



SCHOOL of
GRADUATE STUDIES
EAST TENNESSEE STATE UNIVERSITY

East Tennessee State University
**Digital Commons @ East
Tennessee State University**

Electronic Theses and Dissertations

Student Works

May 1987

An Examination of Demographic Characteristics of Elementary School Principals and Student Achievement Scores

Winston A. Riddle
East Tennessee State University

Follow this and additional works at: <https://dc.etsu.edu/etd>

 Part of the [Educational Administration and Supervision Commons](#)

Recommended Citation

Riddle, Winston A., "An Examination of Demographic Characteristics of Elementary School Principals and Student Achievement Scores" (1987). *Electronic Theses and Dissertations*. Paper 2773. <https://dc.etsu.edu/etd/2773>

This Dissertation - Open Access is brought to you for free and open access by the Student Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact digilib@etsu.edu.

INFORMATION TO USERS

While the most advanced technology has been used to photograph and reproduce this manuscript, the quality of the reproduction is heavily dependent upon the quality of the material submitted. For example:

- Manuscript pages may have indistinct print. In such cases, the best available copy has been filmed.
- Manuscripts may not always be complete. In such cases, a note will indicate that it is not possible to obtain missing pages.
- Copyrighted material may have been removed from the manuscript. In such cases, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, and charts) are photographed by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is also filmed as one exposure and is available, for an additional charge, as a standard 35mm slide or as a 17"x 23" black and white photographic print.

Most photographs reproduce acceptably on positive microfilm or microfiche but lack the clarity on xerographic copies made from the microfilm. For an additional charge, 35mm slides of 6"x 9" black and white photographic prints are available for any photographs or illustrations that cannot be reproduced satisfactorily by xerography.

8715789

Riddle, Winston A.

**AN EXAMINATION OF DEMOGRAPHIC CHARACTERISTICS OF ELEMENTARY
SCHOOL PRINCIPALS AND STUDENT ACHIEVEMENT SCORES**

East Tennessee State University

Ed.D. 1987

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

AN EXAMINATION OF DEMOGRAPHIC CHARACTERISTICS OF ELEMENTARY
SCHOOL PRINCIPALS AND STUDENT ACHIEVEMENT SCORES

A Dissertation
Presented to the Faculty
of the Department of Supervision and Administration
East Tennessee State University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Winston A. Riddle

May, 1987

APPROVAL

This is to certify that the Graduate Committee of

WINSTON A. RIDDLE

met on the

thirty-first day of March, 1987.

The committee read and examined his dissertation, supervised his defense of it in an oral examination, and decided to recommend that his study be submitted to the Graduate Council and the Associate Vice-President for Research and Dean of the Graduate School in partial fulfillment of the requirements for the degree Doctor of Education in Educational Administration.

Wayne H. Edwards
Chairman, Graduate Committee

Robert H. Shepard

Rudolph J. Miller, Jr.

Alan Gray

Charles W. Beckett

Richard A. Crafts

Associate Vice-President for
Research and Dean of the
Graduate School

Signed on behalf of
the Graduate Council

Abstract

AN EXAMINATION OF DEMOGRAPHIC CHARACTERISTICS OF ELEMENTARY SCHOOL PRINCIPALS AND STUDENT ACHIEVEMENT SCORES

by

Winston A. Riddle

The purpose of this study was to consider the specific demographic characteristics of elementary school principals in conjunction with the academic achievement of students in an attempt to identify characteristics that might assist in the identification of effective principals. The characteristics tested were the principal's age, sex, race, tenure in the current position, total experience as a principal, level of previous teaching experience, and level of education.

During and following the review of the literature, a list of characteristics was compiled and refined and a survey instrument constructed. The survey was sent to 255 randomly selected elementary school principals in North Carolina. A total of 222 responses was received.

For each responding principal, third and sixth grade student achievement scores were obtained from the Department of Research, North Carolina Department of Public Instruction. These scores were the result of the spring 1986 administration of the California Achievement Test in the North Carolina Annual Testing Program. The scores were grouped according to the characteristic being studied and compared for significant differences using one-way analysis of variance or t tests.

Grade-wide significant differences were found only in third grade scores when compared by the principal's race and sixth grade scores when compared by the principal's tenure in the current position. Significant differences were found for some student sex/race group scores when compared by the teaching experience, race, and the sex of the principal.

East Tennessee State University
Institutional Review Board

PROJECT TITLE: Do Principals' Personal Characteristics Make a Difference
in Student Achievement Scores?

PRINCIPAL INVESTIGATOR: Winston A. Riddle

The Institutional Review Board has reviewed the above titled project on (date) 2-3-86 with respect to the rights and safety of human subjects, including matters of informed consent and protection of subject confidentiality, and finds the project acceptable to the Board.

Armand LeFevre Chairman

DEDICATION

This dissertation is dedicated to my wife, Merrell, who, while working on her own dissertation, found time to help, support, and encourage me in my efforts; to my children for their support and encouragement; and to my parents, Pinkney and Katie Riddle, who have always encouraged me in my endeavors even while joking that other parents had trouble keeping children in school but they couldn't get theirs out. Well, Mom and Dad, I think I'm finally out.

ACKNOWLEDGEMENTS

Completion of an undertaking such as this depends on many people with whom one comes in contact. Gratitude is expressed to all who have assisted, encouraged, or in any way contributed to the completion of this dissertation, and especially to these people:

The members of my Graduate Committee, Dr. Floyd Edwards, Dr. Robert Shepard, Dr. Charles Burkett, Dr. Rudolph Miller, and Dr. Flora Joy, who have always been willing to help and encourage.

My wife and family, without whose love, support and assistance this goal would never have been reached.

Those many men and women who took the time to answer and return the survey which made this report possible.

TABLE OF CONTENTS

	Page
APPROVAL	ii
ABSTRACT	iii
INSTITUTIONAL REVIEW BOARD APPROVAL	iv
DEDICATION	v
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	x
 CHAPTER	
I. INTRODUCTION	1
Statement of the Problem	2
Purpose of the Study	2
Significance of the Study	3
Limitations	3
Assumptions	4
Hypotheses	5
Definitions of Terms	8
Procedures	9
Organization of the Study	10
II. REVIEW OF RELATED LITERATURE	11
Introduction	11
The Principal as Middle Manager	11
The Effective Principal	13
The Selection of the Principal	17

	The Age of the Principal	20
	The Sex of the Principal	22
	The Tenure of the Principal	23
	The Experience of the Principal	25
	The Educational Level of the Principal	28
	Summary	31
III.	METHODS AND PROCEDURES	35
	Description of the Study	35
	Selection of the Sample	35
	Instrumentation	37
	Collection of the Data	38
	Analysis of the Data	38
IV.	ANALYSES OF DATA	41
	Introduction	41
	Presentation of Data	42
V.	SUMMARY, FINDINGS, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS	113
	Summary and Findings	113
	Conclusions	116
	Discussion	117
	Recommendations	118
	BIBLIOGRAPHY	120
	APPENDICES	124
	A. Letter to Superintendent	124
	B. Second Letter to Superintendent	126
	C. Superintendent's Permission	128

D. Letter to Principal	130
E. Questionnaire	132
VITA	134

LIST OF TABLES

Table	Page
1. COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	43
2. COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	44
3. COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	45
4. COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	46
5. COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	46
6. COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	48
7. COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	48
8. COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	49
9. COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	50
10. COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S AGE CATEGORY	51
11. COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	53
12. COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	53

13.	SIGNIFICANT MEAN DIFFERENCES CALCULATED BY THE STUDENT-NEWMAN-KEULS PROCEDURE	54
14.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	55
15.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	56
16.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	57
17.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	58
18.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	59
19.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	59
20.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	60
21.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TENURE IN CURRENT POSITION	61
22.	SIGNIFICANT MEAN DIFFERENCES CALCULATED BY THE SCHEFFE PROCEDURE	62
23.	COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	64
24.	COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	64
25.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	65

26.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	66
27.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	67
28.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	68
29.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	69
30.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	69
31.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	70
32.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES ACCORDING TO PRINCIPAL'S TOTAL ADMINISTRATIVE EXPERIENCE	71
33.	SIGNIFICANT MEAN DIFFERENCES CALCULATED BY THE STUDENT-NEWMAN-KEULS PROCEDURE	72
34.	COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	74
35.	COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	74
36.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	75
37.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	76
38.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	77

39.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	79
40.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	79
41.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	80
42.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	81
43.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S SEX	82
44.	COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	84
45.	COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	85
46.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	86
47.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	87
48.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	88
49.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	89
50.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	90
51.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	92

52.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	92
53.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S TEACHING EXPERIENCE	93
54.	COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	95
55.	COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	96
56.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	97
57.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	97
58.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	98
59.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	100
60.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	100
61.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	101
62.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	102
63.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S RACE	103
64.	COMPARISON OF NON-WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	104

65.	COMPARISON OF NON-WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	105
66.	COMPARISON OF WHITE MALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	106
67.	COMPARISON OF WHITE FEMALE THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	107
68.	COMPARISON OF ALL THIRD GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	108
69.	COMPARISON OF NON-WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	109
70.	COMPARISON OF NON-WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	110
71.	COMPARISON OF WHITE MALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	111
72.	COMPARISON OF WHITE FEMALE SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	111
73.	COMPARISON OF ALL SIXTH GRADE STUDENTS' ACHIEVEMENT SCORES GROUPED ACCORDING TO PRINCIPAL'S EDUCATION	112

CHAPTER 1
Introduction

The principal has long been recognized and described as the instructional leader of a school. This point of view has been expressed repeatedly in the literature. If the principal is the instructional leader of a school, his/her efforts should reflect in the achievement scores of the students. There is some research which indicates that these efforts have been reflected.¹ Stogdill, summarizing his survey of research and theory concerning leadership, concluded that "when teachers and principals are described as high in consideration and structure, their pupils tend to make higher scores on tests of school achievement."² Carlson contended that instructional excellence is dependent upon administrative leadership and expertise in curriculum and teaching.³ Hencley, McCleary and McGrath said of the elementary school principal:

As this position is seen in terms of its
unique responsibilities and relationships,

¹ W. C. Miller, "Can a Principal's Improved Behavior Result in Higher Pupil Achievement?" Educational Leadership 33 (1976): 337.

² R. H. Stogdill, Handbook of Leadership (New York: Free Press, 1974), 175.

³ T. R. Carlson, Administrators and Reading (New York: Harcourt Brace Jovanovich, 1972), 155.

professionals and laymen alike are becoming aware that a principal of an elementary school stands at the apex of all educational progress--from kindergarten through college.⁴

What are the characteristics of principals that have an influence on achievement scores? This study was an attempt to identify personal characteristics that might influence achievement scores.

The Problem

Statement of the Problem

The problem of this study was to explore possible differences between the mean achievement scores of elementary school students in schools where the principals had different demographic characteristics.

Purpose of the Study

The purpose of this study was to consider the specific demographic characteristics of age, sex, race, tenure in current position, total experience as a principal, previous level of teaching experience (elementary or secondary), and level of education of elementary school principals in conjunction with the achievement scores of third grade and sixth grade students in an attempt to identify particular

⁴ Stephen P. Hencley, Lloyd McCleary and J. H. McGrath, The Elementary School Principalship (New York: Dodd, Mead, 1970), v.

characteristics that might assist in the identification of effective principals.

