school students who intended to go to college were more internal than high school students randomly selected from the population. Battle and Rotter (1963), controlling for race and IQ, found a significant social-class correlation with locus of control scores of black and white sixth- and eighth-grade students. Shaw and Uhl (1971) investigated the relationship between locus of control and school achievement as measured by reading scores and found that lower class blacks and whites had significantly higher external scores than upper-middle-class blacks and whites. Gruen and Ottinger (1969) also found that middle-class children were more internal than lower class children. Jessor, Graves, Hanson, and Jessor (1968) found that internal control expectancies were positively associated with socioeconomic status and that a person's access to opportunities in a community is a function of perceived control.

Coleman et al. (1966) studied the personality characteristics among the disadvantaged which would limit their potential

for achievement. The measure of locus of control belief designed for the study consisted of three statements with which students were asked whether or not they agreed. Among the results of this research were implications for expectancy of control showing that achievement of non-white children was best predicted by a measure of the child's belief that academic outcomes were determinable by his or her own efforts. The researchers concluded that minority students, except for Orientals, have less conviction than whites that they can affect their own environment or future. They also found that family background and the influences of the child's home environment are highly correlated to achievement and that this relationship tends to remain steady throughout the years of school.

Epps (1969) also examined personality factors which are correlates of academic achievement among Negro high school students in the North and in the South. SES differences were studied to see if these factors were related to achievement. Results showed that SES was significantly correlated to school grades only among Southern females, although it was related to vocabulary scores for all four groups of students. SES was more strongly related to expected future education than to any other variable, supporting the findings of Franklin (1963). In the analysis of personality characteristics and achievement, conformity was the most consistent correlate of vocabulary scores across the groups.

A new 40-item locus of control scale was constructed by Nowicki and Strickland (1973) for their study with 1,017 students ranging from grades 3-12. Correlations for the scale were computed with social desirability, SES, academic achievement, and parental level of education. A clear relationship between locus of control orientation and achievement scores was found, with most of the significant correlations present in male groups. Only fifth- and seventh-grade females showed a trend toward significant relationships with achievement scores. Locus of control was not significantly related to social desirability or parental level of education. A significant relationship was found, however, between locus of control and socioeconomic level, more powerful for males than females. The researchers concluded that internality as measured by the Nowicki-Strickland Scale is significantly related to academic competence and social maturity and appears to be a correlate of independent, striving, self-motivated behavior.

Guttentag and Klein (1976) also developed a scale to measure locus of control, this one appropriate for black middle-school children. Common factors across five of the most frequently used scales were identified by the researchers, and selected items were lifted and included in the new instrument. Two alternate forms of the scale were devised and administered to 980 black urban school children. Demographic information was taken from school records. The

results did not support the notion that black children respond differently to locus of control items than white children. The researchers concluded that expectations about personal efficacy are quite general and unspecialized for fifth- through eighth-grade children.

Bartel (1971) reported different patterns of correlations between locus of control and achievement for lower- and middle-class groups. First-grade locus of control scores for middle-class children were negatively correlated with achievement, but by second grade they were positive and continued to increase with grade level. The author concluded that external control is an effective strategy for achievement for beginning students, but that

as the nature of the school task changes from teacher-directed activities (such as those common in first grade) to activities that call for greater inner direction (habits of perseverance and study skills), the child changes his mode of problem solving. The successful middle-class achiever is flexible enough to see at what point reliance on others is less efficacious than reliance on himself. (p. 1106)

The inconsistent and unstable correlations for the lower-class group led Bartel to speculate about possible intervening variables such as excessive teacher control or teacher expectations for low achievement in the population regardless of internal or external control.

Turner (1978) found that females were more internally oriented in lower-class groups while males were more internal in the middle-class comparison group. In general there were

no social class differences in internality in the sample of Appalachian Follow Through participants and lower- and middle-class comparison groups.

Social class differences in reading achievement have received attention for the past several years. Some researchers have theorized that the differences were caused by genetic inequities (Herrnstein, 1971; Jensen, 1969, 1973), while others have suggested that environmental factors were the reason for the differences (Hess, 1970; Zigler & Child, 1973).

Callaway (1972) found that several pupil and family characteristics were related to the achievement of fourth- and seventh-grade students. The factors studied in relationship to reading were: chronological age, age using IQ as covariate, race, race with IQ as covariate, whether the father worked, whether the mother worked, adjustment to the classroom, amount of reading materials in the classroom, family income, and occupation of the principal wage earner. Results showed that age alone was not a significant factor in reading performance. Age with IQ as covariate, however, was significant with the two youngest groups in fourth grade but was not significant at seventh grade. White children were generally higher on reading performance than Negro children; however, when intelligence was a covariate, differences between the reading scores for the two races decreased.

Students whose fathers were employed scored significantly higher in reading than children whose fathers did not

work, and children from low income families scored below children from higher income families on reading. There was no relationship, however, between reading performance and the occupational classifications of the parents.

Student expectations of low socioeconomic status children have been investigated by Entwisle and Webster (1972, 1973) through attempts to raise the expectations of individual children in training sessions with adults. Children from low SES groups were unreceptive to adults from middle class of the opposite race but were receptive to middle-class adults from their own race. The results indicated that student willingness to respond in classroom situations can be raised through manipulations designed to increase their confidence.

Teacher expectations were studied by Rist (1970) in a longitudinal research project which focused on children from kindergarten to second grade. Teacher judgments of social status as evidenced by dress and speech appeared to relate to expectations for academic success. Children judged to be the most educable were seated near the teacher where they could receive opportunities for direct interaction during instruction. Other negative consequences included criticism of the "lesser valued children" by those more highly esteemed by the teacher, and a decrease in the lower socioeconomic status children's confidence in their own abilities.

In summary, the research indicates that there is a significant correlation between the locus of control orientation and socioeconomic status of students, and this relationship does not appear to be associated with race. Teacher control, teacher expectations and student expectations have been found to be related to SES, and a consistent relationship has been found between socioeconomic level and reading achievement.

#### Summary

The literature which served as a basis for the theoretical framework of this study was organized into five categories: (a) Personality Factors Contributing to Student Independence, (b) Student Independence and Reading Achievement, (c) Parental Influences on Student Independence, (d) Teacher Personality and School Organizational Influences on Student Independence and Reading Achievement, and (e) Socioeconomic Status as an Influence of Student Independence and Reading Achievement.

Although some elements emerged that were common to the various definitions of independence in the literature, general agreement on an explicit definition was not apparent. Some authors, for example, emphasized such traits as showing initiative, overcoming obstacles, and deriving satisfaction from work. Others added such characteristics as creativity and self-reliance to their definitions. Many of the

descriptors of independence that were identified in the literature search were incorporated into the items on the Learning Independence Scale developed for this study.

In general, the findings from the research reviewed indicated that there was a significant relationship between measures of independence and reading performance. Furthermore, a number of studies confirmed that there was a correlation between internal orientation of locus of control and academic achievement. The findings concerning sex differences of the achievement/locus of control relationship were inconsistent, and the research showed that social desirability factors accounted for these differences in female responses. High achievement motivation has contributed to students' ability to make decisions and to function productively in the classroom.

Findings from studies of the relationship between parental influences and student independence have shown that parental independence training toward self-reliance enhances students' ability to function on their own in the classroom. Warm, nurturing maternal influences and congruent parent/child locus of control have been found to contribute to internal locus of control orientation in children. Parental authoritarianism, overprotection, and rejection appear to contribute to dependence in children.

The reported literature has shown that there is a significant relationship between the personality and behavior



of the teacher and independence behaviors of students. Warm and spontaneous teachers enhance student creativity, while authoritarian, highly organized teachers tend to stifle creative efforts. A significant correlation has been found between the classroom environment which is created by the teacher and student behaviors which are characteristic of independence (self-reliance, decision-making, problem-solving, working alone). The open classroom setting has been found to increase independent behaviors in students. Teacher expectations and teacher behaviors have also been found to influence reading achievement.

A review of the literature concerned with the relationship between socioeconomic factors and internal-external locus of control supports the notion that high SES students are more internally oriented toward locus of control than low SES students. A significant relationship has been found consistently between socioeconomic status and reading achievement. Such findings leave little doubt that elements such as income and educational levels of parents correlate both with student independence in the classroom and with reading achievement.

The review of literature for this study warrants the conclusions which follow:

- The personality characteristic identified as student independence includes such behaviors as showing initiative, overcoming obstacles, completing an

activity, making decisions, exhibiting creativity, helping others, coping with a situation without reassurance or help, and tolerating uncertainty.

--A significant relationship has been found between student behaviors which are characteristic of independence and reading achievement.

--Parental characteristics and behaviors are generally related to internal locus of control and thus to student independence.

--Teacher characteristics and school environment tend to influence the degree of independence with which students function in the classroom.

--Socioeconomic factors such as the educational level and income level of the home influence locus of control orientation and reading achievement.

## CHAPTER III

### PROCEDURES

In order to study the relationship between independence and reading achievement, it was necessary to develop a Learning Independence Scale, select a student population, collect information about these students, and analyze the collected data according to appropriate statistical procedures. The data collected were analyzed using descriptive statistics, analysis of variance, Duncan's Multiple Range Test (1955), correlational statistics, and regression analysis. This chapter will describe the procedures employed in the study.

#### Development of the Learning Independence Scale

One of the major tasks in this study was to develop a scale to obtain independence ratings for students as perceived by their classroom teachers. The Scale that was finally adopted for this study underwent a number of developmental stages. A thorough review of related literature helped clarify concepts and principles of learning independence and identify possible items for the Scale. Selected principles and concepts, as well as tentative items, were presented to three individuals who were recognized as having expertise in child behavior for their reactions. After consultation with

these authorities, a list of tentative items was compiled and the test format and scoring procedures were developed (Appendix A). Assistance with the development of the test format and scoring procedure was obtained from two research specialists in the Division of Research of the North Carolina Department of Public Instruction.

Student independence is defined as the ability to pursue learning tasks without adult or peer guidance. It involves the ability to make decisions and to solve problems. The student who possesses independence in learning situations is self-reliant, does not rely on others for responsibilities that he or she should accept, does not look to others for opinions or for guidance of conduct, and shows a desire for freedom and absence of constraint.

Personality traits related to student independence which were identified through the literature search include:

- Showing initiative      --The student selects learning activities without adult guidance.
- Overcoming obstacles    --The student devises an alternative method of reaching goals when necessary.
- Completing activities    --The student focuses attention on learning tasks until completed.

- |                                |  |
|--------------------------------|--|
| Doing things alone             | --The student is able to function successfully alone without adult or peer guidance. |
| Decision making                | The student demonstrates the ability to make decisions independently.                |
| Problem solving                | --The student demonstrates the ability to solve social problems independently.       |
| Giving help and<br>reassurance | --The student provides leadership in peer groups.                                    |
| Self-directed                  | --The student plans and organizes work to achieve learning goals.                    |

After the tentative form of the Scale was developed, criteria and procedures to be used to evaluate the Scale were established. A panel of 13 jurors were requested to evaluate the Scale for relevance, appropriateness, and accuracy. The jurors were two primary level classroom teachers, two members of the Division of Reading of the North Carolina Department of Public Instruction, two members of the Division of Research of the North Carolina Department of Public Instruction, a university professor of educational research, a university professor of child development, two university professors of reading, two psychologists, and the deputy state superintendent of instruction of the North Carolina Department of Public Instruction (Appendix B).

Each juror was requested to proceed as follows:

1. Read the attached plan for the proposed study.
2. Become thoroughly familiar with this definition of independence:

Definition of Independence--When judging the students on the extent of his or her independence, think of these types of behaviors: (A) He or she does not rely on others for responsibilities that he or she should accept, (B) He or she does not look to others for opinions or for guidance of conduct, (C) He or she shows a desire for freedom and absence of constraint.

3. Using the above definition, the background information in the proposed study, and your knowledge of and experience with independence and children (third-graders), read each item in the Learning Independence Scale and decide whether it is relevant and is written in a concise and clear manner.
4. Edit any of the items to make them more concise and relevant.
5. Eliminate any redundant items.
6. Write additional items which you think are appropriate.
7. React to and edit the Instructions section and format of the Scale.

8. For each item in the Scale and for those that you added, indicate whether you would include it in the final Learning Independence Scale by writing in front of the item either "yes" or "no".
9. At the bottom of the Learning Independence Scale, indicate whether you accept the recommended instructions, rating scale, and format of the Scale.

The analysis of the jurors' responses resulted in the elimination of two items and the addition of another. Also, upon the jurors' recommendations, a number of editorial changes were made in the items, as well as the instructions for teachers who would be requested to assign independence ratings to their students. The final form of the Learning Independence Scale is found in Appendix C.

A field test of the instrument was conducted with four classrooms of third-grade students during the spring term of the 1976-77 school year. Correlations were computed for the items on the Learning Independence Scale with change scores from pre- and post-administrations of Level B of the Prescriptive Reading Inventory (CTB-McGraw Hill) (Appendix D and Appendix E).

#### Selection of Study Population

The population for this study consisted of a random sample of third-grade classes that participated in the Primary Reading Improvement Program in Educational Region 5

of the State of North Carolina. This Program, funded statewide by the state legislature, has six components: instructional aides for grades 1-3, additional instructional materials for the teaching of reading, prescriptive tests of reading skills, inservice training for the teachers and aides, the services of volunteers in the classrooms, and a school-based plan of objectives and strategies to guide the efforts toward improving the reading program in that school.

The subjects included 8 classroom teachers and 187 third-grade students (Table 1). Each of the 8 classes participating in this study was in a different school system. The classes were selected through a random process by the Division of Research of the North Carolina State Department of Public Instruction and thus were representative of the third-grade students and teachers in Educational Region 5.

Educational Region 5 is one of eight educational districts in the State of North Carolina. It encompasses 11 counties in the north-central Piedmont area of the state and includes both rural and urban communities. Within this region there are 21 individual school systems. Children from both rural and metropolitan areas were included in the sample population. The composition of the sample for this study was, therefore, representative of third-grade students in the Piedmont area of North Carolina.



Table 1  
Number of Students Enrolled in the Eight  
Classes Involved in Study

---

Teacher or Class	Number Pupils
A	23
B	25
C	22
D	21
E	26
F	24
G	23
H	23
Total	187

---

### Collection of Data

Data were collected and analyzed regarding both students and teachers. Teachers were requested to record biographical data for each student in the class:

1. Sex (male or female)
2. Last recorded intelligence quotient
3. Reading scale score from Level 13 of the California Achievement Test
4. Educational level of mother (1 = college graduate, 2 = high school graduate, 3 = less than high school graduate)
5. Income level of parents (1 = more than \$15,000; 2 = from \$5,000 to \$15,000; 3 = less than \$5,000)
6. Ratings on each of 23 items or indicators of learning independence: Indicate the degree that the trait described in an item describes a student by circling 5 = almost always, 4 = usually, 3 = sometimes, 2 = not often, and 1 = almost never.

In addition to recording information about their students, each of the eight teachers in the study was requested to respond to the Gordon Personal Profile (1963), an instrument that was designed to measure four aspects of personality which are believed to be significant in the daily functioning of an individual. These four measures are Ascendancy (A), Responsibility (R), Emotional Stability (E), and Sociability (S). This Profile was selected because it is an efficient

measure of the adjustment and effectiveness of an individual in social, educational, and industrial situations. It is self-administered and has no time limit. Internal consistency and stability of the measures yielded by the Profile have been established by Spearman-Brown computations as reliability coefficient of .80, Standard Deviation of 5.5, and standard error of measurement of 2.5.

High and low scores on the Gordon Personal Profile Scales are interpreted as follows:

#### Ascendancy (A)

Those individuals who are verbally ascendant, who adopt an active role in the group, who are self-assured and assertive in relationships with others, and who tend to make independent decisions score high on this scale. Those who play a passive role in the group, who listen rather than talk, who lack self-confidence, who let others take the lead, and who tend to be overly dependent on others for advice, normally make low scores.

#### Responsibility (R)

Individuals who are able to stick to any job assigned them, who are persevering and determined, and who can be relied on, score high on the Scale. Individuals who are unable to stick to tasks that do not interest them, and who tend to be flighty or irresponsible, usually make low scores.

#### Emotional Stability (E)

High scores on the scale are generally made by individuals who are well balanced, emotionally stable, and relatively free from anxieties and nervous tension. Low scores are associated with excessive anxiety, hypersensitiveness, nervousness, and low frustration tolerance. Generally, a very low score reflects poor emotional balance.

### Sociability (S)

High scores are made by individuals who like to be with and work with people, and who are gregarious and sociable. Low scores reflect a lack of gregariousness, a general restriction in social contacts, and, in the extreme, an actual avoidance of social relationships. (Gordon, 1963, p. 3)

### Analysis of Data

In order to answer the questions that were posed in this study, collected data were analyzed with several different statistical procedures. These procedures included the use of descriptive statistics, analysis of variance, Duncan's Multiple Range Test (1955), correlational statistics, and regression analysis. Descriptive statistics were employed to describe the variables in terms of a measure of central tendency (mean) and variability (standard deviation). For example, in describing the intelligence quotients of students in this investigation, the mean was used to indicate the score of the average third-grader and the standard deviation was used to indicate the range of scores that encompassed 68% of the study population around the mean.

The analysis of variance procedure in conjunction with Duncan's Multiple Range Test was employed in this study to test the significance of differences between and among groups on a continuous variable. The analysis of variance procedure, for example, tested the hypothesis that, on the average, third-grade students from low, middle, and high income families were assigned the same Learning Independence Scale

ratings by their teachers. The analysis of variance procedure will indicate whether there are differences in the scores for the three groups of students; but, if there are differences, the analysis alone does not show to which group or groups the differences can be attributed. The Duncan's Multiple Range Test is one of several follow-up analyses which have been developed to reveal exactly where the significant differences lie after a significant F ratio has been obtained (Huck, Cormier, and Bounds, 1974). In this study the Duncan Multiple Range Test was used to indicate whether the observed differences among the three parental income levels and among the three educational levels of the mothers could be attributed to a particular level or levels.

Correlational statistics were used to measure the relationship between two variables in the study when the variables were used as continuous measures. This procedure was also used to obtain reliability coefficients and to determine internal consistency for the Learning Independence Scale. Correlations are reported within a range of +1 (perfect positive correlation) to -1 (perfect negative correlation). In correlational analysis, one variable is a dependent variable and the other is an independent variable (Kerlinger, 1973).

Regression analysis was used in this study to examine the relationship between a dependent variable and two or more independent variables. The formula derived through this

process can be used to predict the value of a dependent variable based on values of two or more independent variables. Multiple correlations are a by-product of the regression analysis. In examining the relationship between a dependent variable and one or more independent variables, a multiple correlation may be calculated. The multiple correlation is interpreted in the same manner as the simple correlation or the correlation between a dependent variable and a single independent variable (Kerlinger, 1973).

In this study, reading scores and Learning Independence Scale scores were classified as dependent variables. Sex, income level, education level of the mother, and intelligence quotients were used as independent variables. The total Learning Independence Scale score was used as an independent variable for the computation of the regression equation for best predictors of reading scale scores.

When analyses were used to test hypotheses, it was necessary to choose a probability level that indicated whether observed differences were statistically different. In these analyses, the .05 confidence level was used. When observed differences were found to be significant at the .05 level of confidence, the difference would have occurred by chance in five or fewer times in 100 times. The statistics for which probability levels were appropriate in this study include simple correlation ( $r$ ), multiple correlation ( $R$ ), and the analysis of variance results ( $F$ ).

### Summary

This chapter has described the methodology used to investigate whether student independence in the classroom at the third-grade level is related to reading achievement. Included in the chapter was a description of the variables, description of the instruments, information regarding the subjects and classroom teachers who participated in the study, and explanation of the methods used in the data collection. Complete information regarding the analysis of the data is recorded in Chapter IV of this study.

## CHAPTER IV

### FINDINGS

#### Introduction

The major purposes of this study centered around the development of a Learning Independence Scale that could be used to obtain teacher ratings about primary students, and a study of the relationship between the Learning Independence Scale scores for students and other variables that traditionally impact on student performance. In addition to obtaining content validity judgments for the proposed items in the Learning Independence Scale (Chapter III), three statistical analyses were made that are important in test development. First, reliability coefficients were obtained for the Scale for each of the teachers and all teachers combined in order to determine whether the teachers were consistent in assigning learning independence ratings to students. Second, correlations between item scores and total scores were calculated in order to determine the extent that each item in the Learning Independence Scale contributed to the total score for the Scale. Finally, intercorrelations were determined between all items in the Scale in order to determine internal consistency or the degree each item was related to each other item in the Scale.



In addition to making the three analyses that were related to test development, descriptive data (means and standard deviations) were calculated for the total Learning Independence Scale score, for each item in the Scale, and for the following variables for the students involved in the study: sex, intelligence quotients, reading scores, educational level of mothers, and income level of parents. These descriptive data provide a measure of central tendency and variability for the student variables that were included in the study.

The major emphases of the investigation, however, were directed toward answering the questions which follow:

- (1) Were there significant relationships between the Learning Independence Scale scores and the sex of the students?
- (2) Were there significant correlations between the Learning Independence Scale scores and the reading scores of the students?
- (3) Were there significant correlations between the Learning Independence Scale scores and the intelligence quotients of the students?
- (4) Were there significant correlations between the Learning Independence Scale scores of students and their mothers' educational levels?
- (5) Were there significant relationships between the Learning Independence Scale scores of students and their parents' income levels?

- (6) Were there combinations of student variables that can be used to predict Learning Independence Scores for students?
- (7) Were there combinations of student variables that can be used to predict reading scores for students?
- (8) Were there significant correlations between personal profile scores for teachers and the Learning Independence Scale scores they assign to their students?
- (9) Were there significant relationships between personal profile scores for teachers and the reading scores of their pupils?

Table 2 summarizes the statistical procedures used to answer these questions.

Statistics Related to Development of  
Learning Independence Scale

Table 3 presents the correlation coefficients between the odd and even items for the Learning Independence Scale for eight teachers and all teachers involved in this investigation. The range in the magnitude of correlations was from a low of .78 for Teacher B to a high of .92 for Teacher C. The reliability coefficient for all teachers was .87. All observed correlations are significant in that the coefficients would be expected to occur by chance in fewer than 1 in 10,000 times (.0001). The magnitude of these correlations warrants the conclusion that the eight

Table 2  
Statistical Procedures

Procedure	Use in Study
Descriptive Statistics	Description of variables in terms of central tendency (mean) and variability (standard deviation)
Analysis of Variance	Analysis of whether there are differences in the scores of three parental income levels and three educational levels of mothers of subjects
Duncan's Multiple Range Test	Indication of whether observed differences among three parental income levels and among three educational levels of the mothers can be attributed to a particular level or levels.
Correlational Statistics	<p>Procedure to obtain reliability coefficients and to determine internal consistency for the Learning Independence Scale</p> <p>Measurement of the relationships between</p> <ul style="list-style-type: none"> <li>• learning independence and reading achievement</li> <li>• learning independence and intelligence quotient</li> <li>• learning independence and income level of parents</li> <li>• learning independence and sex of students</li> <li>• learning independence and educational level of mothers</li> </ul>

Table 2 (continued)

Procedure	Use in Study
Regression Analysis	<p data-bbox="841 380 1393 449">Examination of the combined relationship between</p> <ul data-bbox="878 485 1468 848" style="list-style-type: none"><li data-bbox="878 485 1409 646">• learning independence and the independent variables (sex, income level, IQ, educational level of mother)</li><li data-bbox="878 682 1468 848">• reading achievement and the independent variables (sex, income level, IQ, educational level of mother, Learning Independence Total)</li></ul>

Table 3

Reliability Coefficients for Odd-Even Items on Learning  
Independence Scale for Eight Teachers and  
Total Number of Teachers

---

Teacher	Reliability
A	0.85*
B	0.78
C	0.92
D	0.89
E	0.79
F	0.88
G	0.89
H	0.86
Total	0.87

---

\*All correlations were significant at the .0001 level.

teachers involved in the study were consistent in assigning Learning Independence Scale scores to students who were enrolled in their classes.

Table 4 presents correlations between each of the 23-item scores and the total scores assigned to students by the teachers participating in the study. Correlations between two items and the total score exceeded .900. These items were: "Plans and organizes his work to achieve learning goals" ( $r = .910$ ), and "Assumes responsibility reliably" ( $r = .906$ ). There were 14 items which had correlations between .800 and .900 with the total scores on the Learning Independence Scale. In rank order according to size of the correlations, these items were:

- Devises alternative method of reaching goals when necessary ( $r = .895$ ).
- Takes initiative for learning pursuits and interprets and evaluates oral directions (both an  $r$  of .889).
- Is able to function successfully alone without adult or peer guidance ( $r = .888$ ).
- Continues working on learning tasks when teacher is not present ( $r = .883$ ).
- Uses materials and resources independently to accomplish learning goals ( $r = .880$ ).
- Is able to function successfully in a group without guidance ( $r = .875$ ).
- Interprets and evaluates written directions ( $r = .873$ ).

Table 4

Correlations Between Item Scores and Total Scores for  
the 23 Items in the Learning Independence Scale

Indicators of Independence	Correlation	Probability
1. Possesses prerequisite skills necessary for success.	.845	.0001*
2. Selects learning activities without adult guidance	.757	.0001*
3. Uses materials and resources independently to accomplish learning goals.	.880	.0001*
4. Focuses attention on learning tasks until completed.	.838	.0001*
5. Demonstrates ability to make decisions independently.	.859	.0001*
6. Demonstrates ability to solve social problems independently.	.788	.0001*
7. Takes care of and is responsible for personal belongings.	.667	.0001*
8. Knows how and where to seek help when necessary.	.792	.0001*
9. Plans and organizes his work to achieve learning goals.	.910	.0001*
10. Is able to function successfully alone without adult or peer guidance.	.888	.0001*
11. Is able to function successfully in a group without guidance.	.875	.0001*
12. Provides leadership in peer groups.	.831	.0001*
13. Pursues his own interests without being easily distracted.	.853	.0001*
14. Devises alternative method of reaching goals when necessary.	.895	.0001*
15. Interprets and evaluates written directions.	.873	.0001*
16. Interprets and evaluates oral directions.	.889	.0001*
17. Raises legitimate questions about school rules and procedures.	.443	.0001*

Table 4 (continued)

Indicators of Independence	Correlation	Probability
18. Manages time efficiently.	.864	.0001 *
19. Assumes responsibility reliably.	.906	.0001 *
20. Takes initiative for learning pursuits.	.889	.0001 *
21. Makes decisions that are not consistent with peer consensus.	.491	.0001 *
22. Demonstrates independence from parents or guardians.	.792	.0001 *
23. Continues working on learning tasks when teacher is not present.	.883	.0001 *

\*All correlations are significant.



- Manages time efficiently ( $r = .864$ ).
- Demonstrates ability to make decisions independently ( $r = .859$ ).
- Pursues own interest without being easily distracted ( $r = .853$ ).
- Possesses prerequisite skills necessary for success ( $r = .845$ ).
- Focuses attention on learning tasks until completed ( $r = .838$ ).
- Provides leadership in peer groups ( $r = .831$ ).

There were four items that had correlations between .700 and .800:

- Knows how and where to seek help when necessary and demonstrates independence from parents or guardians (both  $r$  of  $.792$ ).
- Demonstrates ability to solve social problems independently ( $r = .788$ ).
- Selects learning activities without adult guidance ( $r = .757$ ).

There was one item that had a correlation between .600 and .700:

- Takes care of and is responsible for personal belongings ( $r = .667$ ).

Finally, there were two items that had correlations between .400 and .500 as follows:

- Makes decisions that are not consistent with peer consensus ( $r = .491$ ).
- Raises legitimate questions about school rules and procedures ( $r = .443$ ).

All of the correlations between the 23-item scores and the total score for the Learning Independence Scale were significant at the .0001 level. Except for two items, all correlations were well above .500.

The intercorrelations between the 23 items in the Learning Independence Scale ranged from a high of .890 to a low of .220 (Table 5). The correlations between the items, "Interprets and evaluates written directions" (Item 15) and "Interprets and evaluates oral directions" (Item 16) was .890. A correlation of .220 was observed between "Makes decisions that are not consistent with peer consensus (Item 21) and "Takes care of and is responsible for personal belongings" (Item 7). A correlation of .220 was also observed between "Raises legitimate questions about school rules and procedures" (Item 17) and "Takes care of and is responsible for personal belongings" Item 7). For the two items, "Raises legitimate questions about school rules and procedures" (Item 17) and "Makes decisions that are not consistent with peer consensus" (Item 21), all except two intercorrelations with other items were less than .500. A correlation of .530 was observed between "Provides leadership in peer groups" (Item 12) and "Raises legitimate questions about school

Table 5

Intercorrelations Between the 23 Items Included in the  
Learning Independence Scale

N = 187

Indicators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.00	0.68	0.77	0.65	0.77	0.68	0.51	0.70	0.71	0.71	0.69	0.68	0.67	0.72	0.80	0.79	0.29	0.64	0.75	0.70	0.37	0.72	0.72
2	0.68	1.00	0.75	0.67	0.70	0.55	0.53	0.55	0.70	0.70	0.63	0.58	0.68	0.58	0.67	0.65	0.29	0.66	0.66	0.66	0.27	0.52	0.66
3	0.77	0.75	1.00	0.78	0.78	0.69	0.60	0.74	0.82	0.78	0.79	0.69	0.75	0.75	0.82	0.82	0.30	0.78	0.80	0.77	0.34	0.63	0.74
4	0.65	0.67	0.78	1.00	0.71	0.70	0.62	0.64	0.82	0.74	0.72	0.63	0.74	0.74	0.70	0.72	0.32	0.82	0.79	0.75	0.30	0.62	0.75
5	0.77	0.70	0.78	0.71	1.00	0.72	0.60	0.70	0.78	0.77	0.74	0.67	0.75	0.76	0.75	0.77	0.34	0.68	0.76	0.76	0.39	0.73	0.69
6	0.68	0.55	0.69	0.70	0.72	1.00	0.57	0.66	0.72	0.70	0.76	0.67	0.69	0.71	0.64	0.70	0.34	0.64	0.73	0.68	0.31	0.61	0.64
7	0.51	0.53	0.60	0.62	0.60	0.57	1.00	0.68	0.65	0.61	0.60	0.50	0.57	0.56	0.55	0.61	0.22	0.60	0.65	0.57	0.22	0.46	0.52
8	0.70	0.55	0.74	0.64	0.70	0.66	0.68	1.00	0.74	0.74	0.75	0.66	0.65	0.73	0.71	0.77	0.33	0.68	0.75	0.71	0.31	0.65	0.66
9	0.71	0.70	0.82	0.82	0.78	0.72	0.65	0.74	1.00	0.87	0.83	0.74	0.81	0.85	0.78	0.81	0.38	0.87	0.87	0.86	0.32	0.68	0.86
10	0.71	0.70	0.78	0.74	0.77	0.70	0.61	0.74	0.87	1.00	0.90	0.74	0.79	0.82	0.77	0.78	0.34	0.81	0.86	0.85	0.30	0.65	0.83
11	0.69	0.63	0.79	0.72	0.74	0.76	0.60	0.75	0.83	0.90	1.00	0.73	0.79	0.81	0.74	0.80	0.35	0.78	0.85	0.81	0.32	0.61	0.79
12	0.68	0.58	0.69	0.63	0.67	0.67	0.50	0.66	0.74	0.74	0.73	1.00	0.72	0.79	0.69	0.73	0.53	0.68	0.76	0.74	0.45	0.73	0.72
13	0.67	0.68	0.75	0.74	0.75	0.69	0.57	0.65	0.81	0.79	0.79	0.72	1.00	0.79	0.69	0.74	0.37	0.77	0.79	0.79	0.27	0.64	0.81
14	0.72	0.58	0.75	0.74	0.76	0.71	0.56	0.73	0.85	0.82	0.81	0.79	0.79	1.00	0.79	0.80	0.46	0.76	0.80	0.87	0.45	0.76	0.82
15	0.80	0.67	0.82	0.70	0.75	0.64	0.55	0.71	0.78	0.77	0.74	0.69	0.69	0.79	1.00	0.89	0.32	0.74	0.76	0.76	0.35	0.66	0.76
16	0.79	0.65	0.82	0.72	0.77	0.70	0.61	0.77	0.81	0.78	0.80	0.73	0.74	0.80	0.89	1.00	0.37	0.75	0.82	0.76	0.35	0.65	0.75
17	0.29	0.29	0.30	0.32	0.34	0.34	0.22	0.33	0.38	0.34	0.35	0.53	0.37	0.46	0.32	0.37	1.00	0.37	0.34	0.44	0.45	0.40	0.29
18	0.64	0.66	0.78	0.82	0.68	0.64	0.60	0.68	0.87	0.81	0.78	0.68	0.77	0.76	0.74	0.75	0.37	1.00	0.84	0.80	0.32	0.62	0.37
19	0.75	0.66	0.81	0.79	0.76	0.73	0.65	0.75	0.87	0.86	0.85	0.76	0.79	0.80	0.76	0.82	0.34	0.84	1.00	0.85	0.32	0.66	0.83
20	0.70	0.66	0.77	0.75	0.76	0.68	0.57	0.71	0.86	0.85	0.81	0.74	0.79	0.87	0.76	0.76	0.44	0.80	0.85	1.00	0.42	0.73	0.86
21	0.37	0.27	0.34	0.30	0.39	0.31	0.22	0.31	0.32	0.30	0.32	0.45	0.27	0.45	0.35	0.35	0.45	0.32	0.32	0.42	1.00	0.55	0.41
22	0.72	0.52	0.63	0.62	0.73	0.61	0.46	0.65	0.68	0.65	0.61	0.73	0.64	0.76	0.66	0.65	0.40	0.62	0.66	0.73	0.55	1.00	0.67
23	0.72	0.66	0.74	0.75	0.69	0.64	0.52	0.68	0.86	0.83	0.79	0.72	0.81	0.82	0.76	0.75	0.29	0.87	0.83	0.86	0.41	0.67	1.00

rules and procedures" (Item 17), whereas a correlation of .550 was observed between "Makes decisions that are not consistent with peer consensus" (Item 21) and "Demonstrates independence from parents or guardians" (Item 22).

The statistics that were calculated to provide pertinent information relative to the development of the Learning Independence Scale revealed that the reliability of the instrument was relatively high. Item total score correlations and intercorrelations between the 23 items in the instrument were all significant at the .0001 level, but two items ("Raises legitimate questions about school rules and procedures," Item 17, and "Makes decisions that are not consistent with peer consensus," Item 21) revealed relatively low correlations with items and the total score, and thus might be placed in the suspect category.