Significance of the Study

The evidence appears to support strongly the idea that more effective leaders can lead to greater pupil productivity. McCurdy, quoting W. D. Greenfield, stated that "'Until recently, researchers and funding agencies alike have underestimated the importance of the school principal as an agent' affecting school outcomes."⁵ If characteristics of effective principals can be determined, then appointment of principals with these characteristics would possibly increase pupil achievement.

Many studies have been conducted to determine what an effective principal does or how he/she is perceived by the teachers and/or students, but very few studies have been conducted which describe the personal attributes of the principal. This study was directed toward that area of the principalship in an attempt to increase the knowledge of principal effectiveness, perhaps by identifying demographic characteristics that may relate to pupil achievement.

Limitations

The following limitations were placed on this study:

⁵ Jack McCurdy, The Role of the Principal in Effective Schools: Problems and Solutions (Arlington: American Association of School Administrators, 1983), 19.

1. Only principals of schools containing grades three and six in North Carolina were studied.

2. Only principals who had served a minimum of three years in the same school were studied.

3. Only principals who responded to the questionnaire were included in the study.

4. The student scores were taken from the Spring 1986 administration of the North Carolina Annual Testing Program using the California Achievement Test, Form E, administered in April 1986.

5. The data on the principals were collected during March 1986.

6. It was determined that a 50 percent response to the questionnaire would be adequate for the study.

7. Scores from third and sixth grade classes only were used in the study.

8. Deviations in student academic ability by school were not considered.

Assumptions

The following assumptions were considered necessary for the completion of this study:

1. The participants in the study responded honestly to the questionnaire.

2. The questionnaire was valid and appropriate for the purpose of the study.

3. All effects of socio-economic influences upon scores were normally distributed by the sample size.

4. All effects of student academic ability were normally distributed by sample size.

5. All effects of administrative duties caused by school size were normally distributed by the sample size.

Hypotheses

The following hypotheses, stated in the research form, were developed for this study and tested at the .05 level of significance:

H₁ There will be a significant difference between the mean achievement scores of third grade students in schools where the principals are in one age category and the mean achievement scores of third grade students in schools where the principals are in other age categories.

H₂ There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one age category and the mean achievement scores of sixth grade students in schools where the principals are in other age categories.

H₃ There will be a significant difference between the mean achievement scores of third grade students in schools where the principals are in one experience category in the current position and the mean achievement scores of third grade students in schools where the principals are in other experience categories in the current position.

H₄ There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one experience category in the current position and the mean achievement scores of sixth grade students in schools where the principals are in other experience categories in the current position.

H₅ There will be a significant difference between the mean achievement scores of third grade students in schools where the principals are in one total years experience category and the mean achievement scores of third grade students in schools where the principals are in other total years experience categories.

H₆ There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one total years experience category and the mean achievement scores of sixth grade students in schools where the principals are in other total years experience categories.

H₇ There will be a significant difference between the mean achievement scores of third grade students in schools where the principals are male and the mean achievement scores of third grade students in schools where the principals are female.

H₈ There will be a significant difference between the mean achievement scores of sixth grade students in schools

where the principals are male and the mean achievement scores of sixth grade students in schools where the principals are female.

H_9 There will be a significant difference between the mean achievement scores of third grade students in schools where the principals have elementary teaching experience and the mean achievement scores of third grade students in schools where the principals have secondary teaching experience.

H_{10} There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals have elementary teaching experience and the mean achievement scores of sixth grade students in schools where the principals have secondary teaching experience.

H_{11} There will be a significant difference between the mean achievement scores of third grade students in schools where the principals are white and the mean achievement scores of third grade students in schools where the principals are not white.

H_{12} There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals are white and the mean achievement scores of sixth grade students in schools where the principals are not white.

H₁₃ There will be a significant difference between the mean achievement scores of third grade students in schools where the principals have only a Master's degree and the mean achievement scores of third grade students in schools where the principals have advanced educational degrees.

H₁₄ There will be a significant difference between the mean achievement scores of sixth grade students in schools where the principals have only a Master's degree and the mean achievement scores of sixth grade students in schools where the principals have advanced educational degrees.

Definitions of Terms

In order to assist the reader in understanding certain terms used in this study, the following operational definitions are stated:

1. Advanced Educational Degrees. This term refers to the Educational Specialist and/or the doctoral degree.

2. Demographic Characteristics. This term refers to the personal attributes of age, sex, race, tenure in current position, total experience as a principal, previous level of teaching experience (elementary or secondary), and level of education.⁴

3. Educational Area. This term refers to one of the three geographical areas into which the school systems were divided for this study.

4. Educational Region. This term refers to one of the eight geographical areas into which the school systems of North Carolina are divided.

5. Principal. This term is used to identify the chief administrative officer of a public school.

Procedures

The following procedures were utilized in the development of this study:

1. A review of current literature was conducted.
2. A demographic data questionnaire was designed and field tested.
3. A list of principals in schools with both third and sixth grades in North Carolina was compiled from the Educational Directory of North Carolina, 1985-1986.
4. A computer-generated random sample of principals was drawn from the list.
5. Letters requesting permission to survey the principals were sent to the superintendents of the systems represented in the sample on January 18, 1986.
6. Follow-up letters were mailed to non-responding superintendents on February 5, 1986.
7. A questionnaire, a self-addressed, stamped envelope and a cover letter were mailed to the principal of each school in the sample on February 26, 1986.

8. The data from the principals' questionnaires were coded manually and entered into a computer file.

9. Scores from the Spring 1986 administration of the North Carolina Annual Testing Program for the third and sixth grades were obtained on magnetic tape from the North Carolina Department of Public Instruction, Division of Research, and entered into a computer file.

10. Achievement scores for third and sixth grades of each school were computer-matched to the principal's data.

11. The data were computer-analyzed for significant differences using the ANOVA and t test formulas in the Statistical Package for the Social Sciences--Extended (SPSS-X).

Organization of the Study

Chapter 1 includes an introduction to the study, the statement of the problem, the significance of the study, limitations of the study, the assumptions, the definitions of terms, the procedures followed, the hypotheses, and this outline of the total organization of the study.

Chapter 2 presents a review of related literature.

Chapter 3 describes the procedures and methodology used in collecting and analyzing the data for the study.

Chapter 4 presents the data and an analysis of the findings.

Chapter 5 contains the summary, conclusions, and recommendations.

CHAPTER 2

Review of Related Literature

Introduction

The effect of the personal characteristics of the principal on student achievement appears to be substantial. This chapter reviews literature related to the research questions of the study. The first sections discuss the principal as middle manager and describe an effective principal. The later sections review literature related to the personal characteristics of the principal and their possible effects on student academic achievement.

The Principal as Middle Manager

Principals are often likened to middle managers of industry. Is this a fair comparison? How do principals' activities compare to those of industrial middle managers? Are the duties similar?

A study reported by Alkire and Dorin compared the activities of twenty elementary principals and twenty industrial middle managers. In only one of the five behavioral categories which comprised approximately 80 percent of the two groups' activities (planning, investigating, coordinating, evaluating, and supervising), did the two groups differ significantly. The principals were more

often involved in supervising. In fact, Alkire and Dorin wrote that "if one subtracts the supervision of hallways, cafeterias, bus duty and playground duty, there was no significant difference in supervising activities for the two groups."¹ In addition, Alkire and Dorin found that the principals had greater educational training and preparation for professional growth, had greater community involvement, hired fewer people, and saw fewer salesmen than the industrial managers.²

Morris and his colleagues felt that, over the years, the principal had become recognized as a middle manager based on (1) his position in the middle of the hierarchy, (2) taking orders from superiors, and (3) passing (and enforcing) these orders on to department heads, teachers and students.³ They also felt that this middle position has become more complex and complicated in that the principal is not only in the middle of the hierarchy but also in the middle of a political environment that has overshadowed most educational planning and decision making.⁴

¹ Gary F. Alkire and Patrick C. Dorin, "Elementary Principals: How do We Compare with Middle Managers in Industry?" Education 99 (Summer 1979): 381.

² Alkire and Dorin, 381.

³ Van Cleve Morris et al., Principals in Action (Columbus, Ohio: Charles E. Merrill Publishing, 1984), 3.

⁴ Morris et al., 3.

Alkire and Dorin saw the principal as a middle manager with more supervisory duties than his/her industrial counterpart. This is probably because the industrial manager is not directly responsible for the safety and well-being of hundreds of people.

While Morris agreed with the idea of the principal being a middle manager, he saw the principal as being "in the middle" in more ways than one.

The Effective Principal

Blumberg and Greenfield asserted that:

In many ways the school principal is the most important and influential individual in any school. He is the person responsible for all of the activities that occur in and around the school building. It is his leadership that sets the tone of the school, the climate for learning, the level of professionalism and morale of teachers and the degree of concern for what students may or may not become. He is the main link between the school and the community and the way he performs in that capacity largely determines the attitudes of students and parents about the school. If a school is a vibrant, innovative, child-centered place; if it has a reputation for excellence in teaching; if students are performing to the best of their ability, one can almost always point to the principal's leadership as the key to success.⁵

The literature repeatedly refers to an "effective" principal or to the "leadership" of the principal. What is meant by these terms?

⁵ Arthur Blumberg and William Greenfield, The Effective Principal (Boston: Allyn and Bacon, 1980), 44.

An "effective" principal apparently does something in a manner that achieves more desirable outcomes. Since it is a school principal under consideration, these outcomes must relate in some way to student learning.

Leithwood and Montgomery, defining an effective principal, said, "Principal behaviours are increasingly 'effective' to the extent that they facilitate necessary teacher growth and thereby indirectly influence student learning or impinge on other factors known to effect such learning."⁶

Blumberg and Greenfield, on the basis of their case studies of eight "effective" principals, concluded that the three common elements of effectiveness among those eight were vision, initiative, and resourcefulness.⁷ Then they postulated that these principals had the vision to see what they wanted their schools to become, the initiative to begin moving toward that goal, and the resourcefulness to find innovative ways of overcoming obstacles that hindered their achieving the goal.

The second term often found in the literature was leadership. When defining leadership, McCurdy quoted Scott Thomson, executive director of the National Association of

⁶ K. A. Leithwood and D. J. Montgomery, "The Role of the Elementary School Principal in Program Improvement," Review of Educational Research 52, no. 3 (1982): 310.

⁷ Blumberg and Greenfield, 201.

Secondary School Principals, "Leadership is best defined as 'getting the job done through people.'"⁸

In applying leadership to school principal, Bossert and his associates specified two distinct areas in which leadership must be exercised in order to build or maintain a successful school. These specified areas were instructional organization and climate. They posited that this leadership came from the use of influence which depended on power and authority.⁹ Authority was then defined as "power which is vested in a position or person to whom the right to rule has been granted."¹⁰

Bossert then explained the use of power:

"To exercise power is to induce people to behave in ways that they otherwise would not. The exercise of power involves the manipulation of three types of resources: physical, material, and symbolic. The extent of one's power is related to the kinds and amounts of these resources under one's control and the dependence of subordinates on those resources."¹¹

Relating leadership, power, and authority to school leaders, Sergiovanni wrote that:

Aspects of leadership can be described metaphorically as forces available to administrators,

⁸ Jack McCurdy, The Role of the Principal in Effective Schools: Problems and Solutions (Arlington: American Association of School Administrators, 1983), 19.

⁹ Steven T. Bossert et al., "The Instructional Management Role of the Principal," Educational Administration Quarterly 18, no. 3 (1982): 49.