#### Descriptive Data Relative to Student Variables

Table 6 presents the number of students, means, and standard deviations for the following student variables that were used in the study: sex, intelligence quotients, reading scores, education levels of mother, income levels of parents, each of 23 ratings on the Learning Independence Scale, and a total Learning Independence Scale score. The N count of 187 for students reveals that there was missing data for intelligence quotients (N = 183), education level of mother (N = 178), and income (N = 184). Also, there was missing data (N counts

Table 6

Number of Respondents and Mean and Standard Deviation  
for Variables Used in Study

Variables	N	Mean	Standard Deviation
Sex	187	1.49	0.50
IQ	183	98.38	15.16
Reading Score	187	391.47	52.12
Mother's Educational Level	178	2.28	0.59
Income	184	1.97	0.58
Indicators of Independence			
1. Possesses prerequisite skills necessary for success	187	3.67	1.05
2. Selects learning activities without adult guidance	186	3.47	1.12
3. Uses materials and resources independently to accomplish learning goals	187	3.60	1.06
4. Focuses attention on learning tasks until completed	187	3.72	1.12
5. Demonstrates ability to make decisions independently	187	3.64	1.11
6. Demonstrates ability to solve social problems independently	187	3.68	1.11
7. Takes care of and is responsible for personal belongings	187	4.04	1.03
8. Knows how and where to seek help when necessary	185	3.92	0.99
9. Plans and organizes his work to achieve learning goals	187	3.56	1.13
10. Is able to function successfully alone without adult or peer guidance	187	3.53	1.20
11. Is able to function successfully in a group without guidance	187	3.61	1.16

Table 6 (continued)

<u>Variables</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
12. Provides leadership in peer groups	186	3.17	1.23
13. Pursues his own interests without being easily distracted	186	3.47	1.15
14. Devises alternative method of reaching goals when necessary	186	3.28	1.18
15. Interprets and evaluates written directions	187	3.50	1.20
16. Interprets and evaluates oral directions	185	3.71	1.15
17. Raises legitimate questions about school rules and procedures	186	2.61	1.23
18. Manages time efficiently	186	3.39	1.19
19. Assumes responsibility reliably	185	3.54	1.18
20. Takes initiative for learning pursuits	187	3.35	1.17
21. Makes decisions that are not con- sistent with peer consensus	186	2.77	1.18
22. Demonstrates independence from parents or guardians	162	3.43	1.10
23. Continues working on learning tasks when teacher is not present	162	3.40	1.16
Total	187	78.91	20.85

between 186 and 162) for 12 of the 23 items for the Learning Independence Scale. Since the intelligence test scores were retrieved from school records, the missing intelligence quotients were due to the fact that some students were not available at the time of the testing. The education levels of mothers and parental income levels were assigned by the classroom teachers, and the teachers did not have necessary information to complete these levels for every student. The teacher ratings for students' personality traits (items on Learning Independence Scale) were omitted either inadvertently or because the teacher intended to come back to that item after more thought.

The means revealed that there were more female than male students in the study; that the average intelligence score for the students was 98.38; that the average reading scale score for the students was 391.47; that the average mother of the students had a high school education; and the average income level of the students' parents fell within the \$5,000 to \$15,000 range. One standard deviation for these variables indicates the range within which 68% of the student population fell. The observed means for the 23 items in the Learning Independence Scale ranged from a low of 2.61 to a high of 4.04. The item with the lowest mean was "Raises legitimate questions about school rules and procedures" (Item 17); the item with the greatest mean was "Takes care of and is responsible for personal belongings" (Item 7). One additional item,

"Makes decisions that are not consistent with peer consensus" (Item 21), reflected a mean of 2.77 which was below 3.00. The combined mean for all 23 items was 78.91.

The standard deviation for the items as well as the combined score for the Learning Independence Scale revealed that there was relatively wide variation in the independence ratings assigned to students. The range in standard deviations for the 23 items was from a low of 0.99 to a high of 1.23 for a 5-point scale. The standard deviation for the combined score for the Learning Independence Scale was 20.85.

#### Relationship Between Students' Sex and Learning Independence Scale Scores

One of the objectives of this study was to determine whether there were significant correlations between the sex of students and the Learning Independence Scale scores that were assigned to them by their teachers. Table 7 shows significant correlations between sex and only five of the items in the Learning Independence Scale. The items with significant correlations were as follows:

- Selects learning activities without adult guidance  
( $r = .154$ ,  $p = .0357$ ).
- Is able to function successfully alone without adult or peer guidance ( $r = .154$ ,  $p = .0349$ ).
- Is able to function in a group without guidance  
( $r = .160$ ,  $p = .0283$ ).



Table 7

Correlation Coefficients Between Students' Sex and  
Learning Independence Scale Scores

Indicators of Independence	Correlation	Probability
1. Possesses prerequisite skills necessary for success.	.036	.6272
2. Selects learning activities without adult guidance.	.154	.0357*
3. Uses materials and resources independently to accomplish learning goals.	.090	.2203
4. Focuses attention on learning tasks until completed.	.087	.2356
5. Demonstrates ability to make decisions independently.	.043	.5587
6. Demonstrates ability to solve social problems independently.	-.077	.2959
7. Takes care of and is responsible for personal belongings.	.016	.8264
8. Knows how and where to seek help when necessary.	.034	.6681
9. Plans and organizes his work to achieve learning goals.	.122	.0958
10. Is able to function successfully alone without adult or peer guidance.	.154	.0349*
11. Is able to function successfully in a group without guidance.	.160	.0283*
12. Provides leadership in peer groups.	.032	.6643
13. Pursues his own interests without being easily distracted.	.117	.1127
14. Devises alternative method of reaching goals when necessary.	.123	.0931
15. Interprets and evaluates written directions.	.082	.2617
16. Interprets and evaluates oral directions.	.052	.4792
17. Raises legitimate questions about school rules and procedures.	.005	.9422

Table 7 (continued)

Indicators of Independence	Correlation	Probability
18. Manages time efficiently.	.238	.0011*
19. Assumes responsibility reliably.	.099	.1799
20. Takes initiative for learning pursuits.	.118	.1090
21. Makes decisions that are not consistent with peer consensus.	.021	.7786
22. Demonstrates independence from parents or guardians.	.061	.4382
23. Continues working on learning tasks when teacher is not present.	.159	.0433*
Total	.106	.1482

\*Significant correlation.

- Manages time efficiently ( $r = .283$ ,  $p = .0011$ ).
- Continues working on learning tasks when teacher is not present ( $r = .159$ ,  $p = .0433$ ).

Since males were coded one and females two for this particular correlational analysis, the five positive significant correlations indicate that the participating teachers assigned higher ratings to females than males for these five indicators of Learning Independence. Of the 23 items in the Learning Independence Scale, teachers assigned higher ratings to males for the one indicator: "Demonstrates ability to solve social problems independently" (Item 6). The observed  $r = -.077$  with a probability ratio of .2959, however, indicates that the ratings for males were not statistically different from those assigned to females.

#### Correlations Between Students' Reading and Learning Independence Scale Scores

Significant correlations were observed between the students' reading scores and all 23-item scores and the total score for the Learning Independence Scale (Table 8). Furthermore, the observed correlations in every case would have occurred by chance in only 1 in 10,000 times. Correlations higher than .600 were observed for the total score and three item scores; between .500 and .600 for 14 item scores; between .400 and .500 for three item scores; and between .300 and .400 for three item scores. The three items for which above .600 correlations were observed were:

Table 8

Correlation Coefficients Between Students' Reading Scores  
and Learning Independence Scale Scores

<u>Indicators of Independence</u>	<u>Correlation</u>	<u>Probability</u>
1. Possesses prerequisite skills necessary for success.	.627	.0001*
2. Selects learning activities without adult guidance	.416	.0001*
3. Uses materials and resources independently to accomplish learning goals.	.573	.0001*
4. Focuses attention on learning tasks until completed.	.475	.0001*
5. Demonstrates ability to make decisions independently.	.537	.0001*
6. Demonstrates ability to solve social problems independently.	.443	.0001*
7. Takes care of and is responsible for personal belongings.	.317	.0001*
8. Knows how and where to seek help when necessary.	.522	.0001*
9. Plans and organizes his work to achieve learning goals.	.592	.0001*
10. Is able to function successfully alone without adult or peer guidance.	.553	.0001*
11. Is able to function successfully in a group without guidance.	.551	.0001*
12. Provides leadership in peer groups.	.571	.0001*
13. Pursues his own interests without being easily distracted.	.513	.0001*
14. Devises alternative method of reaching goals when necessary.	.631	.0001*
15. Interprets and evaluates written directions.	.650	.0001*
16. Interprets and evaluates oral directions.	.598	.0001*
17. Raises legitimate questions about school rules and procedures.	.308	.0001*

Table 8 (continued)

<u>Indicators of Independence</u>	<u>Correlation</u>	<u>Probability</u>
18. Manages time efficiently	.502	.0001*
19. Assumes responsibility reliably.	.555	.0001*
20. Takes initiative for learning pursuits.	.598	.0001*
21. Makes decisions that are not consistent with peer consensus.	.378	.0001*
22. Demonstrates independence from parents or guardians.	.539	.0001*
23. Continues working on learning tasks when teacher is not present.	.532	.0001*
Total	.648	.0001*

\*Significant correlation.

- Interprets and evaluates written directions  
( $r = .650$ ).
- Devises alternative method of reaching goals when  
necessary ( $r = .631$ ).
- Possesses prerequisite skills necessary for success  
( $r = .627$ ).

At the other extreme, the items for which below .400 correlations were observed were:

- Makes decisions that are not consistent with peer  
consensus ( $r = .378$ ).
- Takes care of and is responsible for personal belong-  
ings ( $r = .317$ ).
- Raises legitimate questions about school rules and  
procedures ( $r = .308$ ).

#### Correlations Between Students' Intelligence Test Scores and Learning Independence Scale Scores

Significant correlations were also observed between students' intelligence quotients and the total score and the 23-item scores in the Learning Independence Scale (Table 9). Overall, however, the correlations between intelligence quotients and Learning Independence Scale scores were not as high as those that were observed between students' reading scores and Learning Independence Scale scores. The correlations between the intelligence scores and indicators of independence were between .500 and .600 for the total score and for four item scores in the Learning

Table 9

Correlation Coefficients Between Students' Intelligence Test  
Scores and Learning Independence Scale Scores

Indicators of Independence	Correlation	Probability
1. Possesses prerequisite skills necessary for success.	.526	.0001*
2. Selects learning activities without adult guidance	.424	.0001*
3. Uses materials and resources independently to accomplish learning goals.	.464	.0001*
4. Focuses attention on learning tasks until completed.	.363	.0001*
5. Demonstrates ability to make decisions independently.	.436	.0001*
6. Demonstrates ability to solve social problems independently.	.407	.0001*
7. Takes care of and is responsible for personal belongings.	.328	.0001*
8. Knows how and where to seek help when necessary.	.453	.0001*
9. Plans and organizes his work to achieve learning goals.	.474	.0001*
10. Is able to function successfully alone without adult or peer guidance.	.445	.0001*
11. Is able to function successfully in a group without guidance.	.383	.0001*
12. Provides leadership in peer groups.	.496	.0001*
13. Pursues his own interests without being easily distracted.	.392	.0001*
14. Devises alternative method of reaching goals when necessary.	.482	.0001*
15. Interprets and evaluates written directions.	.513	.0001*
16. Interprets and evaluates oral directions.	.510	.0001*
17. Raises legitimate questions about school rules and procedures.	.354	.0001*

Table 9 (continued)

<u>Indicators of Independence</u>	<u>Correlation</u>	<u>Probability</u>
18. Manages time efficiently.	.390	.0001*
19. Assumes responsibility reliably.	.436	.0001*
20. Takes initiative for learning pursuits.	.500	.0001*
21. Makes decisions that are not consistent with peer consensus.	.375	.0001*
22. Demonstrates independence from parents or guardians.	.423	.0001*
23. Continues working on learning tasks when teacher is not present.	.418	.0001*
Total	.539	.0001*

\*Significant correlation.



Independence Scale, between .400 and .500 for 12 items, and between .300 and .400 for seven items in the Learning Independence Scale.

The items with the highest correlations were:

- Possesses prerequisite skills necessary for success (r = .526).
- Interprets and evaluates written directions (r = .513).
- Interprets and evaluates oral directions (r = .510).
- Takes initiative for learning pursuits (r = .500).

Items that were observed to have the lowest correlations with intelligence test scores were:

- Takes care of and is responsible for personal belongings (r = .328).
- Raises legitimate questions about school rules and procedures (r = .354).
- Focuses attention on learning tasks until completed (r = .363).
- Makes decisions that are not consistent with peer consensus (r = .375).
- Is able to function successfully in a group without guidance (r = .383).
- Manages time efficiently (r = .390).
- Pursues his own interest without being easily distracted (r = .392).

Relationship Between Students' Learning Independence  
Scale Scores and Educational Levels of Mothers

Teachers involved in the study were requested to indicate the educational levels attained by the mothers of students enrolled in their classes by circling: college graduate = 1, high school graduate = 2, or less than high school graduate = 3. Correlations between this variable and item and total scores in the Learning Independence Scale were computed (Table 10). Significant negative correlations were observed between mothers' educational level and all indicators of independence on the Scale except Item 7, "Takes care of and is responsible for personal belongings" ( $r = -.142$ ). The negative correlations were obtained because the highest level of education was assigned a value of 1 and the lowest level a value of 3. In general, therefore, students whose mothers received the most education received the highest Learning Independence Scale ratings from their teachers.

In addition to the total Learning Independence Scale score, there were four items for which correlations between  $-.300$  and  $-.400$  were observed. At the other extreme, two items had correlations between  $-.100$  and  $-.200$ , whereas 17 items had correlations between  $-.200$  and  $-.300$ .

The items for which the highest correlations were observed were:

- Provides leadership in peer groups ( $r = -.361$ ).

Table 10

Correlation Coefficients Between Education Level of  
Students' Mothers and Learning Independence Scale Scores

<u>Indicators of Independence</u>	<u>Correlation</u>	<u>Probability</u>
1. Possesses prerequisite skills necessary for success.	-.344	.0001*
2. Selects learning activities without adult guidance.	-.291	.0001*
3. Uses materials and resources independently to accomplish learning goals.	-.281	.0001*
4. Focuses attention on learning tasks until completed.	-.213	.0043*
5. Demonstrates ability to make decisions independently.	-.299	.0001*
6. Demonstrates ability to solve social problems independently.	-.284	.0001*
7. Takes care of and is responsible for personal belongings.	-.142	.0587
8. Knows how and where to seek help when necessary.	-.218	.0036*
9. Plans and organizes his work to achieve learning goals.	-.286	.0001*
10. Is able to function successfully alone without adult or peer guidance.	-.254	.0006*
11. Is able to function successfully in a group without guidance.	-.236	.0015*
12. Provides leadership in peer groups.	-.361	.0001*
13. Pursues his own interests without being easily distracted.	-.228	.0023*
14. Devises alternative method of reaching goals when necessary.	-.306	.0001*
15. Interprets and evaluates written directions.	-.284	.0001*
16. Interprets and evaluates oral directions.	-.308	.0001*
17. Raises legitimate questions about school rules and procedures.	-.203	.0068*

Table 10 (continued)

<u>Indicators of Independence</u>	<u>Correlation</u>	<u>Probability</u>
18. Manages time efficiently.	-.225	.0026*
19. Assumes responsibility reliably.	-.233	.0018*
20. Takes initiative for learning pursuits.	-.241	.0012*
21. Makes decisions that are not consistent with peer consensus.	-.163	.0306*
22. Demonstrates independence from parents or gaurdians.	-.269	.0007*
23. Continues working on learning tasks when teacher is not present.	-.274	.0006*
Total	-.309	.0001*

---

\*Significant correlation.

- Possesses prerequisite skills necessary for success  
( $r = -.344$ ).
- Interprets and evaluates oral directions ( $r = -.308$ ).
- Devises alternative method of reaching goals when  
necessary ( $r = -.306$ ).

The two items with the lowest correlations were:

- Makes decisions that are not consistent with peer  
consensus ( $r = -.163$ ).
- Takes care of and is responsible for personal belongings  
( $r = -.142$ ).

The summary of the analysis of variance tests of the 23 items in the Learning Independence Scale by the educational levels of mothers is presented in Table 11. Significant differences in the Learning Independence Scale scores for 22 of the 23 items and the total score for the Scale were observed. The only item for which significances among the three educational levels of mothers were not observed was Item 21, "Makes decisions that are not consistent with peer consensus." Of the 22 items for which significances were observed, 12 were significant at the .001 level, 9 were significant at the .01 level, and 1 was significant at the .05 level. The differences in the Learning Independence Scale scores among the total score on the Learning Independence Scale was also significant at the .001 level.

Since the data regarding the mothers' educational levels in this study were recorded in three non-continuous categories,

Table 11

Analysis of Variance of Learning Independence Scale Scores  
by Educational Level of Mother

Scale Item	Source	SS	MS	df	F	PR > F
1. Possesses prerequisite skills necessary for success.	Among	23.97	11.98	2	11.82	.0001***
	Within	117.47	1.01	175		
	Total	201.44		177		
2. Selects learning activities without adult guidance	Among	20.68	10.34	2	8.76	.0002***
	Within	205.39	1.18	174		
	Total	226.07		176		
3. Uses materials and resources independently to accomplish learning goals.	Among	17.71	8.85	2	8.31	.0004***
	Within	186.53	1.06	175		
	Total	204.25		177		
4. Focuses attention on learning tasks until completed.	Among	13.42	6.71	2	5.63	.0043**
	Within	208.52	1.19	175		
	Total	221.95		177		
5. Demonstrates ability to make decisions independently.	Among	21.21	10.60	2	9.12	.0002***
	Within	203.48	1.16	175		
	Total	224.70		177		
6. Demonstrates ability to solve social problems independently.	Among	22.81	11.40	2	9.77	.0001***
	Within	204.28	1.16	175		
	Total	227.10		177		
7. Takes care of and is responsible for personal belongings.	Among	13.06	6.53	2	6.32	.0022**
	Within	180.91	1.03	175		
	Total	193.97		177		
8. Knows how and where to seek help when necessary.	Among	10.38	5.19	2	5.59	.0044**
	Within	161.65	.92	174		
	Total	172.04		176		

Table 11 (continued)

Scale Item	Source	SS	MS	df	F	PR > F
9. Plans and organizes his work to achieve learning goals.	Among	22.18	11.09	2	9.53	.0001***
	Within	203.75	1.16	175		
	Total	225.93		177		
10. Is able to function successfully alone without adult or peer guidance.	Among	20.63	10.31	2	7.66	.0006***
	Within	235.58	1.34	175		
	Total	256.22		177		
11. Is able to function successfully in a group without guidance.	Among	16.60	8.30	2	6.53	.0018**
	Within	222.65	1.27	175		
	Total	239.26		177		
12. Provides leadership in peer groups.	Among	37.32	18.66	2	13.86	.0001***
	Within	234.24	1.34	194		
	Total	271.57		176		
13. Pursues his own interests without being easily distracted.	Among	12.99	6.49	2	5.11	.0069**
	Within	221.08	1.27	174		
	Total	234.07		176		
14. Devises alternative method of reaching goals when necessary.	Among	26.18	13.09	2	10.30	.0001***
	Within	221.24	1.27	174		
	Total	247.43		176		
15. Interprets and evaluates written directions.	Among	23.22	11.61	2	8.64	.0003***
	Within	235.27	1.34	175		
	Total	258.50		177		
16. Interprets and evaluates oral directions.	Among	25.00	12.50	2	10.16	.0001***
	Within	214.12	1.23	174		
	Total	239.12		176		

Table 11 (continued)

Scale Item	Source	SS	MS	df	F	PR > F
17. Raises legitimate questions about school rules and procedures.	Among	12.76	6.38	2	4.41	.0135*
	Within	251.75	1.44	174		
	Total	264.51		176		
18. Manages time efficiently.	Among	16.72	8.36	2	6.33	.0022**
	Within	229.79	1.32	174		
	Total	246.51		176		
19. Assumes responsibility reliably.	Among	15.40	7.70	2	5.79	.0037**
	Within	230.23	1.33	173		
	Total	245.63		175		
20. Takes initiative for learning pursuits.	Among	17.39	8.69	2	6.49	.0019**
	Within	234.69	1.34	175		
	Total	252.09		177		
21. Makes decisions that are not consistent with peer consensus.	Among	7.27	3.63	2	2.59	.0780
	Within	244.28	1.40	174		
	Total	251.55		176		
22. Demonstrates independence from parents or guardians.	Among	15.17	7.58	2	6.56	.0019**
	Within	174.67	1.15	151		
	Total	189.85		153		
23. Continues working on learning tasks when teacher is not present.	Among	19.57	9.78	2	7.82	.0006***
	Within	189.05	1.25	151		
	Total	208.62		153		
Total	Among	8634.37	4317.18	2	10.85	.0001***
	Within	69640.18	397.94	175		
	Total	78274.56		177		

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



correlation analysis alone did not reveal whether there were differences between the Learning Independence rating assigned to students' mothers whose education level was either a college graduate, a high school graduate, or less than a high school graduate. Duncan's Multiple Range Test, an extension of the analysis of variance test, indicates the category or categories of the educational level that actually contributed to observed differences in independence ratings.

The Multiple Range Test may show one of the following:

- (1) The F ratio from the analysis of variance identifies no significant differences among the combined three independent variables and the Duncan Test indicates that no differences can be attributed to one or more of the single groups.
- (2) The F ratio shows no significant differences among the combined independent variables but the Duncan Test indicates that one variable is significantly different from the other two variables when considered alone.
- (3) The F ratio indicates that there were significant differences among the three independent variables but the Duncan Test shows that the difference can be attributed to only one of the three variables.
- (4) The F ratio indicates that there were significant differences among the three independent variables and the Duncan Test reveals that the differences

cannot be attributed to a single variable but is a result of differences across or among all three variables.

- (5) The F ratio of the analysis of variance reveals that there were significant differences among the three independent variables and the Duncan Test indicates that each of the three variables was significantly different from the other two variables (Kramer, 1956).

Table 12 presents the analysis of variance data with the results of the Duncan's Multiple Range Test for scores for items in the Learning Independence Scale by educational level. Since the F values and the probability ratios that are shown in the table present essentially the same information that the correlations present in Table 10, these statistics will not be discussed in the context.

On 18 of the 23 items and on the total score for the Learning Independence Scale, observed differences between student independence ratings can be attributed to the fact that students whose parents received less than a high school education received significantly lower independence ratings than students whose parents graduated from high school or college. These items and the means for college graduates, high school graduates, and less than high school categories are presented in sequence as follows:

Table 12

F Values and Probabilities for Analysis of Variance of Learning Independence  
Scale Scores by Educational Level of Mothers and  
Duncan's Multiple Range Test

Scale Item	Mean of Mothers' Educational Level			F Value	Proba- bility
	1 College Graduate	2 High School Graduate	3 Less than High School Graduate		
1. Possesses prerequisite skills necessary for success.	4.38	3.86	<u>3.21</u>	11.82	.0001
2. Selects learning activities without adult guidance.	3.92	3.69	<u>3.02</u>	8.76	.0002
3. Uses materials and resources independently to accomplish learning goals.	4.00	3.82	<u>3.19</u>	8.31	.0004
4. Focuses attention on learning tasks until completed.	3.85	3.93	<u>3.35</u>	5.63	.0043
5. Demonstrates ability to make decisions independently.	4.15	3.86	<u>3.19</u>	9.12	.0002
6. Demonstrates ability to solve social problems independently.	3.92	3.94	<u>3.19</u>	9.77	.0001
7. Takes care of and is responsible for personal belongings.	3.69	<u>4.25</u>	3.70	6.32	.0022

Table 12 (continued)

Scale Item	Mean of Mothers' Educational Level			F Value	Probability
	1 College Graduate	2 High School Graduate	3 Less than High School Graduate		
8. Knows how and where to seek help when necessary.	4.08	4.11	<u>3.60</u>	5.59	.0044
9. Plans and organizes his work to achieve learning goals.	3.85	3.81	<u>3.08</u>	9.53	.0001
10. Is able to function successfully alone without adult or peer guidance.	3.77	3.79	<u>3.08</u>	7.66	.0006
11. Is able to function successfully in a group without guidance.	3.85	3.86	<u>3.22</u>	6.53	.0018
12. Provides leadership in peer groups.	3.85	3.47	<u>2.57</u>	13.86	.0001
13. Pursues own interests without being easily distracted.	3.85	3.64	<u>3.11</u>	5.11	.0069
14. Devises alternative method of reaching goals when necessary.	3.69	3.54	<u>2.76</u>	10.30	.0001
15. Interprets and evaluates written directions.	3.92	3.75	<u>3.02</u>	8.64	.0003

Table 12 (continued)

Scale Item	Mean of Mothers' Educational Level			F Value	Probability
	1	2	3		
	College Graduate	High School Graduate	Less than High School Graduate		
16. Interprets and evaluates oral directions.	4.15	3.95	<u>3.19</u>	10.16	.0001
17. Raises legitimate questions about school rules and procedures.	2.85	2.79	2.24	4.41	.0135
18. Manages time efficiently.	3.54	3.64	<u>2.98</u>	6.33	.0022
19. Assumes responsibility reliably.	3.83	3.75	3.15	5.79	.0037
20. Takes initiative for learning pursuits.	3.62	3.57	2.92	6.49	.0019
21. Makes decisions that are not consistent with peer consensus.	3.00	2.88	2.48	2.59	.0780 (NS)
22. Demonstrates independence from parents or guardians.	3.82	3.66	<u>3.03</u>	6.56	.0019
23. Continues working on learning tasks when teacher is not present.	3.64	3.67	<u>2.93</u>	7.82	.0006
Total Items	85.77	83.83	<u>69.52</u>	10.85	.0001

Note. The underlined mean indicates the source of variance in the scores.

- Possesses prerequisite skills necessary for success.  
Means = 4.38, 3.86 and 3.21.
- Selects learning activities without adult guidance.  
Means = 3.92, 3.69 and 3.02.
- Uses materials and resources independently to accomplish learning goals. Means = 4.00, 3.82 and 3.19.
- Focuses attention on learning tasks until completed.  
Means = 3.85, 3.93 and 3.35.
- Demonstrates the ability to make decisions independently. Means = 4.15, 3.86 and 3.19.
- Demonstrates the ability to solve social problems independently. Means = 3.92, 3.94 and 3.19.
- Knows how and where to seek help when necessary.  
Means = 4.08, 4.11 and 3.60.
- Plans and organizes his work to achieve learning goals. Means = 3.85, 3.81 and 3.08.
- Is able to function successfully alone without adult or peer guidance. Means = 3.77, 3.79 and 3.08.
- Is able to function successfully in a group without guidance. Means = 3.85, 3.86 and 3.22.
- Provides leadership in peer groups. Means = 3.85, 3.45 and 2.57.
- Pursues own interests without being easily distracted.  
Means = 3.85, 3.64 and 3.11
- Devises alternative method of reaching goals when necessary. Means = 3.69, 3.54 and 2.76.

- Interprets and evaluates written directions.  
Means = 3.92, 3.75 and 3.02.
- Interprets and evaluates oral directions.  
Means = 4.15, 3.95 and 3.19.
- Manages time efficiently. Means = 3.54, 3.64 and 2.98.
- Demonstrates independence from parents or guardians.  
Means = 3.82, 3.66 and 3.03.
- Continues working on learning tasks when teacher is not present. Means = 3.64, 3.69 and 2.93.

Total items. Means = 85.77, 83.83 and 69.52

There was one item for which the differences among ratings for students could be attributed to the fact that students whose mothers were high school graduates received significantly higher ratings than students whose mothers did not graduate from high school or graduated from college. This item and the mean ratings by educational levels follows:

- Takes care of and is responsible for personal belongings (college graduate Mean = 3.69, high school graduate Mean = 4.25, less than high school graduate Mean = 3.70).

Differences in the four remaining items in the Learning Independence Scale could not be attributed to the influence of one or more educational categories, but to combined variations among the three categories. These items and means by educational levels follow:

- Raises legitimate questions about school rules and procedures. College graduate Mean = 2.85, high school graduate Mean = 2.79, less than high school graduate Mean = 2.24.
- Assumes responsibility reliably. College graduate Mean = 3.83, high school graduate Mean = 3.75, less than high school graduate Mean = 3.15.
- Takes initiative for learning pursuits. College graduate Mean = 3.62, high school graduate Mean = 3.57, less than high school graduate Mean = 2.92.
- Makes decisions that are not consistent with peer consensus. College graduate Mean = 3.00, high school graduate Mean = 2.88, less than high school graduate Mean = 2.48.

Relationships Between Students' Learning Independence Scale Scores and Income Levels of Parents

Teachers participating in the study were also instructed to indicate the income level of the students' parents (by circling: more than \$15,000 = 1, from \$5,000 to \$15,000 = 2, or less than \$5,000 = 3) in order to demonstrate the relationship between parental income and the ratings assigned to students on the Learning Independence Scale. It was observed that significant correlations occurred between the income and learning independence variables for 19 of the 23 items and the total score on the Learning Independence



Scale scores (Table 13). It is noted that the correlations are negative (-) because the highest income level is coded number 1. The range in the correlations was from a low of  $-.029$  to  $-.392$ . The four items for which significant correlations were not observed are as follows:

- Takes care of and is responsible for personal belongings ( $r = -.029$ ).
- Is able to function successfully alone without adult or peer guidance ( $r = -.137$ ).
- Pursues his own interests without being easily distracted ( $r = -.142$ ).
- Manages time efficiently ( $r = -.110$ ).

On the 23 items in the Learning Independence Scale, there were only two items that correlated higher than  $.300$  with parental income. These items were "Makes decisions that are not consistent with peer consensus" ( $r = -.392$ ) and "Raises legitimate questions about school rules and procedures" ( $r = -.309$ ).

The summary of the analysis of variance computations for the 23 items and the total score for the Learning Independence Scale by parental income levels is presented in Table 14. Significant differences among the means for the parental income levels were observed for 12 of the 23 items and the total score of the Learning Independence Scale. Of the 12 items for which significance of differences were observed, 4 were significant at the  $.001$  level, and 8 were

Table 13

Correlation Coefficients Between Income Level of Students'  
Parents and Learning Independence Scale Scores

Indicators of Independence	Correlation	Probability
1. Possesses prerequisite skills necessary for success.	-.258	.0004*
2. Selects learning activities without adult guidance.	-.158	.0321*
3. Uses materials and resources independently to accomplish learning goals.	-.169	.0221*
4. Focuses attention on learning tasks until completed.	-.148	.0449*
5. Demonstrates ability to make decisions independently.	-.151	.0408*
6. Demonstrates ability to solve social problems independently.	-.217	.0030*
7. Takes care of and is responsible for personal belongings.	-.029	.6995
8. Knows how and where to seek help when necessary.	-.152	.0405*
9. Plans and organizes his work to achieve learning goals.	-.145	.0493*
10. Is able to function successfully alone without adult or peer guidance.	-.137	.0603
11. Is able to function successfully in a group without guidance.	-.162	.0277*
12. Provides leadership in peer groups.	-.287	.0001*
13. Pursues his own interests without being easily distracted.	-.142	.0540
14. Devises alternative method of reaching goals when necessary.	-.194	.0086*
15. Interprets and evaluates written directions.	-.162	.0283*
16. Interprets and evaluates oral directions.	-.198	.0075*
17. Raises legitimate questions about school rules and procedures.	-.309	.0001*

Table 13 (continued)

Indicators of Independence	Correlation	Probability
18. Manages time efficiently.	-.110	.1383
19. Assumes responsibility reliably.	-.162	.0293*
20. Takes initiative for learning pursuits.	-.202	.0059*
21. Makes decisions that are not consistent with peer consensus.	-.392	.0001*
22. Demonstrates independence from parents or guardians.	-.206	.0089*
23. Continues working on learning tasks when teacher is not present.	-.190	.0163*
Total	-.246	.0008*

\*Significant correlation.

Table 14

Analysis of Variance of Learning Independence Scale Scores  
by Parental Income Levels

Scale Item	Source	SS	MS	df	F	PR > F
1. Possesses prerequisite skills necessary for success.	Among	15.78	7.89	2	7.64	.0007***
	Within	186.99	1.03	181		
	Total	202.77		183		
2. Selects learning activities without adult guidance	Among	6.41	3.20	2	2.61	.0764
	Within	221.17	1.22	180		
	Total	227.58		182		
3. Uses materials and resources independently to accomplish learning goals.	Among	6.34	3.17	2	2.85	.0606
	Within	201.69	1.11	181		
	Total	208.03		183		
4. Focuses attention on learning tasks until completed.	Among	5.95	2.97	2	2.43	.0905
	Within	221.35	1.22	181		
	Total	227.30		183		
5. Demonstrates ability to make decisions independently.	Among	8.13	4.06	2	3.34	.0376*
	Within	220.19	1.21	181		
	Total	228.32		183		
6. Demonstrates ability to solve social problems independently.	Among	11.19	5.59	2	4.67	.0105*
	Within	216.88	1.19	181		
	Total	228.08		183		
7. Takes care of and is responsible for personal belongings.	Among	.46	.23	2	.21	.8070
	Within	196.39	1.08	181		
	Total	196.86		183		
8. Knows how and where to seek help when necessary.	Among	4.16	2.08	2	2.21	.1129
	Within	168.75	.94	179		
	Total	172.92		181		

Table 14 (continued)

Scale Item	Source	SS	MS	df	F	PR > F
9. Plans and organizes his work to achieve learning goals.	Among	6.97	3.48	2	2.81	.0626
	Within	224.47	1.24	181		
	Total	231.45		183		
10. Is able to function successfully alone without adult or peer guidance.	Among	7.87	3.93	2	2.78	.0644
	Within	255.98	1.41	181		
	Total	263.86		183		
11. Is able to function successfully in a group without guidance.	Among	7.01	3.50	2	2.64	.0743
	Within	240.59	1.32	181		
	Total	247.60		183		
12. Provides leadership in peer groups.	Among	24.44	12.22	2	8.73	.0002***
	Within	251.95	1.39	180		
	Total	276.40		182		
13. Pursues his own interests without being easily distracted.	Among	6.79	3.39	2	2.61	.0766
	Within	234.64	1.30	180		
	Total	241.44		182		
14. Devises alternative method of reaching goals when necessary.	Among	11.80	5.90	2	4.38	.0139*
	Within	242.53	1.34	180		
	Total	254.33		182		
15. Interprets and evaluates written directions.	Among	8.24	4.12	2	2.92	.0566
	Within	255.75	1.41	181		
	Total	264.00		183		
16. Interprets and evaluates oral directions.	Among	9.57	4.78	2	3.69	.0269*
	Within	232.40	1.29	179		
	Total	241.97		181		

Table 14 (continued)

Scale Item	Source	SS	MS	df	F	PR > F
17. Raises legitimate questions about school rules and procedures.	Among	27.90	13.95	2	10.14	.0001***
	Within	247.97	1.37	180		
	Total	275.67		182		
18. Manages time efficiently.	Among	7.41	3.70	2	2.68	.0710
	Within	248.46	1.38	180		
	Total	255.87		182		
19. Assumes responsibility reliably.	Among	9.29	4.64	2	3.44	.0342*
	Within	241.85	1.35	179		
	Total	251.14		181		
20. Takes initiative for learning pursuits.	Among	15.33	7.66	2	5.77	.0037*
	Within	240.70	1.32	181		
	Total	256.03		183		
21. Makes decisions that are not consistent with peer consensus.	Among	39.62	19.81	2	16.56	.0001***
	Within	215.27	1.19	180		
	Total	254.89		182		
22. Demonstrates independence from parents or guardians.	Among	14.19	7.09	2	6.29	.0024*
	Within	177.17	1.12	157		
	Total	191.37		159		
23. Continues working on learning tasks when teacher is not present.	Among	16.56	8.28	2	6.64	.0017*
	Within	195.83	1.24	157		
	Total	212.40		159		
Total	Among	5529.45	2764.72	2	6.75	.0015*
	Within	74172.37	409.79	181		
	Total	79701.82		183		

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

significant at the .05 confidence level. The confidence level for total Learning Independence Scale by parental income levels was .01.