¹⁰ Bossert, 49

¹¹ Bossert, 49

supervisors and teachers as they influence the events of schooling. Force is the strength or energy brought to bear on a situation to start or stop motion or change. Leadership forces can be thought of as the means available to administrators, supervisors, and teachers to bring about or preserve changes needed to improve schooling.¹²

In further analysis of this area, Education Research Service published a compilation in 1982 entitled The Role of Elementary School Principals: A Summary of Research which contained over 200 studies which had been published since 1970. From this compilation, Robinson and Block analyzed the twenty-two studies which dealt with the principal and student achievement. Based on this analysis, they concluded that the studies indicated that the higher achieving schools had principals who:

1. were strong instructional leaders,
2. emphasized educational goals,
3. communicated high expectations for achievement to students, staff, and parents,
4. worked to maintain a good learning environment, and
5. supported the instructional process.¹³

Also in 1982, Sweeney, in a synthesis of research, carefully analyzed eight studies on effective school leadership and identified six leadership behaviors that were

¹² Thomas J. Sergiovanni, "Leadership and Excellence in Schooling," Educational Leadership 41, no. 5 (1984): 6.

¹³ Glen E. Robinson and Alan W. Block, "The Principal and Achievement: A Summary of 22 Studies," Principal 62, no. 2 (1982): 53.

associated with school effectiveness. Sweeney then suggested that school achievement was enhanced by principals who:

1. emphasized achievement (noted in all eight studies),
2. set instructional strategies (noted in all eight studies),
3. provided an orderly school atmosphere (noted in seven studies),
4. frequently evaluated pupil progress (noted in five studies),
5. coordinated instruction (in four studies), and
6. supported teachers (three studies).¹⁴

Considering the growing importance accorded the principalship, this study was undertaken to consider some of the characteristics usually considered in the selection of a person to fill the position of principal and whether these characteristics have any apparent effect on the achievement scores of students.

The Selection of the Principal

Forrest Conner, executive secretary of the American Association of School Administrators, wrote in the preface of the book The Right Principal for the Right School:

¹⁴ James Sweeney, "Research Synthesis on Effective School Leadership," Educational Leadership 39, no. 5 (1982): 351.

The effective school principal can be a type of catalyst who can stimulate more dynamic educational programs. . . . It is difficult to overestimate the contributions of the principal to the improvement of education. The selection of people for this important . . . position is clearly one of the most important decisions confronting a superintendent of schools. . . . It is a decision which can be based either on clearly defined procedures or on approaches based on hoary traditions and old wives' tales.¹⁵

One principal probably expressed the opinion of many other individuals when he said:

I don't think the promotions are based on seniority or on merit. I think it's just luck, catching someone's ear, or being at the right place at the right time. There were other guys who had been around longer than me [sic] when they asked me to take my first job as an acting principal.¹⁶

Manasse stated that:

A principal appointment may be the most visible action a superintendent takes. . . . If the process is perceived to be fair, accessible, open, and professional, their trust and confidence are enhanced. The opposite perception leads to mistrust¹⁷ that can reverberate throughout the system.

¹⁵ American Association of School Administrators, The Right Principal for the Right School (Washington, DC: American Association of School Administrators, 1967), 6-7.

¹⁶ Harry F. Wolcott, The Man in the Principal's Office: An Ethnography (New York: Holt, Rinehart and Winston, 1973), 193.

¹⁷ A. Lorri Manasse, "Improving Conditions for Principal Effectiveness: Policy Implications of Research," The Elementary School Journal 85, no. 3 (1985): 454.

If promotions are not based on seniority or merit, then what are the criteria? Regarding the selection of principals, McCurdy found that the criteria for selection (in the districts studied) were often vague and ambiguous, and almost never written or expressly stated, but often related to the local community's idea of what a "good" principal should be. These notions and ideas resulted, over the years, in a principal being represented as a white male with a background of athletic coaching.¹⁸

Baltzell and Dentler found that decision makers (when asked about selection of principals) all spoke of the importance of "finding the best educational leaders."¹⁹ Yet when pressed to specify the basic requirements and/or experiences that they would be looking for, none could do so, arguing that these would be decided on a case-by-case basis. This led Baltzell and Dentler to infer that the leaders were "avoiding the knotty problems of operationalizing educational leadership and preserving their flexibility and observably heavy reliance on unstated notions of 'fit' or 'image'."²⁰

¹⁸ McCurdy, 66.

¹⁹ D. Catherine Baltzell, and Robert A. Dentler, "Selecting American School Principals: A Sourcebook for Educators," n.d., ERIC Reproduction Document ED236 811, 6.

²⁰ Baltzell and Dentler, "Sourcebook", 6.

Baltzell and Dentler, in their study of principal selection, observed that, while able principals were interviewed, the selection process could not be classified as based on merit or equity. They concluded that principal selection seemed to be determined more by local conditions and customs than by consideration for educational leadership and expertise.²¹

The Age of the Principal

It may be reasoned that the more experience a principal has, both as teacher and principal, the greater the probability of being an effective principal. This is one of the major arguments used in claiming that female principals have an advantage over male principals.

In a study of elementary school principals done by the Department of Elementary School Principals of the National Education Association, it was found that 67 percent of the male principals were younger than thirty-five years of age when first appointed but that 61 percent of the female principals were first appointed between the ages of thirty-five and forty-nine.²²

²¹ D. Catherine Baltzell, and Robert A. Dentler, "Selecting American School Principals: Executive Summary," (Cambridge, Mass.: Abt Associates 1983), ERIC Reproduction Document ED239 421, 4.

²² Department of Elementary School Principals, The Elementary School Principalship in 1968--A Research Study, (Washington, D.C.: Department of Elementary School Principals, National Education Association, 1968), 13.

Gross and Herriott, in their study of "Executive Professional Leadership" (EPL) in elementary school principals, found that the principals who were forty-five years of age or older when first appointed to a principalship as a group exhibited the lowest EPL; those thirty-six to forty, when first appointed, exhibited the highest EPL; and those thirty or younger were only slightly below the thirty-six to forty group.²³

From these data, they concluded that:

Appointing teachers who are beyond age forty-five to elementary principalships may be a questionable practice, and to discriminate against young teachers who seek to become principals has no justification, in the light of expectations for their EPL.²⁴

If age of the principal is used as a selection factor, then it should be examined to determine if there exists a possible relationship between age of the principal and student achievement. Much work has been done regarding the demographics of age but apparently little as to the possible effect of the principal's age on student achievement.

²³ Neal Gross and Robert E. Herriott, Staff Leadership in Public Schools: A Sociological Inquiry, (New York: John Wiley and Sons, 1965), 156.

²⁴ Gross and Herriott, 156-57.

The Sex of the Principal

Bossert, et al., felt that females made better principals than males, asserting that female principals:

1. tend to score higher on standardized tests;
2. have more experience in education;
3. more readily exchange information;
4. work more hours;
5. are more inclined to be innovative;
6. are more likely to be democratic leaders; and
7. are more preferred by teachers and superiors.²⁵

Newberry, however, referred to sex (in the selection of a principal) as an "irrelevant factor" and "not an appropriate factor to consider."²⁶

Yet if the selection committee is going to consider the sex of the candidate, Newberry felt that the committee should be aware that "women are often superior administrators in the elementary school. . . . are frequently more aware of potential problem situations, and one study reports . . . achievement is higher in elementary schools with a female principal [citation omitted]."²⁷

²⁵ Bossert, 52.

²⁶ Alan J. H. Newberry, "What Not to Look For in an Elementary School Principal," National Elementary Principal 56, no. 4 (1977): 42.

²⁷ Newberry, 42.

Gross and Trask said "our findings showed that . . . pupils' learning were [sic] higher on the average in the schools administered by women than by men." ²⁸

Research as to the possible effect of the principal's sex on student academic achievement seems to be lacking. Much more work apparently needs to be done in this area, particularly as the percentage of female principals continues to increase.

The Tenure of the Principal

The Gross and Trask study found that female principals had served in their current position slightly longer than male principals (8.2 vs. 6.9 years).²⁹ They also found that:

Fifteen percent of the women as compared to 8 percent of the men had been principal of their present school for 16 years or longer. However, 54 percent of the men in comparison with 40 percent of the women had held their present position for less than six years.³⁰

Gross and Herriott found that EPL decreased with experience as a principal, both in total experience and in

²⁸ Neal Gross and Anne E. Trask, The Sex Factor and the Management of Schools, (New York: John Wiley and Sons, 1976), 219.

²⁹ Gross and Trask, 52.

³⁰ Gross and Trask, 52-53.

experience in present position.³¹ They said, "We conclude . . . that the weight of the evidence appears to favor limited, not extensive, experience in the principalship, as a circumstance conducive to high EPL."³²

Gross and Herriott viewed EPL as the "effort . . . (by the principal) to conform to a definition of his role that stresses his obligation to improve the quality of staff performance."³³

However, the data Rosseau compiled tended to show an opposite trend to the Gross study. Rosseau's study tended to indicate that the experienced principals were more effective in the areas of administrative decision making, communications, general administrative behavior, and instructional leadership.³⁴

From this review it appears that tenure in the school has no clear cut relationship to student academic achievement and therefore is still an item for further study.

³¹ Gross and Herriott, 72.

³² Gross and Herriott, 73.

³³ Gross and Herriott, 8.

³⁴ Alan J. Rosseau, "The Elementary School Principal: What Training and Experience Factors Contribute to His Success." Oregon School Study Council Bulletin (ERIC ED 081 072, 1971): 22.

The Experience of the Principal

Many elementary principals are former high school coaches. Benjamin stated that "about one in four was an athletic coach before becoming a principal."³⁵ Over the years, faculties of schools have cast scorn and objections to this situation. Some comments are: "He couldn't win, so they made him principal"; "he represents the wrong values"; "he isn't as smart"; "he favors the athletes"; etc.

Lamar Alexander, former governor of Tennessee, once said, "Some school boards are convinced that only coaches make good principals."³⁶ Alexander went on to say that he felt that some coaches make good principals just as only some teachers make good principals.

Morris et al. stated that many responsibilities of the coach and the principal are similar. They contended that both:

1. organized disparate elements--people, equipment and money--into a self-sustaining enterprise;

³⁵ Robert Benjamin, "The Rose in the Forest," Principal 60, no. 4 (1981): 15.

³⁶ Lamar Alexander, "Five Deep Ruts Hurting Our Schools," Address at Founder's Day, University of the South, October 8, 1984.

2. coordinated individuals in an intricate division of labor, each person performing a specialized task;
3. motivated highly skilled individuals, some of them prima donnas;
4. took care of wounded egos and serve as counselor and parent figure to troubled subordinates;
5. maintained frequent, easy-going contact with the public;
6. kept a cool head under provocative and stressful circumstances;
7. answered to the school and community; and
8. identified with the whole school.³⁷

The authors warned that they are only saying that the responsibilities are similar, not that all coaches will make good principals.

They also stated that a candidate should be judged by (1) the aspects of his present job that most closely resemble a principal's work and (2) how well he performs in the present job.³⁸

It can be reasonably argued that an elementary principal should have elementary school training and teaching

³⁷ Morris, 241-42.

³⁸ Morris, 242.

experience. This is another argument advanced as an advantage a female principal may hold over her male counterparts since a large majority of elementary teachers are female.

Parramore, Davies, and MacGregor, in a longitudinal study of student achievement gains from third to sixth grades, found that "schools in which the principal had or once held elementary teacher certification had students with higher reading scores."³⁹

The Gross and Trask study showed that:

Eight times the proportion of women as men (49 percent vs. 6 percent) had taught at the elementary school level for sixteen years or longer. Furthermore, 34 percent of the men, as compared to only 3 percent of the women, had never taught in elementary school at all.⁴⁰

Gross and Trask concluded that, since males and females differed greatly in the types and total years of teaching experience prior to appointment to the principalship, "the sex factor . . . had a direct influence on the amount and kinds of educational experience they brought to their administrative roles"⁴¹

³⁹ Barbara Parramore, James J. Davies, and Susan MacGregor, "Do Schools Make a Difference? An Analysis of Third to Sixth Grade Achievement Gains in a North Carolina Study," North Carolina Educational Leadership 2, no. 2 (1986): 38.