When the differences in student Learning Independence Scale scores were analyzed to determine whether differences could be attributed to particular parental income levels (Duncan's Multiple Range Test), it was observed that significant differences could be attributed to the "more than \$15,000" category for 15 items and the total independence scores, to the "less than \$5,000" category for 3 items, to the "from \$5,000 to \$15,000" category for 1 item, to all three categories for 2 items, and no differences between categories for 2 items (Table 15).

The items and means in sequence from the highest to lowest income category for the items for which significant differences in independence ratings were attributed to the highest income category (more than \$15,000) are as follows:

- Possesses prerequisite skills necessary for success (Means of 4.27, 3.58 and 3.36).
- Focuses attention on learning tasks until completed (Means of 4.09, 3.66 and 3.54).
- Demonstrates ability to make decisions independently (Means of 4.09, 3.54 and 3.54).
- Demonstrates ability to solve social problems independently (Means of 4.15, 3.63 and 3.32).

Table 15

F Values and Probabilities for Analysis of Variance of  
Learning Independence Scale Scores by Parental  
Income Level and Duncan's Multiple Range Test

Scale Item	Mean of Income Levels			F Value	Proba- bility
	1 More than \$15,000	2 \$5,000- \$15,000	3 Less than \$5,000		
1. Possesses prerequisite skills necessary for success.	<u>4.27</u>	3.58	3.36	7.64	.0007
2. Selects learning activities without adult guidance.	3.85	3.42	<u>3.25</u>	2.61	.0764
3. Uses materials and resources independently to accomplish learning goals.	3.97	3.56	<u>3.36</u>	2.85	.0606
4. Focuses attention on learning tasks until completed.	<u>4.09</u>	3.66	3.54	2.43	.0905
5. Demonstrates ability to make decisions independently.	<u>4.09</u>	3.54	3.54	3.34	.0376
6. Demonstrates ability to solve social problems independently.	<u>4.15</u>	3.63	3.32	4.67	.0105
7. Takes care of and is responsible for personal belongings.	4.03	4.00	4.14	0.21	.8070 (NS)



Table 15 (continued)

Scale Item	Mean of Income Levels			F Value	Proba- bility
	More than \$15,000	\$5,000- \$15,000	Less than \$5,000		
8. Knows how and where to seek help when necessary.	4.21	3.89	3.70	2.21	.1129 (NS)
9. Plans and organizes his work to achieve learning goals.	<u>3.97</u>	3.47	3.43	2.81	.0626
10. Is able to function successfully alone without adult or peer guidance.	<u>3.97</u>	3.43	3.43	2.78	.0644
11. Is able to function successfully in a group without guidance.	4.00	3.57	<u>3.36</u>	2.64	.0743
12. Provides leadership in peer groups.	<u>3.88</u>	3.07	2.68	8.73	.0002
13. Pursues own interests without being easily distracted.	<u>3.88</u>	3.38	3.32	2.61	.0766
14. Devises alternative method of reaching goals when necessary.	<u>3.81</u>	3.19	3.04	4.38	.0139
15. Interprets and evaluates written directions.	<u>3.94</u>	3.43	3.29	2.92	.0566

Table 15 (continued)

Scale Item	Mean Income Levels			F Value	Proba- bility
	1 More than \$15,000	2 \$5,000- \$15,000	3 Less than \$5,000		
16. Interprets and evaluates oral directions.	<u>4.12</u>	3.67	3.33	3.69	.0269
17. Raises legitimate questions about school rules and procedures.	<u>3.12</u>	<u>2.66</u>	<u>1.79</u>	10.14	.0001
18. Manages time efficiently.	3.82	<u>3.28</u>	3.41	2.68	.0710
19. Assumes responsibility reliably.	<u>4.03</u>	3.45	3.39	3.44	.0342
20. Takes initiative for learning pursuits.	<u>3.97</u>	3.23	3.18	5.77	.0037
21. Makes decisions that are not consistent with peer consensus.	<u>3.48</u>	<u>2.77</u>	<u>1.85</u>	16.56	.0001
22. Demonstrates independence from parents or guardians.	<u>4.03</u>	3.28	3.35	6.29	.0024
23. Continues working on learning tasks when teacher is not present.	<u>4.03</u>	3.21	3.39	6.64	.0017
Total Items	90.12	77.27	72.79	6.75	.0015

Note. The underlined mean indicates the source of variance in the scores.

- Plans and organizes his work to achieve learning goals (Means of 3.97, 3.47 and 3.43).
  - Is able to function successfully alone without adult or peer guidance (Means of 3.97, 3.43 and 3.43).
  - Is able to function successfully in a group without guidance (Means of 4.00, 3.57 and 3.36).
  - Provides leadership in peer groups (Means of 3.88, 3.07 and 2.68).
  - Pursues his own interests without being easily distracted (Means of 3.88, 3.38 and 3.32).
  - Devises alternative method of reaching goals when necessary (Means of 3.81, 3.19 and 3.04).
  - Interprets and evaluates written directions (Means of 3.94, 3.43 and 3.29).
  - Assumes responsibility reliably (Means of 4.03, 3.45 and 3.39).
  - Takes initiative for learning pursuits (Means of 3.97, 3.23 and 3.18).
  - Demonstrates independence from parents or guardians (Means of 4.03, 3.28 and 3.35).
  - Continues working on learning tasks when teacher is not present (Means of 4.03, 3.21 and 3.39).
- Total items (Means of 90.12, 77.27 and 72.79).

The items and means in sequence from the highest to the lowest income category for the items for which significant differences in independence ratings were attributed to the lowest income category (less than \$5,000) are as follows:

- Selects learning activities without adult guidance (Means of 3.85, 3.42 and 3.25).
- Uses materials and resources independently to accomplish learning goals (Means of 3.97, 3.56 and 3.36).
- Is able to function successfully in a group without guidance (Means of 4.00, 3.57 and 3.36).

The one item and its means in sequence from the highest to the lowest income categories for the items for which significant differences between independence ratings were attributed to the middle income category (from \$5,000 to \$15,000) is as follows:

- Manages time efficiently (Means of 3.82, 3.28 and 3.41).

The two items and their means in sequence from the highest to the lowest income categories for the items for which significant differences between independence ratings were attributed to all three income categories are as follows:

- Makes decisions that are not consistent with peer consensus (Means of 3.48, 2.77 and 1.85).
- Raises legitimate questions about school rules and procedures (Means of 3.12, 2.66 and 1.79).

The two items and their means in sequence from the highest to the lowest income categories for the items for which no significant differences between ratings by income categories were observed are as follows:

- Takes care of and is responsible for personal belongings (Means of 4.03, 4.00 and 4.14).
- Knows how and where to seek help when necessary (Means = 4.21, 3.89 and 3.70).

Prediction of Learning Independence Scale Scores and Reading Scores with Selected Student Variables

One of the major objectives of this study was to determine which combinations of student variables would predict Learning Independence Scale scores and reading scores of pupils. In addition to independence and reading scores, the variables that were used in these analyses included intelligence quotients, sex, educational level of mother, and income level of parents. The intercorrelations for all of these variables are presented in Table 16.

The correlations between the students' reading scores and the other variables were as follows: Total independence ( $r = .65$ ), intelligence quotient ( $r = .73$ ), sex ( $r = .22$ ), education ( $r = -.32$ ) and income ( $r = -.33$ ). The correlations between total Independence scores and I.Q., sex, education, and income were .55, .12,  $-.31$ , and  $-.23$  respectively. The remaining intercorrelations were as follows: sex and I.Q. ( $r = .04$ ), sex and education ( $r = .03$ ), and sex and income ( $r = -.01$ ); I.Q. and education ( $r = -.34$ ), I.Q. and income ( $r = -.39$ ); and education and income ( $r = .38$ ).

The multiple correlation and multiple procedures analyzed the above intercorrelations to determine the best

Table 16

Intercorrelation Between Variables for Possible Predictors of  
Reading Scale Score and Total Learning Independence Scale Score  
N = 175

Variables	<u>Correlations</u>					
	Reading Score	Total Independence	I.Q.	Sex	Mother's Education	Parental Income
Reading Score	1.00	0.65	0.73	0.22	-0.32	-0.33
Total Independence	0.65	1.00	0.55	0.12	-0.31	-0.23
I.Q.	0.73	0.55	1.00	0.04	-0.34	-0.39
Sex	0.22	0.12	0.04	1.00	0.03	-0.01
Mother's Education	-0.32	-0.31	-0.34	0.03	1.00	0.38
Parental Income	-0.33	-0.23	-0.39	-0.01	0.38	1.00

combination of variables that would contribute significantly to predicting Learning Independence Scale scores and reading scores of students. The procedure selects combinations of variables that have high correlations with the factor to be predicted but, at the same time, low correlations with each other. In Table 16, it is seen that the correlations between Learning Independence Scale scores and education and sex are  $-.31$  and  $.12$  respectively, but the correlation between sex and education is extremely low at  $.03$ . These correlations point to the fact that both sex and education can independently contribute to predicting Learning Independence scores.

Table 17 presents the data that resulted from an analysis that was made to select the best combination of variables that could predict Learning Independence Scale scores. The process first selected the I.Q. test score as a predictor with a correlation of  $.550$  with the Independence score. An  $R^2$  of  $.302$  for this correlation indicates that 30% of the variance in the Independence scores of students can be attributed to the variations in I.Q. scores. When sex was combined with I.Q. scores to predict Independence scores, a multiple correlation of  $.559$  was obtained. The addition of education to the combination of variables raised the multiple correlation to  $.574$  but the addition of income failed to increase the size of the multiple correlation. Approximately 33% of the variance in Learning Independence Scale scores for the students, therefore, can be attributed to I.Q. scores, sex, and

Table 17

Zero Order Correlations, Multiple Correlations, and  
the Regression Equation for Best Predictors of  
Total Learning Independence Scale Scores

Variables	Simple Correlation (r)	Multiple Correlation (R)	R <sup>2</sup>
I.Q. Test Score	.550	.550	.302
Sex	.120	.559	.312
Mother's Educational Level	.306	.574	.329
-----			
Income	.233	.574	.330
Total LIS = 14.13 + 0.71 I.Q. + 4.28 Sex - 4.94 Education			



educational level. The regression equation for predicting total Learning Independence Scale scores for students when using I.Q. scores, sex, and mother's educational level is as follows:

$$\text{Total} = 14.13 + 0.71 \text{ I.Q.} + 4.28 \text{ sex} - 4.94 \text{ Education}$$

Learning Independence Scale scores that were obtained from various measures of sex, educational levels, and I.Q. scores when using the derived formula are included in Appendix F. For example, if male = 1, education level 2, and I.Q. of 50 are entered in the formula, a Learning Independence Scale score of 44.03 is predicted. Similarly, if female = 2, educational level 3, and I.Q. of 105 are the predictors, a Learning Independence Scale score of 82.42 is predicted.

Table 18 presents the zero order, multiple correlations, and the regressions equation for the best predictors for reading scale scores of students. The probable predictors of reading scores in this case were Learning Independence Scale scores, I.Q. test scores, sex, education level, and income level. The variables with the highest correlation with reading scores was I.Q. test score ( $r = .729$ ). Approximately 52% of the variances in reading scores could be attributed to variation in I.Q. scores. When the Learning Independence Scale scores were combined with the I.Q. scores to predict reading scores, a multiple correlation of .787 was obtained. The inclusion of sex in this combination of variables increased the multiple correlation to .802. A combination of I.Q. test scores, and sex account for approximately 64% of the variance

Table 18

Zero Order Correlations, Multiple Correlations, and  
the Regression Equation for Best Predictors  
for Reading Scale Score

Variables	Simple Correlation (r)	Multiple Correlation (R)	R <sup>2</sup>
I.Q. Test Score	.729	.729	.517
Total Learning Independence Scale (LIS)	.648	.787	.619
Sex	.222	.802	.644
-----			
Mother's Educational Level	.319	.803	.645
Parents' Income Level	.333	.804	.646

Regression Equation for Predicting Reading Scale Score

Reading Score = 112.48 + 1.92 I.Q. + 0.83 Total LIS + 16.60 Sex

in the students' reading scores. The inclusion of educational level and income level only raised the previous multiple correlation of .802 to .803 and .804 respectively. Using I.Q. scores, Total Learning Independence Scale (LIS) scores, and sex--the best predictors of reading scores--the following regression equation was obtained: Reading Score =  $112.48 + 1.92 \text{ I.Q.} + 0.83 \text{ Total LIS} + 16.60 \text{ Sex}$ .

An example of the application of the regression equation using various combinations of the independent variables in the formula to predict reading scores for pupils is included in Appendix G. For example, the predicted score for a male student = 1 with an I.Q. of 95 and a total Independence Learning Scale score of 110 would be 402.78. Similarly the predicted reading score for a female = 2 with an I.Q. of 120 and Independence score of 120 would be 475.68.

Relationship Between Personal Profile Scores  
for Teachers and Student Reading and  
Learning Independence Scale Scores

The eight teachers who were involved in this study were requested to respond to the Gordon Personal Profile for Teachers. This profile yielded scores on ascendancy, responsibility, emotional stability, and sociability. One purpose of this study was to determine whether there was a significant correlation between the personality scores for teachers and reading scores and Learning Independence Score ratings for the students enrolled under the teachers.

Table 19 presents the intercorrelations between the four scores obtained from the eight teachers who were administered the Gordon Personal Profile. The analysis of scores revealed that there were significant correlations at the .05 confidence level between ascendancy and sociability ( $r = .85$ ) and between responsibility and emotional stability ( $r = .79$ ). The remaining correlations between ascendancy and responsibility ( $r = .70$ ), ascendancy and emotional stability ( $r = .60$ ), responsibility and sociability ( $r = .61$ ), and emotional stability and sociability ( $r = .29$ ) were smaller than the correlation that was needed for significance at the .05 level.

There were no significant correlations observed between the Personal Profile scores for the eight teachers and the reading scores for their pupils (Table 20). The correlations between the reading scores and the Personal Profile ratings were as follows: ascendancy (.682), responsibility (.428), emotional stability (.528), and sociability (.396).

Only one of the four Personal Profile ratings for teachers correlated significantly with the Learning Independence Scale scores of students. The observed correlation of .800 between emotional stability ratings for teachers and Learning Independence average for their students was significant at the .05 confidence level. The correlations between the Learning Independence ratings for students and the remaining Gordon Personal Profile ratings for teachers were: ascendancy

Table 19

Intercorrelations Between the Scale Scores on the  
Gordon Personal Profile for Teachers  
N = 8.

Scale	Ascendancy	Responsibility	Emotional Stability	Sociability
Ascendancy	1.00	0.70	0.60	0.85*
Responsibility		1.00	0.79*	0.61
Emotional Stability			1.00	0.29
Sociability				1.00

\*Significant correlation at .05 confidence level.

Table 20

Correlations Between Self-Report Scores for Teachers on the Gordon Personal Profile, Students' Average Reading Scores, and the Average Total Learning Independence Scale Scores Assigned to Students  
 N = 8

---

<u>Gordon Scales</u>	<u>Correlations</u>	
	<u>Reading Average</u>	<u>Learning Independence Average</u>
Ascendancy (A)	.682	.714
Responsibility (R)	.428	.610
Emotional Stability (E)	.528	.800*
Sociability (S)	.396	.410

---

\*Significant correlation at .05 confidence level.

( $r = .714$ ), responsibility ( $r = .610$ ), and sociability ( $r = .410$ ).

### Summary

This chapter has described the statistical procedures and findings of an investigation of the relationship between student independence and reading achievement at the third-grade level. The reliability for the Learning Independence Scale developed for this study was established through odd-even correlations for the eight teachers in the study, all of which were significant at the .0001 level. Correlations between each of the 23 item scores and total scores for the Learning Independence Scale were significant at the .0001 level. Intercorrelations between items in the scale confirmed the internal consistency of the Learning Independence Scale.

Computations of the means and standard deviations for the following variables were reported as measures of central tendency and variability: items in the Learning Independence Scale, total Learning Independence Scale score, reading achievement scale scores, intelligence quotients, sex, educational level of mothers, and income level of parents. The combined mean for the items on the Learning Independence Scale was 78.91, and the standard deviation for the combined score was 20.85. The mean IQ for the students in the study was 98.38, and the mean reading scale score was 391.47.

Of the 23 items on the scale, only 5 revealed positive significant correlations with sex of student. The total Learning Independence Scale score was not significantly related to the students' sex.

Significant correlations were observed between students' reading achievement scores and all 23 item scores and the total score for the Learning Independence Scale (.0001 level of confidence). Significant correlations were also observed between students' intelligence quotients and each of the 23 Learning Independence Scale items, as well as for the total Learning Independence Scale score (.0001 confidence level). In general, however, the correlations between intelligence quotients and Learning Independence Scale scores were not as high as those observed between students' reading achievement scores and Learning Independence Scale scores.