⁴⁰ Gross and Trask, 46.

⁴¹ Gross and Trask, 218.

Many people hold the belief that an elementary principal should have elementary teaching experience. Despite this belief, Benjamin said, "More than 18 percent of the principals have not had one day of teaching experience in an elementary school; another 4 percent have had less than one year experience."⁴²

If the teaching experience of the principal improves student achievement, why are principals appointed who do not have this experience? Student achievement as a function of the experience of the principal therefore needs further study.

The Educational Level of the Principal

Another "reasonable" argument that could be made is that the higher the earned degree level of a principal, the more effective he/she would be. How does this argument fare in the literature?

A cost benefit analysis developed by Heim and Perl using data that had been collected for New York State suggested that a 14 percentile gain in reading achievement and a 12 percentile gain in mathematics achievement could be obtained in grades three through five by a \$100 per pupil allotment toward the upgrading of a principal's degree level. These estimated gains exceeded those estimated to be produced by the application of the same

⁴² Benjamin, 15.

funds toward the upgrading of teacher degree level, toward increasing teacher experience, or decreasing teacher-pupil ratio. It was advised, however, that "the statistics . . . should not be taken as offering precise estimates of the absolute magnitude of these effects."⁴³

This analysis was disputed by the observations of Summers and Wolfe who concluded that neither the principal's experience, degree status, nor extra educational credits were related to increased student achievement.⁴⁴ However, Summers and Wolfe's work was challenged by the Philadelphia School District as being too limited in scope for validity.

There seems to be a lack of literature and research upon the effect of the principal's degree status upon student achievement as such. However, there is research relating to the educational level of principals.

Gross and Trask found in their study of elementary school principals that:

1. five percent of the males and 3 percent of the females had been awarded a doctorate;

⁴³ John Heim and Lewis Perl, The Educational Function: Implications for Educational Manpower Policy, IPE Monograph no. 4 (Ithaca: Cornell University, 1974), p. 25-6.

⁴⁴ Anita A. Summers and Barbara L. Wolfe, "Which School Resources Help Learning? Efficiency and Equity in Philadelphia Public Schools," Business Review, (February 1975): 14.

2. eighty-five percent of the females and 86 percent of the males had obtained Master's degrees;
3. more than twice as many females as males had taken more than forty hours of undergraduate education courses;
4. twice as many males as females had taken fewer than twenty-one hours of undergraduate education courses;
5. thirty-two percent of the males and 22 percent of the females took fifty-one or more hours of graduate level education courses.⁴⁵

Their data also showed that a larger percentage of females attended the state-supported colleges or teachers' colleges and a larger percentage of males had attended private colleges. Since the larger percentage of females had attended schools which trained teachers, Gross and Trask felt this explained most of the differential in undergraduate education coursework.

The authors also felt their data indicated an earlier educational career choice for the females and that this would partially explain the undergraduate difference. The reverse differential in the graduate education hours was theorized to be an attempt by the males to correct a possible perceived deficiency in education training.⁴⁶

⁴⁵ Neal Gross and Anne E. Trask, The Sex Factor and the Management of Schools (New York: John Wiley and Sons, 1976), 39-42.

⁴⁶ Gross and Trask, 42.

While the work of Gross and Trask did not include student achievement, it does indicate that male principals have more advanced degrees than do the female principals. Since these researchers did not consider student achievement, and considering the conflicting conclusions of the other researchers, level of education of the principal remains an interesting research subject.

Summary

Austin listed some factors, while not found in every school, were characteristic of the exemplary schools, as a whole, in the longitudinal studies of New York, Delaware, Pennsylvania, and Maryland:

1. Strong principal leadership was present (for example, schools "being run" for a purpose rather than "running" from force of habit).
2. There was strong principal participation in the classroom instructional program and in actual teaching.
3. Higher expectations on the part of the principal for student and teacher performance advancement were evident.
4. Principals felt that they had more control over the functioning of the school, the curriculum and program, and their staff.

5. Greater experience and more pertinent education in the roles of principals, teachers, and teacher aides were noted. [Emphasis added]⁴⁷

Austin, in his review of exemplary school studies that had been conducted for the states of California, Delaware, New York, Maryland, Michigan, and Pennsylvania, reported that principals of the exemplary schools in these studies:

1. created a sense of direction for the school.
2. executed their designated leadership role.
3. fostered academic expectations.
4. recruited their own staff.
5. had more advanced training.
6. tended to have an education as elementary school teachers.
7. had particular competence in one area of the curriculum, such as reading or mathematics.⁴⁸

Gross and Trask asserted that the findings from their study of the influence of the principal's sex "challenge the validity of the widespread practice followed by many

⁴⁷ Gilbert R. Austin, "Exemplary Schools and the Search for Effectiveness," Educational Leadership 37, no. 1 (1979): 12.

⁴⁸ Gilbert R. Austin, "Exemplary Schools and Their Identification," New Direction for Testing and Measurement 10 (1981): 43.

school districts of giving preference to men in filling vacancies in the principalship."⁴⁹

Dwyer reported that many of the principals in his study believed that they did make a difference in their schools and that their personal characteristics, experiences, and training did affect their activities and decisions and thereby affected their influence on the school. Dwyer felt his observations supported this belief.⁵⁰

He further stated that:

Principals do play an important part in shaping effective instructional organizations. In doing so, they interpret a host of information from many sources. They hold tightly to their own experiences as educators and their beliefs about important outcomes for their students. They find meaning in the sometimes paradoxical demands placed on them, and they maneuver within their constraints to move their organizations closer to their goals--not overnight, but in small steps that build upon each other. Their actions must be contingent on their changing⁵¹ scenes, on new demands, and on new situations.

Gross and Herriott summarized their study of the Executive Professional Leadership in elementary school principals in this manner:

⁴⁹ Gross and Trask, 219.

⁵⁰ David C. Dwyer, "The Search for Instructional Leadership: Routines and Subtleties in the Principal's Role," Educational Leadership 41, no. 5 (1984): 35.

⁵¹ Dwyer, 37.

If Executive Professional Leadership is to be the criterion, many school systems are selecting principals on grounds that appear to have little empirical justification: type or amount of teaching experience, experience as an assistant or vice principal, number of undergraduate and graduate courses in education, number of graduate courses in educational administration, sex, and marital status.⁵²

With age, sex, education and previous experience all being listed as factors in the selection of a principal, and the diverse findings that have been reported in the literature, it seemed that further examination of these characteristics and student achievement was in order. Perhaps with further research an effect can be established or ruled out, and the selection of more effective principals will result.

⁵² Gross and Herriott, 175.

CHAPTER 3

Methods and Procedures

This chapter contains information about the population, the instruments used, hypotheses, and procedures for collection and analysis of the data.

Description of the Study

This study was a descriptive study, utilizing the questionnaire method of collecting data. The research considered together the demographic characteristics (age, sex, race, tenure in the current position, total experience as a principal, level of previous teaching experience, level of education) of the elementary school principal and the achievement scores of third and sixth grade students in selected elementary schools in North Carolina.

Selection of Sample

The population for this study consisted of elementary principals in North Carolina who met the following criteria: (1) the schools they administered contained both grades three and six, and (2) they had at least a three year tenure in that school.

The process of determining the sample for this study was to prepare a list of schools which contained both grades

three and six from the North Carolina Educational Directory, 1985-1986. This list contained 637 schools.

North Carolina is divided into eight educational regions for administrative purposes. In an attempt to maintain equal geographic representation and prevent too few responses from an area, these eight divisions were collapsed into three. A computer-generated simple random sample of 50 percent was drawn from the list of schools in each of the three divisions.

A letter requesting permission to survey the selected principals, a self-addressed, stamped envelope and a permission form, were mailed on January 18, 1986, to the superintendent of each of the ninety-six school districts represented in the sample. On February 5, 1986, a second letter with the above mentioned enclosures, and a copy of the research instrument, were mailed to the non-responding superintendents. Samples of the letters, permission form, and instrument can be found in Appendix A.

Ninety-one responses were received from the superintendents, a 94.8 percent response rate. Seventy-six of the responding superintendents (83.5 percent) granted approval for principals in their system to participate in the study. This represented 53.9 percent of the 141 school systems in North Carolina. Approval from the superintendents resulted in a final sample of 255 principals.

Instrumentation

During and following the research of literature, a list of possible demographic characteristics was compiled and refined. The professor and members of an advanced methods of research class at East Tennessee State University reviewed and helped to finalize the list. The final list contained the characteristics of sex, age, race, tenure in the current position, total experience as a principal, level of previous teaching experience, and level of education.

A questionnaire was then developed to gather data regarding these characteristics. Copies of the questionnaire were supplied to professors to administer to students in graduate level classes in educational administration at East Tennessee State University. After administration to these graduate classes, minor revisions in format were made.

The questionnaire was then mailed to the sample that had been drawn. Data from the returned questionnaires were entered into the computer at East Tennessee State University and analyzed according to the research design.

North Carolina conducts an annual testing program using the California Achievement Test, Form E. Scores from the Spring 1986 testing were obtained from the North Carolina Department of Public Instruction, Division of Research, for this study.

Collection of Data

After the final approval by the superintendents for the census principals to participate in this study, data collection procedures began. On February 26, 1986, a letter, a questionnaire, and a self-addressed, stamped envelope were mailed to each census principal. Responses were received from 222 of the 255 census principals, a gross response of 87 percent. Since this exceeded the 50 percent rate set as the minimum acceptable response, no follow-up procedures were conducted.

The students' achievement scores were obtained from the North Carolina Department of Public Instruction, Division of Research, on magnetic tape. These scores and data from the questionnaires were entered into the computer at East Tennessee State University for processing.

Analysis of the Data

Data from the returned questionnaires were coded on a summary sheet and entered, via terminal, into a computer account file at East Tennessee State University. Student achievement information on the magnetic tape received from the North Carolina Department of Public Instruction was mechanically read into a computer file.

The student achievement scores were the total battery scale scores from the Spring 1986 administration of the

North Carolina Annual Testing Program using the California Achievement Test, Form E, published by McGraw Hill. Mean scores were calculated by grade, sex, and race for the third and sixth grades in each school whose principal had responded to the questionnaire.

The demographic characteristics obtained from the questionnaire were age, sex, race, teaching experience, tenure in the current position and total experience as a principal.

The scores were then tested for significant differences using the demographic characteristics as the independent variable. Analysis was done on an IBM 4341 computer at East Tennessee State University using the t test, the one-way analysis of variance (ANOVA) and Scheffe procedures in the Statistical Package for the Social Sciences--Extended (SPSS-X). Analysis of variance testing was done to reduce the risk of Type 1 errors that might arise from repeated t test procedures. The .05 level of significance was considered adequate for all comparisons. These analyses are presented in Chapter 4.

The ANOVA procedure only tests for differences between extreme means, therefore the Scheffe procedure was used as a post hoc test in those cases where the ANOVA procedure had indicated a significant difference. The Scheffe procedure was chosen over the Tukey and the Newman-Keuls procedures because it is more conservative than they and because some

authors consider it more appropriate when comparing groups of unequal size or when doing complex comparisons.¹ However, when the ANOVA test found a significant difference and the Scheffe procedure proved too conservative to detect a significant difference between a pair of groups, the Newman-Keuls was used.

The t test of independent means was used when testing dichotomous characteristics, or when collapsing of categories resulted in only two categories. The t test was used because it is (1) appropriate for interval data, (2) easy to apply and interpret, and (3) the most powerful test for assessing mean differences between groups.²

¹ Dennis E. Hinkle, William Wiersma, and Stephen G. Jurs, Applied Statistics for the Behavioral Sciences (Boston: Houghton Mifflin, 1979), 276.

² Dean J. Champion, Basic Statistics for Social Research, 2nd ed. (New York: MacMillan, 1981), 176.

CHAPTER 4

Analysis of Data

Introduction

The data presented in this chapter resulted from a survey sent to 255 principals of schools in North Carolina which contained both grades three and six. Of the 255 survey instruments sent, 222 (87 percent) were returned and 167 (76.2 percent) of those returned were usable. This resulted in a usable response of 66.5 percent. The majority of the unusable returns were from principals who did not have at least three years tenure in the current position.

Third and sixth grade achievement scores for the schools of the responding principals were obtained from the Department of Research, State Department of Public Instruction, Raleigh, North Carolina. The scores were the results of the Spring 1986 North Carolina Annual Testing Program.

The information provided by the Department of Research included the race of each student categorized as "American Indian," "Black," "White," and "Other." However, since 75 percent of the students were "White," the four categories were collapsed into two, "White" and "Non-White."

Analysis of Variance and t test tables, using the student achievement scores as the dependent variable and

the demographic characteristics of the principals as the independent variables, were constructed and presented in this chapter following the appropriate hypothesis. The tables for each hypothesis were arranged in the following manner: (1) Non-White males, (2) Non-White females, (3) White males, (4) White females, and (5) Grade. The hypotheses were stated in the null format for the purpose of statistical testing. Because of the possibility of a Type I error when using repeated tests, rejection of a hypothesis was based on the significance shown for the group Grade, or all students in the grade.

Presentation of Data

Hypothesis One

Hypothesis one, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals are in one age category and the mean achievement scores of third grade students in schools where the principals are in other age categories.

The questionnaire (Appendix E) asked for the principal's age in eight categories: (1) Under 26, (2) 26-30, (3) 31-35, (4) 36-40, (5) 41-45, (6) 46-50, (7) 51-55, and (8) Over 55. Since the analysis of the responses showed that only 18 percent of the principals were forty years of age or younger, the first four categories were collapsed into one for testing. The analysis also showed that 25 percent of the principals were 41-45 years of age, 19

percent were 46-50, 16 percent were 51-55, and 22 percent were over fifty-five years of age.

Testing for significant differences between school means of student' achievement scores, as defined by the age range of the principals, was conducted by using a one-way analysis of variance. Tables 1 through 5 show the results of this statistical testing of third grade students' achievement scores.

Table 1 shows the analysis of variance summary for Non-White, male, third grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 0.7187 with a probability of 0.5808.

Table 1

Comparison of Non-White Male Third Grade Students' Achievement Scores According to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	2218.9596	554.7399	.7187	.5808
Within Groups	117	90307.8438	771.8619		
Total	121	92526.8034			

p > 0.050

Table 2 shows the analysis of variance summary for Non-White, female, third grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 0.6241 with a probability of 0.6462.

Table 2
Comparison of Non-White Female Third Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	2158.9281	539.7320	.6241	.6462
Within Groups	116	100316.7069	864.7992		
Total	120	102475.6350			

$p > 0.050$

Table 3 shows the analysis of variance summary for White, male, third grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 1.1929 with a probability of 0.3161.

Table 3
 Comparison of White Male Third Grade
 Students' Achievement Scores According
 to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1999.6915	499.9229	1.1929	.3161
Within Groups	158	66216.4120	419.0912		
Total	162	68216.1035			

$p > 0.050$

Table 4 shows the analysis of variance summary for White, female, third grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 1.2233 with a probability of 0.3031.

Table 5 shows the analysis of variance summary for all third grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The F ratio was 1.2233 with a probability of 0.3031. Based on the data presented in Table 5, which shows no significant difference at the 0.050 level, null hypothesis one failed to be rejected.

Table 4

Comparison of White Female Third Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	2391.3692	597.8423	1.2233	.3031
Within Groups	158	77217.2050	488.7165		
Total	162	79608.5742			

$p > 0.050$

Table 5

Comparison of All Third Grade Students'
Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	190184.37	47546.097	.5453	.7027
Within Groups	160	13951271.67	87195.448		
Total	164	14141456.05			

$p > 0.050$

Hypothesis Two

Hypothesis two, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one age category and the mean achievement scores of sixth grade students in schools where the principals are in other age categories.

Tables 6 through 10 present the results of the one-way analysis of variance testing for significant differences in achievement scores of sixth grade students. Table 6 presents the analysis of variance summary for Non-White, male, sixth grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 1.3331 with a probability of 0.2619.

Table 7 shows the analysis of variance summary for Non-White, female, sixth grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 0.1838 with a probability of 0.9464.

Table 6

Comparison of Non-White Male Sixth Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	98902.659	24725.6648	1.3331	.2619
Within Groups	114	2114397.977	18547.3507		
Total	118	2213300.637			

p > 0.050

Table 7

Comparison of Non-White Female Sixth Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	17229.583	4307.3958	.1838	.9464
Within Groups	117	2741423.230	23430.9678		
Total	121	2758652.814			

p > 0.050

Table 8 shows the analysis of variance summary for White, male, sixth grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 0.7247 with a probability of 0.5763.

Table 8

Comparison of White Male Sixth Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	16149.6493	4037.4123	.7247	.5763
Within Groups	153	852342.3710	5570.8652		
Total	157	868492.0202			

$p > 0.050$

Table 9 shows the analysis of variance summary for White, female, sixth grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55.

The analysis indicated no significant difference at the 0.050 level, between the categories. The F ratio was 0.3693 with a probability of 0.8302.

Table 10 shows the analysis of variance summary for all sixth grade students' achievement scores. The age categories of the principals (as tested) were: (1) Under 41, (2) 41-45, (3) 46-50, (4) 51-55, and (5) Over 55. The F ratio was 0.3574 with a probability of 0.8386. Based on the data presented in Table 10, which shows no significant difference at the 0.050 level, null hypothesis two failed to be rejected.

Table 9

Comparison of White Female Sixth Grade
Students' Achievement Scores According
to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	8346.5826	2086.6456	.3693	.8302
Within Groups	153	864501.3010	5650.3353		
Total	157	872847.8836			

$p > 0.050$

Table 10
 Comparison of All Sixth Grade Students'
 Achievement Scores According
 to Principal's Age Category

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	83164.54	20791.136	.3574	.8386
Within Groups	157	9132852.61	58171.036		
Total	161	9216017.16			

$p > 0.050$

Hypothesis Three

Hypothesis three, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals are in one experience category in the current position and the mean achievement scores of third grade students in schools where the principals are in other experience categories in the current position.

The questionnaire (Appendix E) asked for the years of experience in the current position. Responses ranged from three years to thirty-two years with a mode of three, a mean of 9.8, and a median of eight. The majority (56 percent) of the principals had fewer than ten years tenure in the current position.

The principals were divided into five groups according to their experience in the current position: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. Percentages in each group were: (1) 27.6 percent, (2) 28.2 percent, (3) 19.4 percent, (4) 14.1 percent, and (5) 10.6 percent, respectively.

Tables 11 through 16 present the results of the one-way analysis of variance for third grade students achievement scores. Table 11 presents the ANOVA summary for Non-White, male, third grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing of the scores for significant differences did not indicate a difference significant at the 0.050 level. The values which resulted were an F ratio of 0.1584 and a probability of 0.9588.

Table 12 presents the ANOVA summary for Non-White, female, third grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing of the scores for significant differences did indicate a difference significant at the 0.050 level. The values which resulted were an F ratio of 3.3280 and a probability of 0.0128. Although this probability value is less than the 0.050 level, the Scheffe Procedure did not detect a significant difference at the 0.050 level between any pair of groups.

Table 11

Comparison of Non-White Male Third Grade Students'
Achievement Scores According to Principal's
Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	498.3086	124.5772	.1584	.9588
Within Groups	117	92028.4948	786.5683		
Total	121	92526.8034			

p > 0.050

Table 12

Comparison of Non-White Female Third Grade Students'
Achievement Scores According to Principal's
Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	10549.3170	2637.3293	3.3280	.0128*
Within Groups	116	91926.3180	792.4683		
Total	120	102475.6350			

* p < 0.050

Since the Scheffe Procedure did not detect a significant difference (0.050 level) between any two groups, the

Student-Newman-Keuls Procedure was performed and a significant difference was found between the group of principals with fewer than five years experience in the current position and the group with 10 to 14 years experience in the current position. The Scheffe Procedure is a more conservative test than the Newman-Keuls and that may explain why the Scheffe did not give a significant difference and the Newman-Keuls did. Table 13 presents the results of the Student-Newman-Keuls Procedure.

Table 13
Significant Mean Differences Calculated by the
Student-Newman-Keuls Procedure

Mean	Group	Fewer than 5 years	5-9 years	10-14 years	15-19 years	20 years or more
661.0422	Fewer than 5 years					
665.1352	5-9 years					
677.9817	20 years or more					
681.8371	15-19 years					
682.7104	10-14 years	*				

(*) denotes pairs of groups significantly different at the 0.050 level

Table 14 presents the ANOVA summary for White, male, third grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and

(5) over 20. Testing of the scores for differences did not indicate a difference significant at the 0.050 level. The values which resulted were an F ratio of 1.1296 and a probability of 0.3446.

Table 14

Comparison of White Male Third Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1896.5991	474.1498	1.1296	.3446
Within Groups	158	66319.5044	419.7437		
Total	162	68216.1035			

$p > 0.050$

Table 15 presents the ANOVA summary for White, female, third grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing of the scores for differences did not indicate a difference significant at the 0.050 level. The values which resulted were an F ratio of 0.2699 and a probability of 0.8970.

Table 16 presents the ANOVA summary for all third grade students. The categories of experience were: (1)

fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing of the scores for differences did not indicate a difference significant at the 0.050 level. The values which resulted were an F ratio of 0.1584 and a probability of 0.9588. Since this probability exceeds the 0.050 level, null hypothesis three failed to be rejected.

Table 15

Comparison of White Female Third Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	540.3252	135.0813	.2699	.8970
Within Groups	158	79068.2490	500.4320		
Total	162	79608.5742			

$p > 0.050$

Table 16

Comparison of All Third Grade Students'
Achievement Scores According to Principal's
Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	639212.71	159803.18	1.8936	.1141
Within Groups	160	13502243.34	84389.02		
Total	164	14141456.05			

$p > 0.050$

Hypothesis Four

Hypothesis four, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one experience category in the current position and the mean achievement scores of sixth grade students in schools where the principals are in other experience categories in the current position.

Tables 17 through 21 present the data obtained by one-way analysis of variance testing of the sixth grade students scores. Table 17 presents the ANOVA summary of testing the scores of Non-White, male, sixth grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing did not indicate a difference significant at

the 0.050 level in the scores on these students. The values from the testing were an F ratio of 1.4207 and a probability of 0.2316.

Table 17

Comparison of Non-White Male Sixth Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	105089.008	26272.2520	1.4207	.2316
Within Groups	114	2108211.629	18493.0845		
Total	118	2213300.637			

$p > 0.050$

Table 18 presents the ANOVA summary of testing the scores of Non-White, female, sixth grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing did not indicate a difference significant at the 0.050 level in the scores on these students. The values from the testing were an F ratio of 0.0780 and a probability of 0.9889.