Students whose mothers received the most education received the highest Learning Independence Scale ratings from their teachers. Significant correlations were observed between mothers' level of education and all indicators of independence on the Scale except Item 7, "Takes care of and is responsible for personal belongings." Analysis of variance computations revealed that there were significant differences among the three levels of mothers' education and total Learning Independence Scale score as well as for 22 of the 23 individual items on the Scale (.001 confidence level). Multiple comparisons (Duncan's Multiple Range Test) revealed



that for 18 of the 23 items and on the total score for the Learning Independence Scale, differences between student independence ratings could be attributed to the fact that children whose mothers received the lowest amount of education were rated lower on personality traits of independence than students whose mothers graduated from high school or college.

Significant correlations occurred between parental income level and Learning Independence Scale variables for 19 of the 23 items and for the total score on the Learning Independence Scale. Analysis of variance computations revealed that there were significant differences among the three levels of parental income for 12 of the 23 scale items and for total independence score. Multiple comparisons showed that significant differences could be attributed to the highest income level for 15 scale items and the total score for the Learning Independence Scale.

Intercorrelations between the variables were computed to establish possible predictors of reading scale scores as well as total Learning Independence Scale scores. Regression equations for predicting both learning independence and reading are included, and examples of the application of the equations are included in the appendix.

Intercorrelations were computed between the scale scores on the Gordon Personal Profile which was administered to the eight teachers in the study. Significant correlations

(.05 confidence level) were found between ascendancy and sociability traits and between responsibility and emotional stability traits. There were no significant correlations observed between Personal Profile scores of teachers and reading scores of students. A significant correlation was found between emotional stability of teachers and total learning independence of students (.05 confidence level).

CHAPTER V  
SUMMARY AND CONCLUSIONS

Description of Study

The major purpose of this study was to develop a scale to measure the learning independence of third-grade students and to determine the relationships between the independence measure and the five student variables which follow: reading performance, intelligence quotients, sex, educational level of mother, and income level of parents. Another purpose of the study was to determine the relationship between four personality traits of teachers and two variables: Learning Independence Scale (LIS) scores assigned to students by their teachers and reading scores obtained by students on a standardized reading test. In fulfilling the objectives of the study, statistical procedures were employed to answer the following questions:

1. Were there significant relationships between the LIS scores and the sex of the students?
2. Were there significant relationships between the LIS scores and the reading scores of students?
3. Were there significant correlations between the LIS scores and the intelligence test scores of students?
4. Were there significant relationships between the LIS scores of students and the educational levels of their mothers?

5. Were there significant relationships between the LIS scores of students and the income levels of their parents?
6. Were there combinations of student variables that can be used to predict students' LIS scores?
7. Were there combinations of student variables that can be used to predict students' reading scores?
8. Were there significant relationships between personal profile scores for teachers and the LIS scores they assign to their students?
9. Were there significant relationships between personal profile scores of teachers and the reading performance scores obtained by their students?

A total of 187 students and eight teachers from eight third-grade classes from the Piedmont area of the State of North Carolina participated in this study. The eight classes were selected on a random basis from all eligible third-grade classes in Educational Region 5 in North Carolina. The information collected from and about these students included LIS scores assigned by their teachers, a reading score obtained from the administration of the California Achievement Test in the spring of the school year, the sex of students, the educational levels of the students' mothers, and the income levels of the students' parents.

Data collected in this study were analyzed by calculating descriptive statistics. Means and standard deviations

were obtained for the variables to provide measures of central tendency and variability. Correlational and regression analysis were used to determine the relationship between variables and to predict students' reading scores and LIS scores with other student variables. Also, correlational analysis was used to determine the relationship between teacher personality traits and reading and independence scores for pupils. Finally, analyses of variance and the Duncan's Multiple Range Test were employed to identify the sources of differences between LIS scores of students when classified by mothers' educational levels and parental income levels.

Four personal profile scores were obtained for each of the eight teachers through the administration of the Gordon Personal Profile, a self-report instrument. The four teacher personality factors measured by the Gordon Personal Profile included Ascendancy, Responsibility, Emotional Stability, and Sociability.

#### Development of the Learning Independence Scale

The Learning Independence Scale that was used in the study was developed with the assistance of literature background, consultants, and 13 jurors. Literature provided a basis for the rationale for this instrument as well as ideas for creating items; consultants provided advice relative to content and format; and the panel of jurors evaluated item content, the instrument format, and administrative instructions.

The development of the Learning Independence Scale included the establishment of reliability coefficients, the determination of correlations between item scores and total scores, and the determination of intercorrelations between item scores. Through split-half (odd-even) correlational analysis, the observed range in the reliability coefficients obtained for the eight teachers was from a low of .78 to a high of .92. The reliability coefficient for all teachers was .87. In order to determine whether ratings assigned by the teachers for each item for the students were consistent with the ratings assigned to all other items in the instrument, correlation coefficients were obtained between item scores and the total scores for the Scale. Correlations obtained between the item scores and total scores were significant at the .0001 confidence level. With few exceptions, the intercorrelations between items in the Learning Independence Scale were well above .500, whereas all observed intercorrelations were significant at the .001 level. There were, however, two items in the Learning Independence Scale which were statistically weak. These items were "Makes decisions that are not consistent with peer consensus," and "Raises legitimate questions about school rules and procedures."

Descriptive statistics were calculated for the variables used in this study and revealed that there were slightly more female than male students involved in the study. It was

observed that the average educational level of the mothers of the students was high school graduate, and the average income level of the students' parents fell within the \$5,000-\$15,000 range. The observed means for other student variables were: intelligence scores = 98.38, reading scale score = 391.47, the 23 items in the Learning Independence Scale = from a range of 2.61 to a high of 4.04, and the combined Learning Independence Scale score = 78.91.

### Findings

A correlational analysis revealed that only 5 (approximately 22%) of the 23 coefficients observed between independence ratings for students and the students' sex were statistically significant. The correlation between sex and the total score was not significant. The items for which significant correlations were observed were:

- Selects learning activities without adult guidance
- Is able to function successfully alone without adult or peer guidance
- Is able to function in a group without guidance
- Manages time efficiently
- Continues to work on learning tasks when teacher is not present

Significant correlations were observed between students' reading scores and independence ratings for all 23 items and the combined score for the Learning Independence Scale. The

magnitude of correlations between the LIS scores and the reading scores were as follows: for 3 items and the combined scale score, correlations higher than .600; for 14 items, correlations between .500 and .600; for 3 items, correlations between .400 and .500; and for 3 items, between .300 and .400.

Significant correlations were also observed between students' intelligence test scores and the combined score and the 23-item scores in the Learning Independence Scale. In general, however, the correlations observed between the LIS scores and the intelligence scores were not as high as those observed between LIS scores and reading scores. The magnitude of the correlations between the intelligence scores of students and the LIS scores assigned to students by their teachers were as follows: for the combined score and for 4 items, correlations between .500 and .600; for 12 items, between .400 and .500; and for 7 items, between .300 and .400.

A correlational analysis indicated that there was a significant relationship between students' LIS scores and the educational level of the students' mothers. The magnitude of the correlations in this case were: for the combined score for the Scale and for 4 items, correlations between .300 and .400; for 17 items, correlations between .200 and .300; and for 2 items, between .100 and .200.

Analysis of variance computations revealed there were significant differences among the three educational levels of students' mothers for 22 of the 23 items and the total



score of the Learning Independence Scale. F values ranged from a high of 13.86 to a low of 4.41 for the 22 significant items. The item for which significant differences among the three educational levels were not observed was Item 21, "Makes decisions that are not consistent with peer consensus." F value for this item was 2.59.

Results of Duncan's Multiple Range Test, an extension of an analysis of variance test, provided information that indicated whether observed differences among independence ratings assigned to students whose mothers graduated from college, graduated from high school, or had less than a high school education could be attributed to any particular educational level. Results of this analysis revealed that the lower educational category (less than high school education) was responsible for the significant difference in LIS scores for 18 of the 23 items and for the combined LIS score. On the other hand, the educational category, high school graduate, was the contributing factor to the differences observed for a single item. For four remaining items, significance of differences were attributed to combined variations among the independence ratings within all three educational levels.

Significant correlations between independence ratings received by students and the income levels of their parents were observed for the combined score and for 19 items in the Learning Independence Scale. The correlations between the income variable and the LIS scores were relatively lower than

the observed correlations between the educational variable and the independence ratings. Analysis of variance computations revealed there were significant differences among the three levels of parental income for 12 of the 23 items and the total score of the Learning Independence Scale. F values ranged from a high of 16.56 (for Item 21, "Makes decisions that are not consistent with peer consensus") to a low of 3.34 for the 12 significant items. The confidence level for total Learning Independence Scale by parental income levels was .01. When data were analyzed to determine whether observed differences could be attributed to particular income levels, it was discovered that differences for the combined score and for 15 items could be assigned to the "more than \$15,000" category; for 3 items, less than \$15,000; and for 1 item, from the \$5,000 to \$15,000 category.

When student variables were combined in a correlational analysis to predict the LIS scores of students, it was discovered that intelligence test scores, sex, and educational level of mother improved prediction over that observed through the use of a single variable. A zero order correlation of .550, for example, was observed between students' intelligence test scores and the LIS scores. This correlation was raised to .559 when sex was combined with the first two variables, and to a level of .574 when education was combined with sex and intelligence quotients to predict the independence ratings assigned to students. The addition of

parental income to the combined variables, however, failed to increase the size of the multiple correlations. The analysis revealed that intelligence quotients, mothers' educational level, and parental income level, when combined, accounted for approximately 33% of the variations that were observed in students' LIS ratings. The derived formula for predicting the total LIS scores for third-grade students when using intelligence test scores, sex, and education level of mother as predictor is:

$$\text{Total} = 14.13 + 0.71 \text{ I.Q.} + 4.28 \text{ Sex} - 4.94 \text{ Education}$$

When: 1 = male and 2 = female

When: 1 = college graduate, 2 = high school graduate,  
and 3 = less than high school graduate

When the student variables were combined to predict the reading test scores of students, a combination of intelligence test scores, total LIS scores, and sex were found to contribute. Correlations between the reading scale score and variables increased as variables were added as follows: reading and I.Q. test scores =  $r$  of .729; reading, I.Q. test, and the LIS scores =  $r$  of .787; reading, I.Q. test, the LIS scores, and sex =  $r$  of .802. Intelligence test scores, total LIS scores, and sex accounted for approximately 64% of the variance that was observed in the students' reading scores. The regression equation that was derived for predicting students' reading score was:

$$\text{Reading Score} = 112.48 + 1.92 \text{ I.Q.} + 0.83 \text{ total LIS} \\ + 16.60 \text{ Sex}$$

When: 1 = male and 2 = female

One purpose of the study was to determine whether there was a significant correlation between personalities for four measures obtained for teachers who took the Gordon Personal Profile and the LIS scores and reading scores of their students. The four personality scores that were obtained for the eight teachers who were administered the test were Ascendancy, Responsibility, Emotional Stability, and Sociability. The correlation coefficients between the average reading scores for students in the eight classes and their teachers' personality scores were as follows: Ascendancy ( $r = .682$ ), Responsibility ( $r = .428$ ), Emotional Stability ( $r = .528$ ), and Sociability ( $r = .396$ ). Because of the small study population, eight teachers, none of the four observed correlations was statistically significant.

The correlations between the average LIS scores assigned to the students in the eight classes and their teachers' personality scores were as follows: Ascendancy ( $r = .714$ ), Responsibility ( $r = .610$ ), Emotional Stability ( $r = .800$ ), and Sociability ( $r = .410$ ). The correlation ( $r = .800$ ) between the average LIS score for students and Emotional Stability was significant ( $p < .05$ ).

### Summary of Testing the Hypotheses

A summary report of the results of testing the nine hypotheses proposed for this study is as follows:

Hypothesis Number 1: Were there significant relationships between the LIS scores of students and the sex of students?

Results: Significant correlations were observed for only 5 of the 23 items in the Learning Independence Scale. The correlation between the sex of students and the total score on the Learning Independence Scale was not significant at the .05 level of confidence. On the basis of these findings, the hypothesis was rejected.

Hypothesis Number 2: Were there significant relationships between the LIS scores and the reading scores of students?

Results: All item scores and the combined score for the Learning Independence Scale were significantly related to reading achievement scores for students in the sample population ( $p < .0001$ ). The hypothesis was accepted.

Hypothesis Number 3: Were there significant relationships between the LIS scores and the intelligence test scores of students?

Results: All item scores and the combined score for the Learning Independence Scale were significantly related to intelligence test scores for students in the sample population ( $p < .0001$ ). The hypothesis was accepted.

Hypothesis Number 4: Were there significant relationships between the LIS scores for students and the educational levels of the students' mothers?

Results: Of the 23 items on the Learning Independence Scale, 22 of the items and the combined score were significantly related to the educational levels of the students' mothers ( $p < .05$ ). The hypothesis was accepted.

Hypothesis Number 5: Were there significant relationships between the LIS scores of students and the income level of the students' parents?

Results: There were significant correlations between 19 items and the combined score of the Learning Independence Scale and the income level of the students' parents ( $p < .05$ ). The hypothesis was accepted.

Hypothesis Number 6: Were there combinations of student variables that can be used to predict the LIS scores of students?

Results: Intelligence test scores, sex of students, and mothers' educational level can be combined to predict students' LIS scores (Total LIS =  $14.13 = 0.71 \text{ I.Q.} + 4.28 \text{ Sex} - 4.94 \text{ Education}$ ). The hypothesis was accepted.

Hypothesis Number 7: Were there combinations of student variables that can be used to predict the reading scores of students?

Results: Intelligence test scores, total LIS scores, and sex of students can be combined to predict students'

reading scores (Reading score =  $112.48 = 1.92 \text{ I.Q.} + 0.83 \text{ Total LIS} + 16.60 \text{ Sex}$ ). The hypothesis was accepted.

Hypothesis Number 8: Were there significant relationships between teachers' personal profile scores and the LIS scores they assigned to their students?

Results: Only one of four factors from Gordon's Personal Profile was significantly related to the LIS scores assigned by teachers to their students ( $p < .05$ ). The hypothesis was accepted for Emotional Stability; the hypothesis was rejected for Ascendancy, Responsibility, and Sociability.

Hypothesis Number 9: Were there significant relationships between teachers' personal profile scores and the average reading scores for students in their classes?

Results: None of the observed correlations between the teacher profile scores and the student reading scores was significant. The hypothesis was rejected.

### Conclusions

The findings of this study warrant the conclusions which follow:

1. Teachers can reliably assign learning independence ratings to third-grade students. These ratings can be used as a measure of the students' ability to function in a self-directed manner in the classroom and can be correlated with other student characteristics.

2. There is a relationship between third-grade students' learning independence level and their reading performance. Students who function most independently in the classroom are also the highest achievers in reading. This finding indicates that teachers may increase the probability of higher reading achievement for their students by including independence training in their classroom programs.

3. Intelligence quotients, sex of students, and the educational level of the mother can be used to predict learning independence on the part of third-grade students. Such predictions may determine which students are in need of learning independence training and make it possible for teachers to focus attention on this area as they plan learning activities for these students.

4. Intelligence test scores, learning independence ratings, and sex of students, when combined, can predict the reading performance of third-grade students. This information may be useful for identifying students for intervention programs. It may also serve administrators as a guide in assigning students to teachers. Predictions of reading performance may also indicate whether students are working to their potential.

5. The educational level of the mother and the income level of the parents are related to the learning independence level of the students. For 18 of the 23 items and the total score of the Learning Independence Scale this study showed



that differences between students' LIS scores can be attributed to the fact that students whose mothers received less than a high school education received significantly lower independence ratings than students whose mothers graduated from high school or college. It was also observed that significant differences in LIS scores could be attributed to the "more than \$15,000" income category for 15 of the 23 items and the total Scale score. In other words, students whose mothers had the lowest educational level were rated lowest in learning independence. Students whose parents had the highest income level were rated highest in learning independence. Although it is not desirable to stereotype or label children from certain socioeconomic levels or certain educational levels, it would appear beneficial to create opportunities for students from lower SES levels and lower parental educational levels to participate in problem-solving, decision-making activities which would encourage self-reliance and independence.

6. In general, the perceptions of the teachers in regard to their own personality traits are not significantly related to the learning independence ratings they assign to students or to the reading performance of students. While it may be expected that the teacher's personality is related to the independence with which students function in the classroom, the findings of this study do not support that notion. It may be possible that an evaluation of teacher behavior rather

than teacher personality would indicate a significant relationship to learning independence of students.

### Implications

The results of this study have implications for the fields of education and psychology. The findings add to the knowledge of personality characteristics which are related to achievement in general and to the area of reading achievement specifically. The data clearly support the notion that third-grade students who are rated highest in independent behavior by their teachers are also the highest achievers in reading. It can be reasoned, then, that providing early training in independence can increase the probability of reading achievement for children.

Bond and Wagner (1960) concur that such attitudes may be developed during the elementary school years. These authors discuss six habits and attitudes which merit attention during this period of time in a child's life, one of which is assuming independence:

Assuming independence is a habit that grows directly out of purposeful reading whether the reading is part of a study or a recreational situation. Habits of independence enable the reader to rely on his (or her) own resources and to institute self-initiated reading activities. Independence is a real yardstick of reading maturity. As in the case of the development of independence in other areas of living, growth results from having the opportunity to be independent. The responsibilities the child is expected to assume should be reasonable ones for him (or her). Such independence will be fostered in classes where the children search out their own material to study in connection with a topical unit or for much of their personal reading.  
(pp. 297-298)

Sex of students does not appear to be related to the child's independent behavior. Educators have generally assumed that girls' maturation occurs at a faster rate than boys', and this might have been interpreted as a condition which would affect the child's ability to function independently. The findings of this study do not support that idea.