Table 19 presents the ANOVA summary of testing the scores of White, male, sixth grade students. The categories of experience were: (1) fewer than 5 years, (2)

5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing did not indicate a difference significant at the 0.050 level in the scores on these students. The values from the testing were an F ratio of 1.1958 and a probability of 0.3150.

Table 18

Comparison of Non-White Female Sixth Grade Students' Achievement by Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	7336.676	1834.1690	.0780	.9889
Within Groups	117	2751316.138	23515.5225		
Total	121	2758652.814			

$p > 0.050$

Table 19

Comparison of White Male Sixth Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	26327.5616	6581.8904	1.1958	.3150
Within Groups	153	842164.4586	5504.3429		
Total	157	868492.0202			

$p > 0.050$

Table 20 presents the ANOVA summary of testing the scores of White, female, sixth grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing did not indicate a difference significant at the 0.050 level in the scores on these students. The values from the testing were an F ratio of 0.6793 and a probability of 0.6073.

Table 20

Comparison of White Female Sixth Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	15231.6866	3807.9216	.6793	.6073
Within Groups	153	857616.1970	5605.3346		
Total	157	872847.8836			

$p > 0.050$

Table 21 presents the ANOVA summary of testing the scores of all sixth grade students. The categories of experience were: (1) fewer than 5 years, (2) 5-9, (3) 10-14, (4) 15-19, and (5) over 20. Testing did indicate a difference significant at the 0.050 level in the scores on these students. The values from the testing were an F ratio of 1.4207 and a probability of 0.0209. Tables 17 through 20 do not indicate any significant differences in

the scores for the sex/race groups. However, null hypothesis four was rejected since a difference significant at the 0.050 level was found for all sixth grade students as a group.

Table 21

Comparison of All Sixth Grade Students' Achievement Scores According to Principal's Tenure in Current Position

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	650230.050	162557.51	2.9795	.0209*
Within Groups	157	8565787.107	54559.15		
Total	161	9216017.157			

* $p < 0.050$

Table 22 presents the results of the Scheffe Procedure which was conducted to determine which pairs of groups were significantly different. The sixth grade students with principals in the 10-14 year tenure category had achievement scores significantly higher only when compared to students with principals in the 5-9 year category.

Table 22
Significant Mean Differences Calculated
by the Scheffe Procedure

Mean	Group	5-9 years	20 years	Fewer than	15-19 year	10-14 year
676.1681	5-9 years					
715.8962	20 years or more					
754.1791	Fewer than 5 years					
783.9554	15-19 years					
857.8375	10-14 years	*				

(*) denotes pairs of groups significantly different at the 0.050 level

Hypothesis Five

Hypothesis five, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals are in one total years experience category and the mean achievement scores of third grade students in schools where the principals are in other total years experience categories.

The survey instrument asked "how many total years experience as a principal do you have?" Total experience ranged from three years to thirty-four years, with a mode of fifteen, a mean and a median of fourteen. These tendencies, when compared with those listed under null

hypothesis three, indicate that many principals have changed schools at least once in their career.

The principals were categorized according to their total experience: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. Percentages of the principals in each group were: (1) 11.8 percent, (2) 17.6 percent, (3) 21.2 percent, (4) 25.3 percent, and (5) 24.1 percent, respectively.

Tables 23 through 27 present the results of the analysis of variance testing of null hypothesis five. Table 23 presents the results for the Non-White, male, third grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. These results (F ratio of 0.1698 and a probability of 0.9534) do not indicate a difference significant at the 0.050 level.

Table 24 presents the results for the Non-White, female, third grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 24 (F ratio of 1.6843 and a probability of 0.1583) do not indicate a difference significant at the 0.050 level.

Table 23

Comparison of Non-White Male Third Grade Students'
Achievement Scores According to Principal's
Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	533.9265	133.4816	.1698	.9534
Within Groups	117	91992.8769	786.2639		
Total	121	92526.8034			

$p > 0.050$

Table 24

Comparison of Non-White Female Third Grade Students'
Achievement Scores According to Principal's
Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	5624.9220	1406.2305	1.6843	.1583
Within Groups	116	96850.7130	834.9199		
Total	120	102475.6350			

$p > 0.050$

Table 25 presents the results for the White, male, third grade students. Categories of experience were: (1)

fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 25 (F ratio of 0.7178 and a probability of 0.5810) do not indicate a difference significant at the 0.050 level.

Table 25

Comparison of White Male Third Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1217.4259	304.3565	.7178	.5810
Within Groups	158	66998.6777	424.0423		
Total	162	68216.1035			

$p > 0.050$

Table 26 presents the results for the White, female, third grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 26 (F ratio of 0.6532 and a probability of 0.6255) do not indicate a difference significant at the 0.050 level.

Table 26

Comparison of White Female Third Grade Students'
Achievement Scores According to Principal's
Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1295.0396	323.7599	.6532	.6255
Within Groups	158	78313.5347	495.6553		
Total	162	79608.5742			

$p > 0.050$

Table 27 presents the results for all third grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 27 (F ratio of 2.1805 and a probability of 0.0735) do not indicate a difference significant at the 0.050 level.

The probability of 0.0735 shown in Table 27 exceeds the 0.050 level, therefore null hypothesis five failed to be rejected.

Table 27

Comparison of All Third Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	731033.44	182758.36	2.1805	.0735
Within Groups	160	13410422.61	83815.14		
Total	164	14141456.05			

$p > 0.050$

Hypothesis Six

Hypothesis six, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals are in one total years experience category and the mean achievement scores of sixth grade students in schools where the principals are in other total years experience categories.

Tables 28 through 33 present the results of the testing of null hypothesis six, using the one-way analysis of variance. Table 28 presents the ANOVA summary for testing the scores of Non-White, male, sixth grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 28 (F ratio of 2.4303 and a probability of 0.0516),

while indicating the possibility of a significant difference, still exceed the 0.050 level.

Table 28

Comparison of Non-White Male Sixth Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	173905.011	43476.2528	2.4303	.0516
Within Groups	114	2039395.626	17889.4353		
Total	118	2213300.637			

$p > 0.050$

Table 29 presents the ANOVA summary for testing the scores of Non-White, female, sixth grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 29 (F ratio of 0.7637 and a probability of 0.5509) do not indicate a significant difference.

Table 30 presents the ANOVA summary for testing the scores of White, male, sixth grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or

more. The results shown in Table 30 (F ratio of 2.2303 and a probability of 0.0683), while somewhat significant, still exceed the 0.050 level.

Table 29

Comparison of Non-White Female Sixth Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	70196.315	17549.0788	.7637	.5509
Within Groups	117	2688456.499	22978.2607		
Total	121	2758652.814			

p > 0.050

Table 30

Comparison of White Male Sixth Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	47850.2476	11962.5619	2.2303	.0683
Within Groups	153	820641.7726	5363.6717		
Total	157	868492.0202			

p > 0.050

Table 31 presents the ANOVA summary for testing the scores of White, female, sixth grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 31 (F ratio of 0.8385 and a probability of 0.5027) do not indicate a significant difference.

Table 31

Comparison of White Female Sixth Grade Students' Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	18724.1780	4681.0445	.8385	.5027
Within Groups	153	854123.7055	5582.5079		
Total	157	872847.8836			

$p > 0.050$

Table 32 presents the ANOVA summary for testing the scores of sixth grade students. Categories of experience were: (1) fewer than five years, (2) 5-9 years, (3) 10-14 years, (4) 15-19 years, and (5) twenty years or more. The results shown in Table 32 (F ratio of 2.4925 and a probability of 0.0453) indicates a significant difference between scores.

While Table 32 does present an F Ratio of 2.4925 and a probability of 0.0453 for the sixth grade students, the Scheffe Procedure failed to detect a significant difference (0.050 level) between any pair of groups. The Student-Newman-Keuls procedure was then used and a difference significant at the 0.050 level was found between the group with 5 to 9 years experience and the group with 15 to 19 years experience. These results are presented in Table 33. Hypothesis six was, therefore, rejected.

Table 32

Comparison of All Sixth Grade Student's Achievement Scores According to Principal's Total Administrative Experience

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	550305.195	137576.30	2.4925	.0453*
Within Groups	157	8665711.963	55195.62		
Total	161	9216017.157			

* $p < 0.050$

Table 33

Significant Mean Differences Calculated by the
Student-Newman-Keuls Procedure

Mean	Group	5 - 9 y e a r s	2 0 y e a r s	1 0 - 1 4 y e a r	F e w e r t h a n	1 5 - 1 9 y e a r
644.0417	5-9 years					
745.7228	20 years or more					
762.0656	10-14 years					
786.0070	Fewer than 5 years					
818.4543	15-19 years	*				

(*) denotes pairs of groups significantly different at the 0.050 level

Hypothesis Seven

Hypothesis seven, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals are male and the mean achievement scores of third grade students in schools where the principals are female.

Of the responding principals, 86 percent were male and 14 percent were female. Since sex is a dichotomous characteristic, the t test of independent means was used to test null hypotheses seven and eight.

Tables 34 through 38 present the results of testing null hypothesis seven. The tables do not have the same N

because not all schools had both Non-White and White males and females in both third and sixth grade.

Table 34 presents the results of the analysis of data for the Non-White, male, third grade students. This analysis does not reveal a significant difference between the scores of students who have a male principal and those who do not, as evidenced by a mean score of 652.4 with a standard deviation of 29.01 for the male principals and a mean score of 656.5 with a standard deviation of 17.29 for the female principals. Statistical testing of these data, when using the separate variance estimate, resulted in a t-value of -0.80 and a 2-tailed probability of 0.428.

Table 35 presents the results of the analysis of data for the Non-White, female, third grade students. This analysis does not reveal a significant difference between the scores of students who have a male principal and those who have a female principal, as evidenced by a mean score of 671.1 with a standard deviation of 30.86 for the male principals and a mean score of 674.4 with a standard deviation of 17.54 for the female principals. Statistical testing of these data, when using the separate variance estimate, resulted in a t-value of -0.59 and a 2-tailed probability of 0.556.

Table 34

Comparison of Non-White Male Third Grade Students'
Achievement Scores Grouped According
to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	105	652.4	29.01	2.831	-0.80	33	0.428
Female	17	656.5	17.29	4.194			

p > 0.050

Table 35

Comparison of Non-White Female Third Grade Students'
Achievement Scores Grouped According
to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	103	671.1	30.86	3.040	-0.59	38	0.556
Female	17	674.2	17.54	4.134			

p > 0.050

Table 36 presents the results of testing the scores of the White, male, third grade students. The data reveal no significant difference between the achievement scores of

the students in schools with a male principal and the students in schools with a female principal. The male principals had a mean score of 682.3 with a standard deviation of 20.05 while the female principals has a mean score of 690.2 with a standard deviation of 22.47. These data, when tested using the pooled variance estimate, resulted in a t-value of -1.72 and a 2-tailed probability of 0.088.

Table 36

Comparison of White Male Third Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	140	682.3	20.05	1.695	-1.72	161	0.088
Female	23	690.2	22.47	4.685			

$p > 0.050$

In contrast, Table 37 shows a significant difference between the achievement scores of White, female, third grade students who have a male principal and those who have a female principal. The students of the female principals scored higher than the students of the male principals, as evidenced by the mean score of 702.1 and standard deviation of 14.08 for the female principals, compared to a mean

score of 694.0 and standard deviation of 23.70 for the male principals. When these data were subjected to statistical testing, using the separate variance estimate, a t-value of -2.28 and a 2-tailed probability of 0.027 resulted.

Table 37

Comparison of White Female Third Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	140	694.0	23.70	1.950	-2.28	44	0.027*
Female	23	702.1	14.08	2.935			

* $p < 0.050$

Table 38 presents the results of the statistical testing of the scores for all third grade students. These data reveal no significant difference between the achievement scores of third grade students who have a male principal and those who have a female principal as evidenced by a mean score of 2326.2 with a standard deviation of 556.9 for male principals, compared to a mean score of 2405.1 and a standard deviation of 569.0 for the female principals. Statistical testing of these data resulted in a t-value of -0.63 and a 2-tailed probability of 0.530. Since the

probability of 0.530 shown in Table 36 exceeds the 0.050 level, null hypothesis seven failed to be rejected.

Table 38

Comparison of All Third Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	142	2326.2	556.9	46.734	-0.63	163	0.530
Female	23	2405.1	569.0	118.642			

$p > 0.050$

Hypothesis Eight

Hypothesis eight, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals are male and the mean achievement scores of sixth grade students in schools where the principals are female.

Tables 39 through 43 present the results of testing the null hypothesis by using the t test. The slight preference for female principals indicated by third grade students is not shown as strongly by the sixth grade students.

Table 39 presents the data for the Non-White, male sixth grade students. This table does not reveal a significant difference between the achievement scores of those students who have a male principal and those students who have a female principal. The male principals selected here had a mean score of 418.4 with a standard deviation of 138.83 compared to the female principals who had a mean score of 437.2 with a standard deviation of 129.93. Statistical testing of these data, using the t test and the pooled variance estimate, resulted in a t -value of -0.57 and a 2-tailed probability of 0.570.

Table 39

Comparison of Non-White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	98	418.4	138.83	14.024	-0.57	117	0.570
Female	21	437.2	129.93	28.354			

$p > 0.050$

Table 40 shows the results of testing the scores of the Non-White, female, sixth grade students. The data reveal no significant difference between the achievement

scores of the students who have a male principal and the students who have a female principal. The male principals had a mean score of 467.0 with a standard deviation of 156.23 while the female principals had a mean score of 469.9 with a standard deviation of 122.24. These data, when tested using the pooled variance estimate, resulted in a t-value of -0.08 and a 2-tailed probability of 0.938.

Table 40

Comparison of Non-White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	103	467.0	156.23	15.394	-0.08	120	0.938
Female	19	469.9	122.24	28.043			

p > 0.050

Table 41 presents the data for the White, male sixth grade students. This table does not reveal a significant difference between the achievement scores of those students who have a male principal and those students who have a female principal. The male principals selected here had a mean score of 446.1 with a standard deviation of 67.17 compared to the female principals who had a mean score of

411.1 with a standard deviation of 102.90. Statistical testing of these data, using the t test and the separate variance estimate, resulted in a t -value of 1.61 and a 2-tailed probability of 0.120.

Table 41

Comparison of White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	134	446.1	67.17	5.803	1.61	27	0.120
Female	24	411.1	102.90	21.003			

$p > 0.050$

Table 42 presents the data for the White, female sixth grade students. This table does not reveal a significant difference between the achievement scores of those students who have a male principal and those students who have a female principal. The male principals selected here had a mean score of 456.0 with a standard deviation of 69.01 compared to the female principals who had a mean score of 456.4 with a standard deviation of 102.03. Statistical testing of these data, using the t test and the separate

variance estimate, resulted in a t-value of -0.02 and a 2-tailed probability of 0.984.

Table 42

Comparison of White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	134	456.0	69.01	5.962	-0.02	27	0.984
Female	24	456.4	102.03	20.826			

$p > 0.050$

Table 43 presents the results of the statistical testing of the scores for all sixth grade students. These data reveal no significant difference between the achievement scores of sixth grade students who have a male principal and those who have a female principal as evidenced by a mean score of 1521.6 with a standard deviation of 413.1 for male principals, compared to a mean score of 1622.1 and a standard deviation of 334.8 for the female principals. Statistical testing of these data resulted in a t-value of -1.13 and a 2-tailed probability of 0.261. Since the probability of 0.261 shown in Table 41 exceeds the 0.050 level, null hypothesis eight failed to be rejected. Table 43

shows a probability of 0.261 for all sixth grade students so hypothesis eight failed to be rejected.

Table 43
Comparison of All Sixth Grade Students'
Achievement Scores Grouped According
to Principal's Sex

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Male	138	1521.6	413.1	35.165	-1.13	160	0.261
Female	24	1622.1	334.8	68.341			

$p > 0.050$

Hypothesis Nine

Hypothesis nine, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals have elementary teaching experience and the mean achievement scores of third grade students in schools where the principals have secondary teaching experience.

For purposes of testing hypotheses nine and ten, elementary teaching experience means teaching experience in grades Kindergarten through six and secondary teaching experience means experience in grades seven through twelve. This is the commonly accepted division.

Elementary teaching experience among the sample principals ranged from one year to twenty-nine years, with a mean of 5.6, a mode of two, and a median of four. Since North Carolina requires a minimum of three years teaching experience to qualify for a principal's certificate, these numbers would indicate that many of the principals also had secondary teaching experience. Over half, 51 percent, of the principals reported no elementary teaching experience at all. For purposes of testing this null hypothesis, a principal was categorized as elementary or secondary based on whether the majority of his/her teaching experience was elementary or secondary.

The t test was used to test null hypothesis nine and ten since only two characteristics were being considered. Tables 44 through 48 present the results of this testing for hypothesis nine. These tables show no consistent trend toward favoring elementary or secondary teaching experience among these third grade students.

Table 44 presents the data for the Non-White, male third grade students. This table does not reveal a significant difference between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 654.3 with a standard deviation of 30.83 compared to the principals with secondary teaching

experience who had a mean score of 652.3 with a standard deviation of 26.27. Statistical testing of these data, using the t test and the pooled variance estimate, resulted in a t -value of 0.35 and a 2-tailed probability of 0.726.

Table 44

Comparison of Non-White Male Third Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	38	654.3	30.83	5.001	0.35	120	0.726
Second.	84	652.3	26.27	2.866			

$p > 0.050$

Table 45 presents the data for the Non-White, female, third grade students. This table does not reveal a significant difference between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 667.7 with a standard deviation of 18.54 compared to the principals with secondary teaching experience who had a mean score of 673.1 with a standard

deviation of 32.55. Statistical testing of these data, using the t test and the separate variance estimate, resulted in a t -value of -1.16 and a 2-tailed probability of 0.250.

Table 45

Comparison of Non-White Female Third Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	35	667.7	18.54	3.134	-1.16	106	0.250
Second.	86	673.1	32.55	3.510			

$p > 0.050$

Table 46 presents the results of the analysis of data for the White, male, third grade students. This analysis does not reveal a significant difference between the scores of students in schools with a principal who has elementary teaching experience and students in schools with a principal who has secondary teaching experience, as evidenced by a mean score of 685.6 and a standard deviation of 26.20 for the principals with elementary teaching experience compared to a mean score of 682.6 with a standard deviation of

17.87 for the principals with secondary teaching experience. Statistical testing of these data, when using the separate variance estimate, resulted in a t-value of 0.70 and a 2-tailed probability of 0.485.

Table 46

Comparison of White Male Third Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	46	685.6	26.20	3.862	0.70	62	0.485
Second.	117	682.6	17.87	1.652			

$p > 0.050$

Table 47 presents the data for the White, female third grade students. This table does not present a significant difference between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 691.3 and a standard deviation of 33.12, compared to the principals with secondary teaching experience who had a mean score of 696.8 and a standard deviation of 15.65. Statistical testing of these data,

using the t test and the separate variance estimate, resulted in a t -value of -1.08 and a 2-tailed probability of 0.285 .

Table 47

Comparison of White Female Third Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	47	691.3	33.12	4.831	-1.08	55	0.285
Second.	116	696.8	15.65	1.453			

$p > 0.050$

Table 48 presents the data for all the third grade students. Like the other tables for third grade students, this table does not present a significant difference between the achievement scores of those students whose principal had elementary teaching experience and those students whose principal had secondary teaching experience. The principals with elementary teaching experience had a mean score of 2388.5 and a standard deviation of 523.6 , compared to the principals with secondary teaching experience who had a mean score of 2316.8 and a standard deviation of 571.3 . Statistical testing of these data,

using the t test and the pooled variance estimate, resulted in a t -value of 0.74 and a 2-tailed probability of 0.457. Since the value of 0.457 exceeds the maximum level of 0.050, hypothesis nine failed to be rejected.

Table 48

Comparison of All Third Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	47	2388.5	523.6	76.38	0.74	163	0.457
Second.	118	2316.8	571.3	62.60			

$p > 0.050$

Hypothesis Ten

Hypothesis ten, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals have elementary teaching experience and the mean achievement scores of sixth grade students in schools where the principals have secondary teaching experience.

Secondary teaching experience ranged from one to twenty-three years with a mean of 8.3, a mode of six, and a median of seven. Only 19 percent of the principals had no secondary teaching experience.

For purposes of testing null hypothesis ten, a principal was categorized as elementary or secondary based on whether the majority of his/her teaching experience was elementary or secondary. Tables 49 through 53 present the results of testing hypothesis ten, using the t test.

The data presented in Table 49 indicate that the Non-White, male sixth grade students, with principals who have elementary teaching experience, scored significantly higher than the Non-White, male, sixth grade students whose principals have secondary teaching experience. The principals with elementary teaching experience had a mean score of 463.4 and a standard deviation of 118.52, compared to the principals with secondary teaching experience who had a mean score of 403.0 and a standard deviation of 141.18. Statistical testing of these data, using the t test and

Table 49

Comparison of Non-White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	37	463.4	118.52	19.485	2.27	117	0.025
Second.	82	403.0	141.18	15.590			

$p < 0.050$

the pooled variance estimate, resulted in a t-value of 2.27 and a 2-tailed probability of 0.025, less than the level of 0.050 set as the maximum acceptable.

Table 50 presents the data for the Non-White, female, sixth grade students. This table does not present a significant difference between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 467.4 and a standard deviation of 147.30, compared to the principals with secondary teaching experience who had a mean score of 467.4 and a standard deviation of 153.58. Statistical testing of these data, using the \underline{t} test and the pooled variance estimate, resulted in a t-value of -0.00 and a 2-tailed probability of 0.999.

Table 50

Comparison of Non-White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	39	467.4	147.30	23.587	-0.00	120	0.999
Second.	83	467.4	153.58	16.858			

$p > 0.050$

Data for the White, male, sixth grade students are presented in Table 51. This table does not present a significant difference between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 434.0 and a standard deviation of 91.86, compared to the principals with secondary teaching experience who had a mean score of 443.5 and a standard deviation of 66.43. Statistical testing of these data, using the t test and the separate variance estimate, resulted in a t -value of -0.63 and a 2-tailed probability of 0.528.

Data for the White, female, sixth grade students were presented in Table 52. No significant difference was found between the achievement scores of those students whose principal has elementary teaching experience and those students whose principal has secondary teaching experience. The principals with elementary teaching experience had a mean score of 448.7 and a standard deviation of 78.99, compared to the principals with secondary teaching experience who had a mean score of 458.7 and a standard deviation of 72.88. Statistical testing of these data, using the t test and the pooled variance estimate, resulted in a t -value of -0.78 and a 2-tailed probability of 0.438.