This study has shown that it is possible for teachers to predict both reading achievement and learning independence from a combination of student variables. This finding should be explored with other populations and other ages. It may be possible for such prediction equations to contribute information regarding academic performance of students which would assist personnel in public education, higher education, and clinical settings.

The educational levels of students' mothers and income levels of students' parents are related to student independence. The personality of the teacher, however, does not appear to affect student independence. This relationship should be explored further, perhaps with another teacher personality measure and a larger teacher sample population.

#### Recommendations for Further Study

This study was limited to eight classes of third-grade students from the Piedmont area of the State of North Carolina. It is recommended that this study be replicated with more classes in other areas of North Carolina and the nation.

Since only eight teachers were involved in the study, it is important to learn whether the findings of this study can be reliably generalized to North Carolina and the nation.

It appears equally important that additional validation studies be conducted with the Learning Independence Scale. These studies might include additional analysis of the reliability and content validity of the Scale. The number of teachers who rate students on learning independence should be increased to determine whether a larger teacher sample would affect correlations between teacher personality and the student independence variable. Studies with children of other ages and geographic locales should be conducted to establish general acceptance of the Learning Independence Scale. Correlational studies of the various items in the Learning Independence Scale with larger sub-populations of students (race, sex, educational and income levels of parents) should be conducted. Such findings, along with professional judgments, would help to determine whether teachers exercise biases in rating learning independence on the part of students. Additional studies using the Learning Independence Scale would also provide information concerning the effectiveness of the two items on the scale which were placed in the suspect category: "Raises legitimate questions about school rules and procedures" and "Makes decisions that are not consistent with peer consensus." A third item, "Takes care of and is responsible for personal belongings" may also

be considered suspect, and further research may determine whether these three items should be removed from the Learning Independence Scale.

Studies using male teachers in the sample population would provide information concerning possible biases of the female teachers used in the present study. It would also be interesting to correlate the findings of the present study with those of studies using a sample population of children who live with the male parent, substituting the father's educational level as a part of the data collection.

Finally, the relationship between the Learning Independence Scale and the Intellectual Achievement Responsibility Questionnaire (Crandall et al., 1965) should be explored to establish similarities in the way students perceive the responsibility for their educational success and failures and the manner in which their teachers rate them on learning independence.

## BIBLIOGRAPHY

- Altshuler, R., & Kassinove, H. The effects of skill and chance instructional sets, schedule of reinforcement, and sex on children's temporal persistence. Child Development, 1975, 46, 258-262.
- Ansbacher, H., & Ansbacher, R. The individual psychology of Alfred Adler. New York: Basic Books, 1956.
- Baldwin, A., Kalhorn, J., & Breese, F. The appraisal of parent behavior. Psychological Monographs, 1949, 63 (Whole No. 299).
- Baratz, J. C. Teaching reading in an urban Negro school system. In F. Williams (Ed.), Language and poverty: Perspectives on a theme. Chicago: Markham, 1970.
- Barber, L. K. Immature ego development as a factor in retarded ability to read. Dissertation Abstracts, 1952, 12, 503.
- Barnett, M. A., & Kaiser, D. L. The relationship between intellectual-achievement responsibility attributions and performance. Child Study Journal, 1978, 8 (4), 209-215.
- Baron, R. A. Authoritarianism, locus of control, and risk taking. The Journal of Psychology, 1968, 68, 141-143.
- Barron, F. Some personality correlations of independence of judgment. Journal of Personality, 1953, 21, 287-297.
- Bartel, N. R. Locus of control and achievement in middle- and lower-class children. Child Development, 1971, 42, 1099-1107.
- Barth, R. Open education and the American school. New York: Agathon Press, Inc., 1972.
- Battle, E., & Rotter, J. B. Children's feelings of personal control as related to social class and ethnic group. Journal of Personality, 1963, 31, 482-493.

- Bell, A. E., Abrahamson, D. S., & Growse, R. Achievement and self-reports of responsibility for achievement in informal (open-space) and traditional classrooms. British Journal of Educational Psychology, 1977, 47, 258-267.
- Beller, E. K. Dependency and autonomous achievement striving related to orality and anality in early childhood. Child Development, 1957, 28, 287-315.
- Beller, E. K. Exploratory studies of dependency. Transactions of the New York Academy of Sciences, II, 1959, 21 (5), 414-426.
- Bialer, I. Conceptualization of success and failure in mentally retarded and normal children. Journal of Personality, 1961, 29, 303-320.
- Bond, G. L., & Fay, L. C. A comparison of the performance of good and poor readers on the individual items of the Stanford-Binet Scale, Forms L and M. Journal of Educational Research, 1950, 43, 475-479.
- Bruner, J. S. The process of education. Cambridge, Mass.: Harvard University Press, 1960.
- Burke, C. Dialect and the reading process. In J. L. Laffey & R. Shuy (Eds.), Language differences: Do they interfere? Newark, Del.: International Reading Association, 1973.
- Callaway, B. Pupil and family characteristics related to reading achievement. Education, 1972, 92 (3), 71-75.
- Challman, C. C. Personal adjustment and remedial reading. Journal of Exceptional Children, 1939, 6, 7-12.
- Chan, K. S. Locus of control and achievement motivation--Critical factors in educational psychology. Psychology in the Schools, 1978, 15, 104-109.
- Chance, J. E. Internal control of reinforcements and the school learning process. Paper presented at the biennial meeting of the Society for Research in Child Development, Minneapolis, March 1965.
- Clifford, M. M., & Cleary, T. A. The relationship between children's academic performance and achievement accountability. Child Development, 1972, 43, 647-655.

- Cobb, J. A. Relationship of discrete classroom behaviors to fourth-grade academic achievement. Journal of Educational Psychology, 1972, 63 (1), 74-80.
- Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. F., Weinfeld, F. D., & York, R. L. Equality of educational opportunity. Washington, D.C.: U.S. Government Printing Office, 1966.
- Crandall, V., Katkovsky, W., & Crandall, V. J. Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations. Child Development, 1965, 36, 91-109.
- Crandall, V. J., Katkovsky, W., & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 43, 1123-1134.
- Crowne, D. P., & Liverant, S. Conformity under varying conditions of personal commitment. Journal of Abnormal and Social Psychology, 1963, 66, 547-555.
- Culver, V. I., & Morgan, R. F. The relationship of locus of control to reading achievement. Paper presented at the annual meeting of the International Reading Association (22nd), Miami Beach, May 1977.
- Cutts, W. G. A comparative study of good and poor readers at the middle grade level. Dissertation Abstracts, 1956, 16, 1855.
- Davis, W. L., & Phares, E. J. Parental antecedents of internal-external control of reinforcement. Psychological Reports, 1969, 24, 427-436.
- Ducette, J., Wolk, S., & Friedman, S. Locus of control and creativity in black and white children. The Journal of Social Psychology, 1972, 88, 297-298.
- Durkin, D. What classroom observations reveal about reading comprehension instruction. Reading Research Quarterly, 1979, 14 (4), 481-533.
- Dweck, C. S., & Reppucci, N. D. Learned helplessness and reinforcement responsibility in children. Journal of Personality and Social Psychology, 1973, 31, 674-685.



- Eisenman, R., & Platt, J. Birth order and sex differences in academic achievement and internal-external control. The Journal of General Psychology, 1968, 78, 279-285.
- Entwisle, D. R. Socialization of language: Educability and expectations. In M. L. Moehr & J. Stallings (Eds.), Culture, child, and school. Belmont, Calif.: Wadsworth, 1975.
- Entwisle, D. R., & Frasure, N. E. A contradiction resolved: Children's processing of syntactic cues. Developmental Psychology, 1974, 10, 852-857.
- Entwisle, D. R., & Webster, M., Jr. Raising children's performance expectations: A classroom demonstration. Social Science Research, 1972, 1, 147-158.
- Entwisle, D. R., & Webster, M., Jr. Research notes: Status factors in expectation raising. Sociology of Education, 1973, 46, 115-126.
- Epps, E. G. Correlates of academic achievement among Northern and Southern urban Negro students. Journal of Social Issues, 1969, 25, 3, 55-70.
- Farrall, C., & Thaller, K. Children's personality--Does it differ in traditional and open classrooms? The Elementary School Journal, 1976, 440-449.
- Foshay, A. W. Teaching tactics and teaching strategy. Educational Leadership, 1975, 32 (6), 373-375.
- Franklin, R. D. Youth's expectancies about internal versus external control of reinforcement related to N variables. Unpublished doctoral dissertation, Purdue University, 1963.
- Frasure, N. E., & Entwisle, D. R. Semantic and syntactic development in children. Developmental Psychology, 1973, 9, 236-245.
- Frost, B. P. Some personality characteristics of poor readers. Psychology in the Schools, 1965, 2, 218-219.
- Gillooly, W. B., & Murray, F. B. Familiarization effects on expressional and conceptual competency. Irish Journal of Education, 1970, 2, 116-126.

- Gilmor, T. M., Locus of control and reliability and validity of its measures and association with race, sex, socioeconomic status, adaptive behavior in children and adolescents: Literature review. Canadian Psychological Review, 1978, 19, 1-26.
- Goodman, K. S. Dialect barriers to reading comprehension. Elementary English, 1965, 42, 853-860.
- Gordon, D. A. Children's beliefs in internal-external control and self-esteem as related to academic achievement. Journal of Personality Assessment, 1977, 41, 383-386.
- Gordon, L. V. Manual for Gordon Personal Profile. New York: Harcourt, Brace, Jovanovich, Inc., 1963.
- Gruen, G. E., & Ottinger, D. R. Skill and chance orientations as determiners of problem-solving behavior in lower and middle class children. Psychological Reports, 1969, 24, 207-214.
- Guttentag, M., & Klein, I. The relationship between inner versus outer locus of control and achievement in black middle school children. Educational and Psychological Measurement, 1976, 36, 1101-1109.
- Hallock, G. A. Attitudinal factors affecting achievement in reading. Dissertation Abstracts, 1958, 18, 2061-2062.
- Halpin, A. W., & Croft, D. B. The organizational climate of the schools. Chicago: Midwest Administration Center, 1963.
- Heathers, G. Emotional dependence and independence in a physical threat situation. Child Development, 1953, 24, 169-179.
- Heilbrun, A. B. Parent model attributes, nurturant reinforcement, and consistency of behavior in adolescents. Child Development, 1964, 35, 151-167.
- Herrnstein, R. IQ. The Atlantic Monthly, 1971, 228, 43-64.
- Hess, R. D. Social class and ethnic influences upon socialization. In P. H. Mussen (Ed.), Carmichael's manual of child psychology (3rd ed.). Vol. 2. New York: Wiley, 1970.

- Hjelle, L. A. Internal-external control as a determinant of academic achievement. Psychological Reports, 1970, 26, 326.
- Huck, S. W., Cormier, W. H., & Bounds, W. G., Jr. Reading statistics and research. New York: Harper & Row, 1974.
- Hudson, C. E. A comparison of social and personal adjustment of elementary students attending an open space school and elementary students attending a traditional school. Unpublished doctoral dissertation, St. Louis University, 1973.
- James, W. H. Internal versus external control of reinforcements as a basic variable in learning theory. Unpublished doctoral dissertation, Ohio State University, 1957.
- Jencks, C., Smith, M., Acland, H., Bane, M. J., Cohen, D., Gentis, H., Heyns, B., & Michelson, S. Inequality: A reassessment of the effect of family and schooling in America. New York: Basic Books, Inc., 1972.
- Jensen, A. R. How much can we boost IQ and scholastic achievement? Harvard Educational Review, 1969, 39, 1-123.
- Jensen, A. R. Educability and group differences. New York: Harper & Row, 1973.
- Jessor, R., Graves, T., Hanson, R., & Jessor, S. Society, personality, and deviant behavior. New York: Holt, Rinehart, and Winston, 1968.
- Jones, S. H. Final Report: Headstart Evaluation and Research Center. New Orleans: Tulane University, 1967.
- Katkovsky, W., Crandall, V. C., & Good, S. Parental antecedents of children's beliefs in internal-external control of reinforcements in intellectual achievement situations. Child Development, 1967, 38, 766-776.
- Kerlinger, F. N. Foundations of behavioral research. New York: Holt, Rinehart and Winston, Inc., 1973.
- Kifer, E. The impact of success and failure on the learner. Evaluation in Education, 1977, 1 (4), 281-359.
- Kramer, C. Y. Extension of multiple range tests to group means with unequal numbers of replications. Biometrics, 1956, 12, 307-310.

- Lao, R. Levinson's IPC (Internal-External Control) Scale, a comparison of Chinese and American students. Journal of Cross-Cultural Psychology, 1978, 9 (1), 113-124.
- Lefcourt, H. M. Internal versus external control of reinforcement: A review. Psychological Bulletin, 1966, 65 (4), 206-220.
- Lefcourt, H. M. Locus of control: Current trends in theory and research. Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc., 1976.
- Levenson, H. Perceived parental antecedents of internal, powerful others, and chance locus of control orientations. Developmental Psychology, 1973, 9, 260-265.
- Liverant, S., & Scodel, A. Internal and external control as determinants of decision making under conditions of risk. Psychological Reports, 1960, 7, 59-67.
- Lunenburg, F. C., & O'Reilly, R. R. Personal and organizational influence on pupil control ideology. The Journal of Experimental Education, 1974, 42 (3), 31-35.
- MacDonald, A. P., Jr. Internal-external locus of control: Parental antecedents. Journal of Consulting and Clinical Psychology, 1971, 37 (1), 141-147.
- McGhee, P. E., & Crandall, V. C. Beliefs in internal-external control of reinforcements and academic performance. Child Development, 1968, 39, 91-102.
- McKinney, J. D., Mason, J., Perkerson, K., & Clifford, M. Relationship between classroom behavior and academic achievement. Journal of Educational Psychology, 1975, 67, 198-203.
- McMurray, J. G. Correlations of reading difficulties in satisfactory and disabled readers in Grade 3. Ontario Journal of Educational Research, 1963, 5, 149-157.
- Messer, S. The relation of internal-external control to academic performance. Child Development, 1972, 43, 1456-1462.
- Nowicki, S., Jr., & Duke, M. P. A preschool and primary internal-external control scale. Developmental Psychology, 1974, 10 (6), 874-880.

- Nowicki, S., & Roundtree, J. Correlates of locus of control in a secondary school population. Developmental Psychology, 1971, 4, 477-478.
- Nowicki, S., & Segal, W. Perceived parental characteristics, locus of control orientation, and behavioral correlates of locus of control. Developmental Psychology, 1974, 10 (1), 33-37.
- Nowicki, S., & Strickland, B. R. A locus of control scale for children. Journal of Consulting and Clinical Psychology, 1973, 40, 148-154.
- Nowicki, S., & Walker, C. Achievement in relation to locus of control: Identification of a new source of variance. Journal of Genetic Psychology, 1973, 123, 63-67.
- Odell, M. Personality correlates of independence and conformity. Unpublished master's thesis, Ohio State University, 1959.
- Phares, E., Jr. Changes in expectancy in skill and chance situations. Unpublished doctoral dissertation, Ohio State University, 1955.
- Phares, E. J. Expectancy changes in skill and chance situations. Journal of Abnormal Social Psychology, 1957, 54, 339-342.
- Porter, R. B., & Cattell, R. B. Manual for the Children's Personality Questionnaire. Champaign, Ill.: Institute for Ability and Personality Testing, 1968.
- Powell, A. Alternative measures of locus of control and the prediction of academic performance. Psychological Reports, 1971, 29, 47-50.
- Pressman, P. E. Interaction effects of locus of control, sex, socio-economic status, and intelligence upon reading scores of seventh and eighth grade students. Unpublished doctoral dissertation, Boston University, 1977.
- Reimanis, G. Performance, intelligence, and locus of reinforcement control scales. Psychology in the Schools, 1973, 10, 207-211.
- Rich, H. L., & Bush, A. J. Factor analysis of Collins Internal/External Locus of Control Scale. Journal of Education Research, 1978, 71, 194-197.

- Rist, R. C. Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. Harvard Educational Review, 1970, 40, 411-451.
- Robinson, G. J. Analysis of teacher expectations and reading achievement in first grade. Unpublished doctoral dissertation, Ball State University, 1976.
- Roe, B., Stoodt, B., & Burns, P. Reading instruction in the secondary school. Chicago: Rand McNally College Publishing Co., 1978.
- Rokeach, M. The open and closed mind. New York: Basic Books, 1960.
- Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80 (Whole No. 609).
- Rotter, J. B., Seeman, M., & Liverant, S. Internal versus external control of reinforcements: A major variable in behavior theory. In N. F. Washbourne (Ed.), Decisions, values, and groups (Vol. 2). London: Pergamon Press, 1962.
- Scheck, D. C. An exploratory investigation of the interaction effects of three child-rearing dimensions upon the development of internal-external control orientation in adolescent females. Psychology, 1978, 15 (1), 8-13.
- Seidner, C. J., Lewis, S. C., Sherwin, N. V., & Troll, E. W. Cognitive and affective outcomes for pupils in an open-space elementary school: A comparative study. The Elementary School Journal, 1978, 78 (3), 208-219.
- Seitz, V. Social class and ethnic group differences in learning to read. Newark, Del.: International Reading Association, 1977.
- Shaw, R. L., & Uhl, N. P. Control of reinforcement and academic achievement. The Journal of Educational Research, 1971, 64, 226-228.
- Shuy, R. W. A linguistic background for developing beginning reading materials for black children. In J. C. Baratz & R. W. Shuy (Eds.), Teaching black children to read. Washington, D.C.: Center for Applied Linguistics, 1969.
- Solomon, D., Houlihan, K. A., Busse, T. V., & Parelius, R. J. Parent behavior and child academic achievement, achievement striving, and related personality characteristics. Genetic Psychology Monographs, 1971, 83, 173-273.

- Solomon, D., & Kendall, A. Individual characteristics and children's performance in "open" and "traditional" classroom settings. Journal of Educational Psychology, 1976, 68 (5), 613-625.
- Spache, G. Personality patterns of retarded readers. Journal of Educational Research, 1957, 58, 461-469.
- Steig, J. Teacher-student congruency and its relationship to reading achievement in grades four through six. Unpublished master's thesis, Rutgers University, 1972.
- Stith, M., & Connor, R. Dependency and helpfulness in young children. Child Development, 1962, 33, 15-20.
- Strang, R. Relationships between certain aspects of intelligence and certain aspects of reading. Educational and Psychological Measurement, 1943, 3, 355-359.
- Stretch, B. B. Rise of the free school. Saturday Review, 1970, 53, 76-79.
- Strickland, B. R. Delay of gratification as a function of race of the experimenter. Journal of Personality and Social Psychology, 1972, 22, 108-112.
- Strickland, B. R. Delay of gratification and internal locus of control in children. Journal of Consulting and Clinical Psychology, 1973, 40, 338.
- Tetenbaum, T., & Houtz, J. The role of affective traits in the creative and problem-solving performance of gifted urban children. Psychology in the Schools, 1978, 15, 27-32.
- Turner, R. R. Locus of control, academic achievement, and follow through in Appalachia. Contemporary Educational Psychology, 1978, 3, 367-375.
- Turner, R. L., & Denny, D. A. Teacher characteristics, teacher behavior and changes in pupil creativity. The Elementary School Journal, 1969, 69, 265-270.
- Vincenzi, H., & Maraschiello, R. Measuring self-responsibility: A useful interpretation. Child Development, 1978, 49, 523-525.
- Walls, R. T., & Smith, T. S. Development of preference for delayed reinforcement in disadvantaged children. Journal of Educational Psychology, 1970, 61, 118-123.

- Warner, D. The role of pupil judgment in reading instruction. Reading Teacher, 1969, 23, 108-111.
- Weiner, B., Frieze, I., Kukla, A., Rest, S., & Rosenbaum, R. Perceiving the causes of success and failure. Morristown, N.J.: General Learning Press, 1971.
- White, R. W. Motivation reconsidered: The concept of competence. Psychological Review, 1959, 66 (5), 297-333.
- Wichern, F., & Nowicki, S., Jr. Independence training practices and locus of control orientation in children and adolescents. Developmental Psychology, 1976, 12 (1), 77.
- Wilson, F. S., Stuckey, T., & Langevin, R. Are pupils in the open plan different? Journal of Educational Research, 1972, 66, 115-118.
- Wolk, S., & Ducette, J. The moderating effect of locus of control in relation to achievement-motivation variables. Journal of Personality, 1973, 41, 59-70.
- Zigler, E., & Child, I. L. Socialization and personality development. Reading, Mass.: Addison-Wesley, 1973.



APPENDIX A  
DRAFT OF  
LEARNING INDEPENDENCE SCALE

Instructions: At the top of the Scale record the biographical data which has been requested. Then for each item in the Scale indicate the degree that the trait describes the student by circling 5 = almost always, 4 = usually, 3 = sometimes, 2 = not very often, or 1 = almost never. In assigning the ratings to the items, make a conscious effort to judge the student on the basis of actual classroom behavior, independent of his or her reading performance.

Biographical Data:

- A. Student's Name \_\_\_\_\_  
 Student's Number \_\_\_\_\_  
 Teacher's Name \_\_\_\_\_
- B. This student is:  
 (Please check one)
- \_\_\_\_ 1. White male  
 \_\_\_\_ 2. White female  
 \_\_\_\_ 3. Non-white male  
 \_\_\_\_ 4. Non-white female
- C. Last Recorded I.Q. \_\_\_\_\_
- D. Educational Level of Mother  
 (Circle one)
1. High      2. Medium      3. Low
- E. Income Level of Parents  
 (Circle one)
1. High      2. Medium      3. Low

Ratings (Circle one)Indicators of Independence

Almost Always	Usually	Sometimes	Not Very Often	Almost Never	
5	4	3	2	1	Possesses prerequisite skills necessary for success.
5	4	3	2	1	Selects learning activities without adult guidance.
5	4	3	2	1	Uses materials and resources effectively to accomplish learning goals.
5	4	3	2	1	Focuses attention on learning tasks until completed.
5	4	3	2	1	Demonstrates ability to make decisions independently.
5	4	3	2	1	Demonstrates ability to solve social problems independently.
5	4	3	2	1	Takes care of and is responsible for personal belongings.
5	4	3	2	1	Knows how to seek help when necessary.
5	4	3	2	1	Plans and organizes his work to achieve learning goals.
5	4	3	2	1	Is able to function successfully alone without adult or peer guidance.
5	4	3	2	1	Is able to function successfully in a group without guidance.
5	4	3	2	1	Provides leadership in peer groups.
5	4	3	2	1	Pursues his own interests without being easily distracted.
5	4	3	2	1	Devises alternative method of reaching goals when necessary.
5	4	3	2	1	Interprets written directions.

Ratings (Circle one)Indicators of Independence

Almost Always	Usually	Sometimes	Not Very Often	Almost Never	
5	4	3	2	1	Interprets oral directions.
5	4	3	2	1	Raises legitimate questions about school rules and procedures.
5	4	3	2	1	Manages time efficiently.
5	4	3	2	1	Carries responsibility reliably.
5	4	3	2	1	Takes initiative for learning pursuits.
5	4	3	2	1	Makes decisions that are not consistent with peer consensus.

APPENDIX B  
PANEL OF JURORS

- Dr. Jerome Melton, Deputy Superintendent of Public Instruction, State of North Carolina
- Dr. H. T. Connor, Assistant Superintendent for Research, North Carolina Department of Public Instruction
- Dr. Clark Trivett, Division of Research, North Carolina Department of Public Instruction
- Dr. John Busch, Professor, School of Education, University of North Carolina at Greensboro
- Dr. Nancy White, Professor, School of Home Economics, University of North Carolina at Greensboro
- Dr. Patrick Mattern, Professor, School of Education, University of North Carolina at Greensboro
- Mrs. Mary Hunter, Professor, School of Education, University of North Carolina at Greensboro
- Dr. John Edwards, Psychologist, University of North Carolina at Greensboro
- Mr. Michael Booher, School Psychologist, Greensboro City Schools
- Mrs. Mary Purnell, Director of Division of Reading, North Carolina Department of Public Instruction
- Dr. Betty Jean Foust, Assistant Director of Division of Reading, North Carolina Department of Public Instruction
- Mrs. Margaret Watts, Classroom teacher, Greensboro City Schools
- Ms. Ellen Bunton, Classroom teacher, Guilford County Schools

APPENDIX C  
LEARNING INDEPENDENCE SCALE

Learning Independence Scale  
Developed by Virginia B. Hayes

Instructions: At the top of the Scale record the biographical data which has been requested. Then for each item in the Scale indicate the degree that the trait describes the student by circling 5 = almost always, 4 = usually, 3 = sometimes, 2 = not very often, or 1 = almost never. In assigning the ratings to the items, make a conscious effort to judge the student on the basis of actual classroom behavior, independent of his or her reading performance.

Biographical Data:

A. Student's Name \_\_\_\_\_

Student's Number \_\_\_\_\_  
(To be assigned)

Teacher's Name \_\_\_\_\_

B. This student is:  
(Please check one)

- \_\_\_\_ 1. White male  
\_\_\_\_ 2. White female  
\_\_\_\_ 3. Non-white male  
\_\_\_\_ 4. Non-white female

C. Last Recorded I.Q. \_\_\_\_\_

D. Scale Score from California Achievement Test \_\_\_\_\_.

E. Educational Level of Mother  
(Circle one)

1. College Grad.      2. H.S. Grad.  
3. Less Than H.S. Grad.

F. Income Level of Parents  
(Circle one)

1. More Than \$15,000      2. From \$5,000 to \$15,000  
3. Less Than \$5,000



Ratings (Circle one)Indicators of Independence

Almost Always	Usually	Sometimes	Not Very Often	Almost Never	
5	4	3	2	1	Possesses prerequisite skills necessary for success.
5	4	3	2	1	Selects learning activities without adult guidance.
5	4	3	2	1	Uses materials and resources independently to accomplish learning goals.
5	4	3	2	1	Focuses attention on learning tasks until completed.
5	4	3	2	1	Demonstrates ability to make decisions independently.
5	4	3	2	1	Demonstrates ability to solve social problems independently.
5	4	3	2	1	Takes care of and is responsible for personal belongings.
5	4	3	2	1	Knows how and where to seek help when necessary.
5	4	3	2	1	Plans and organizes his work to achieve learning goals.
5	4	3	2	1	Is able to function successfully alone without adult or peer guidance.
5	4	3	2	1	Is able to function successfully in a group without guidance.
5	4	3	2	1	Provides leadership in peer groups.
5	4	3	2	1	Pursues his own interests without being easily distracted.

Ratings (Circle one)Indicators of Independence

Almost Always	Usually	Sometimes	Not Very Often	Almost Never	
5	4	3	2	1	Devises alternative method of reaching goals when necessary.
5	4	3	2	1	Interprets and evaluates written directions.
5	4	3	2	1	Interprets and evaluates oral directions.
5	4	3	2	1	Raises legitimate questions about school rules and procedures.
5	4	3	2	1	Manages time efficiently.
5	4	3	2	1	Assumes responsibility reliably.
5	4	3	2	1	Takes initiative for learning pursuits.
5	4	3	2	1	Makes decisions that are not consistent with peer consensus.
5	4	3	2	1	Demonstrates independence from parents or guardians.
5	4	3	2	1	Continues working on learning tasks when teacher is not present.

APPENDIX D  
CORRELATION COEFFICIENTS BETWEEN STUDENTS' PRE-TEST SCORES  
AND 23 INDEPENDENT VARIABLES

Correlation Coefficients Between Students'  
Pre-Test Scores and 23 Independent Variables

N = 95

<u>Independent Variable</u>	<u>Correlation</u>	<u>Significance Level</u>
Intelligence Quotient	.51	.000
Mothers' Education Level	-.53*	.006
Parents' Income Level	-.32*	.006
Indicators of Independence		
1. Possesses prerequisite skills necessary for success.	.48	.000
2. Selects learning activities without adult guidance.	.50	.000
3. Uses materials and resources independently to accomplish learning goals.	.51	.000
4. Focuses attention on learning tasks until completed.	.37	.001
5. Demonstrates ability to make decisions independently.	.44	.000
6. Demonstrates ability to solve social problems independently.	.38	.000
7. Takes care of and is responsible for personal belongings.	.17	.107
8. Knows how and where to seek help when necessary.	.46	.000
9. Plans and organizes his work to achieve learning goals.	.48	.000
10. Is able to function successfully alone without adult or peer guidance.	.52	.000

---

\*Relationships are positive because of the inverse coding on these two independent variables.

<u>Independent Variable</u>	<u>Correlation</u>	<u>Significance Level</u>
11. Is able to function successfully in a group without guidance.	.48	.000
12. Provides leadership in peer groups.	.39	.001
13. Pursues his own interests without being easily distracted.	.42	.000
14. Devises alternative method of reaching goals when necessary.	.45	.000
15. Interprets and evaluates written directions.	.51	.000
16. Interprets and evaluates oral directions.	.42	.000
17. Raises legitimate questions about school rules and procedures.	.48	.000
18. Manages time efficiently.	.35	.002
19. Assumes responsibility reliably.	.43	.000
20. Takes initiative for learning pursuits.	.39	.001
21. Makes decisions that are not consistent with peer consensus.	.04	.720
22. Demonstrates independence from parents or guardians.	.23	.047
23. Continues working on learning tasks when teacher is not present.	.42	.000

APPENDIX E  
CORRELATION COEFFICIENTS BETWEEN STUDENTS' READING  
CHANGE SCORES AND 23 INDEPENDENT VARIABLES

Correlation Coefficients Between Students' Reading  
Change Scores and 23 Independent Variables

N = 95

<u>Independent Variables</u>	<u>Correlation</u>	<u>Significance Level</u>
Intelligence Quotient	.48	.000
Mothers' Education Level	-.10*	.433
Parents' Income Level	-.25*	.049
Indicators of Independence		
1. Possesses prerequisite skills necessary for success.	.48	.000
2. Selects learning activities without adult guidance.	.34	.004
3. Uses materials and resources independently to accomplish learning goals.	.45	.000
4. Focuses attention on learning tasks until completed.	.38	.001
5. Demonstrates ability to make decisions independently.	.49	.000
6. Demonstrates ability to solve social problems independently.	.41	.001
7. Takes care of and is responsible for personal belongings.	.28	.016
8. Knows how and where to seek help when necessary.	.40	.001
9. Plans and organizes his work to achieve learning goals.	.42	.000
10. Is able to function successfully alone without adult or peer guidance.	.41	.000

---

\*Relationships are positive because of inverse coding on these two independent variables.

<u>Independent Variable</u>	<u>Correlation</u>	<u>Significance Level</u>
11. Is able to function successfully in a group without guidance.	.41	.000
12. Provides leadership in peer groups.	.51	.000
13. Pursues his own interests without being easily distracted.	.30	.000
14. Devises alternative method of reading goals when necessary.	.44	.000
15. Interprets and evaluates written directions.	.44	.000
16. Interprets and evaluates oral directions.	.41	.000
17. Raises legitimate questions about school rules and procedures.	.41	.000
18. Manages time efficiently.	.41	.000
19. Assumes responsibility reliably.	.40	.000
20. Takes initiative for learning pursuits.	.49	.000
21. Makes decisions that are not consistent with peer consensus.	.43	.000
22. Demonstrates independence from parents or guardians.	.38	.001
23. Continues working on learning tasks when teacher is not present.	.39	.001



## APPENDIX F

LEARNING INDEPENDENCE TOTAL SCORES OBTAINED FROM REGRESSION  
EQUATION WITH INTELLIGENCE QUOTIENTS, EDUCATIONAL  
LEVEL OF MOTHER, AND SEX AS PREDICTORS

Learning Independence Total Scores Obtained from Regression  
Equation with Intelligence Quotients, Educational  
Level of Mother, and Sex as Predictors

(Total Learning Independence Scale Score =  
14.13 + .71 I.Q. + 4.28 Sex - 4.94 Education)

		Education			
		I.Q.	1	2	3
Sex = 1 (Male)	50		48.97	44.03	39.09
	75		66.72	61.78	56.84
	90		77.37	72.43	67.49
	95		80.92	75.98	71.04
	100		84.47	79.53	74.59
	105		88.02	83.08	78.14
	110		91.57	86.63	81.69
	120		98.67	93.73	88.79
Sex = 2 (Female)	50		53.25	48.31	43.37
	75		71.00	66.06	61.12
	90		81.65	76.71	71.77
	95		85.20	80.26	75.32
	100		88.75	83.81	78.87
	105		92.30	87.36	82.42
	110		95.85	90.91	85.97
	120		102.95	98.01	93.07

Note: 1 = College graduate  
2 = High school graduate  
3 = Less than high school graduate

## APPENDIX G

READING SCORES OBTAINED FROM REGRESSION EQUATION WITH  
INTELLIGENCE QUOTIENTS, LEARNING INDEPENDENCE  
SCALE TOTAL SCORES, AND SEX AS PREDICTORS

Reading Scores Obtained from Regression Equation with Intelligence Quotients,  
Learning Independence Scale Total Scores, and Sex as Predictors

$$(\text{Reading} = 112.48 + 1.92 \text{ I.Q.} + .83 \text{ Total LIS} + 16.6 \text{ Sex})$$

		Total LIS Scores									
I.Q.		30	40	50	60	70	80	90	100	110	120
Sex = 1 (Male)	50	249.98	258.28	266.58	274.88	293.18	291.48	299.78	308.08	316.38	324.68
	75	297.98	306.28	314.58	322.88	331.18	339.48	347.78	356.08	364.38	372.68
	90	326.78	335.08	343.38	351.68	359.98	368.28	376.58	384.88	393.18	401.48
	95	336.38	344.68	352.98	361.28	369.58	377.88	386.18	394.48	402.78	411.08
	100	345.98	354.28	362.58	370.88	379.18	387.48	395.78	404.08	412.38	420.68
	105	355.58	363.88	372.18	380.48	388.78	397.08	405.38	413.68	421.98	430.28
	110	365.18	373.48	381.78	390.08	398.38	406.68	414.98	423.28	431.58	439.88
120	384.38	392.68	400.98	409.28	417.58	425.88	434.18	442.48	450.78	459.08	
Sex = 2 (Female)	50	266.58	274.88	283.18	291.48	299.78	308.08	316.38	324.69	332.98	341.28
	75	314.58	322.88	331.18	339.48	347.78	356.08	364.38	372.68	380.98	389.28
	90	343.38	351.68	359.98	368.28	376.58	384.88	393.18	401.48	409.78	418.08
	95	352.98	361.28	369.58	377.88	386.18	394.48	402.78	411.08	419.38	427.68
	100	362.58	370.88	379.18	387.48	395.78	404.08	412.38	420.68	428.98	437.28
	105	372.18	380.48	388.78	397.08	405.38	413.68	421.98	430.28	438.58	446.88
	110	381.78	390.08	398.38	406.68	414.98	423.28	431.58	439.88	448.18	456.48
120	400.98	409.28	417.58	425.88	434.18	442.48	450.78	459.08	467.38	475.68	