Table 51

Comparison of White Male Sixth Grade Students'
Achievement Scores Grouped According to
Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	45	434.0	91.86	13.693	-0.63	63	0.528
Second.	113	443.5	66.43	6.250			

p > 0.050

Table 52

Comparison of White Female Sixth Grade Students'
Achievement Scores Grouped According to
Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	45	448.7	78.99	11.775	-0.78	156	0.438
Second.	113	458.9	72.88	6.856			

p > 0.050

Table 53 presents the data for all the sixth grade students. No significant difference was found between the achievement scores of sixth grade students whose principal had elementary teaching experience and sixth grade students whose principal had secondary teaching experience, as evidenced by a mean score of 1597.8 and a standard deviation of 382.1 for the principals with elementary teaching experience, compared to a mean score of 1511.5 and a standard deviation of 410.4 for the principals with secondary teaching experience. Statistical testing of these data, using the t test and the pooled variance estimate, resulted in a t -value of 1.24 and a 2-tailed probability of 0.217. Since the value of 0.217 exceeds the maximum level of 0.050, hypothesis ten failed to be rejected.

Table 53

Comparison of All Sixth Grade Students'
Achievement Scores Grouped According to
Principal's Teaching Experience

Prin. Exper.	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Elemen.	47	1597.8	382.1	55.73	1.24	160	0.217
Second.	115	1511.5	410.4	38.27			

$p > 0.050$

Hypothesis Eleven

Hypothesis eleven, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals are white and the mean achievement scores of third grade students in schools where the principals are not white.

Eighty-four percent of the studied principals were White, 14 percent were Black, 1 percent were American Indian, and 1 percent were Hispanic. These four categories were collapsed into two for this study--White and Non-White. Since these categories had to be collapsed, a t test was used to test null hypotheses eleven and twelve.

Tables 54 through 58 present the results from testing null hypothesis eleven. The only group of third grade students not showing a significant difference in achievement was the Non-White males as is shown in Table 54. All achievement differences favored the White principals.

Data from comparing achievement scores of Non-White, male, third grade students are presented in Table 54. No significant difference was found between the achievement scores of students whose principal was White and the achievement scores of students whose principal was Non-White. The Non-White principals had a mean score of 651.8, and a standard deviation of 35.53, compared to a mean score of 653.2 and a standard deviation of 28.29 for the White

principals. Statistical testing of these data yielded a t-value of -0.23 and a probability of 0.819.

Table 54

Comparison of Non-White Male Third Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	25	651.8	25.53	5.106	-0.23	120	0.819
White	97	653.2	28.29	2.873			

$p > 0.050$

Table 55 presents the data from comparing the achievement scores of Non-White, female, third grade students. A significant difference was found between the achievement scores of those students whose principal was White and those students whose principal was Non-White. The students with a White principal scored significantly higher than the students with a Non-White principal. The White principals has a mean score of 673.4 and a standard deviation of 31.81, compared to a mean score of 664.5 and standard deviation of 14.90 for the Non-White principals. Testing these data yielded a t-value of -2.09 and a 2-tailed probability of 0.040.

Table 55

Comparison of Non-White Female Third Grade Students'
Achievement Scores Grouped According
to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	25	664.5	14.90	2.819	-2.09	90	0.040*
White	96	673.4	31.81	3.246			

$p < 0.050$

A significant difference was also found between the achievement scores of White, male, third grade students whose principal was White and the scores of White, male, third grade students whose principal was Non-White. The students of the White principals had a mean score of 684.9 and a standard deviation of 19.86, compared to the mean score of 674.7 and standard deviation of 22.71 for the students of the Non-White principals. These data, when tested, resulted in a t-value of -2.22 and a probability of 0.028, well within the 0.050 level. These data and values are presented in Table 56.

Data from testing the achievement scores of White, female, third grade students are presented in Table 57. Here, also, a significant difference was found between the scores of students whose principal was White and the scores

of students whose principal was Non-White, with the students of the White principals scoring higher. The students of the White principals had a mean score of 698.1 and a

Table 56

Comparison of White Male Third Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	23	674.7	22.71	4.734	-2.22	161	0.028
White	140	684.9	19.86	1.679			

p < 0.050

Table 57

Comparison of White Female Third Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	23	677.2	41.28	8.606	-2.41	23	0.024
White	140	698.1	15.51	1.311			

p < 0.050

standard deviation of 15.51, while the students of the Non-White principals had a mean score of 677.2 and a standard deviation of 41.28. These data resulted in a t-value of -2.41 and a probability of 0.024.

Table 58 displays the data from testing all third grade students achievement scores according to the race of the principal. Third grade students who had a White principal scored significantly higher than did the students who had a Non-White principal. The mean score for the students of the White principals was 2297.4 and a standard deviation of 581.1. The mean score for the students of the Non-White principals was 2560.0 and a standard deviation of 327.9. These data resulted in a t-value of 2.19 and a probability of 0.030. Since this probability is less than the established level of 0.050, hypothesis eleven was rejected.

Table 58

Comparison of All Third Grade Students'
Achievement Scores Grouped According
to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	25	2560.0	327.9	65.59	2.19	163	0.030
White	140	2297.4	581.1	49.11			

$p < 0.050$

Hypothesis Twelve

Hypothesis twelve, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals are white and the mean achievement scores of sixth grade students in schools where the principals are not white.

The significant differences shown for the third grade scores were not present in the sixth grade scores. The results of testing the sixth grade scores are given in Tables 59 through 63.

No significant difference was found between the achievement scores of Non-White, male, sixth grade students whose principal was Non-White and those students whose principal was White. These data are displayed in Table 59. The mean score for the students of the Non-White principals was 433.1 with a standard deviation of 111.05, compared to a mean score for the students of the White principals of 418.9 with a standard deviation of 143.13. These data resulted in a t-value of 0.45 and a 2-tailed probability of 0.650.

The data displayed in Table 60 do not reveal a significant difference between the achievement scores of Non-White, female, sixth grade students whose principals are Non-White and those students whose principals are White. The students of the Non-White principals had a mean score of 453.2 with a standard deviation of 96.36, compared to a mean score of 470.9 and a standard deviation of 161.79 for

the students of the White principals, resulting in a t-value of -0.69 and a probability of 0.491.

Table 59

Comparison of Non-White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	24	433.1	111.05	22.667	0.45	117	0.650
White	95	418.9	143.13	14.685			

$p > 0.050$

Table 60

Comparison of Non-White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	24	453.2	96.36	19.669	-0.69	59	0.491
White	98	470.9	161.79	16.343			

$p > 0.050$

Analysis of the data revealed no significant difference between the achievement scores of White, male, sixth grade students who had a Non-White principal and the scores of students who had a White principal, as evidenced by a mean score of 453.4 with a standard deviation of 102.84 for the students of the Non-White principals and a mean score of 439.0 with a standard deviation of 69.62 for the students of the White principals. Statistical testing of these data resulted in a t-value of 0.60 and a probability of 0.552. These data and results are reported in Table 61.

Table 61

Comparison of White Male Sixth Grade Students'
Achievement Scores Grouped According
to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	20	453.4	102.84	22.997	0.60	21	0.552
White	138	439.0	69.62	5.926			

$p > 0.050$

Data reported in Table 62 do not reveal a significant difference between the achievement scores of White, female, sixth grade students who had a Non-White principal and the

students who had a White principal. This was evidenced by a mean score of 457.8 with a standard deviation of 112.61 for the students of the Non-White principals compared to a mean score of 455.8 with a standard deviation of 67.91 for the students of the White principals. Statistical testing of these data yielded a t-value of 0.08 and a probability of 0.937.

Table 62

Comparison of White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Race

Prin. Race	N	Mean	Std. Dev.	Std. Error	Separate Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	20	457.8	112.61	25.180	0.08	21	0.937
White	138	455.8	67.91	5.781			

$p > 0.050$

Table 63 presents the results of testing the achievement scores of all sixth grade students. No significant difference was found, as evidenced by a mean score of 1645.7 with a standard deviation of 375.7 for the students of the Non-White principals compared to a mean score of 1517.5 with a standard deviation of 406.0 for the students of the White principals. Statistical testing resulted in a

t-value of 1.44 and a 2-tailed probability of 0.151. Since this probability was greater than the 0.050 level, null hypothesis twelve failed to be rejected.

Table 63

Comparison of All Sixth Grade Students'
Achievement Scores Grouped According
to Principal's Race

Prin. Sex	N	Mean	Std. Dev.	Std. Error	Pooled Variance Estimate		
					t Value	Deg. of Freedom	2-Tail Prob.
Non-White	24	1645.7	375.7	76.70	1.44	160	0.151
White	138	1517.5	406.0	34.56			

$p > 0.050$

Hypothesis Thirteen

Hypothesis thirteen, in the null form, stated:

There will be no significant difference between the mean achievement scores of third grade students in schools where the principals have a master's degree and the mean achievement scores of third grade students in schools where the principals have additional advanced educational degrees.

North Carolina requires a person to hold a Master's Degree in order to obtain a principal's certification. It was not surprising that all of the studied principals reported master's degrees or higher. Sixty-five percent

reported the master's degree as the highest degree earned, 27 percent reported the specialist degree and 8 percent reported they held a doctorate.

Tables 64 through 68 report the results of testing for significant differences between the achievement scores of students in schools where principals have different levels of education. Table 64 reports the results of the analysis of variance conducted to test for significant differences between the achievement scores of students of principals with the various levels of education. The levels of education tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Statistical testing resulted in an F ratio of 0.2508 and a probability of 0.7786.

Table 64

Comparison of Non-White Male Third Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	388.3110	194.1555	.2508	.7786
Within Groups	119	92138.4924	774.2730		
Total	121	92526.8034			

$p > 0.050$

Table 65 presents an analysis of variance summary for the testing of the achievement scores of Non-White, female, third grade students grouped according to the level of education of the principals. The summary did not reveal a difference significant at the 0.050 level. Testing yielded an F ratio of 0.2098 and a probability of 0.8110.

Table 65

Comparison of Non-White Female Third Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	363.1309	181.5654	.2098	.8110
Within Groups	118	102112.5042	865.3602		
Total	120	102475.6350			

$p > 0.050$

Data displayed in Table 66 are the results of testing the achievement scores of White, male, third grade students of principals with the various levels of education. The levels of education tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Statistical testing of these data did not reveal a difference significant at the 0.050 level, but resulted in an F ratio of 0.8517 and a probability of 0.4286.

Table 67 shows a summary of analysis of variance testing of White, female, third grade students' achievement scores when grouped according to the level of education of the principals. The levels tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. No difference significant at the 0.050 level was found. Results of testing were an F ratio of 2.0301 and a probability of 0.1347.

Table 66

Comparison of White Male Third Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	718.5557	359.2779	.8517	.4286
Within Groups	160	67497.5478	421.8597		
Total	162	68216.1035			

$p > 0.050$

Table 67

Comparison of White Female Third Grade Students'
Achievement Scores Grouped According
to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	1970.1803	985.0902	2.0301	.1347
Within Groups	160	77638.3939	485.2400		
Total	162	79608.5742			

$p > 0.050$

Table 68 presents an ANOVA summary of the testing of all third grade students' achievement scores when grouped according to the principal's level of education. The levels tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Testing resulted in an F ratio of 0.8048 and a probability of 0.449. No difference significant at the 0.050 level was found between the levels, therefore null hypothesis thirteen failed to be rejected.

Table 68

Comparison of All Third Grade Students'
Achievement Scores Grouped According
to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	139124.2	69562.110	.8048	.4490
Within Groups	162	14002331.8	86434.147		
Total	164	14141456.1			

$p > 0.050$

Hypothesis Fourteen

Hypothesis fourteen, in the null form, stated:

There will be no significant difference between the mean achievement scores of sixth grade students in schools where the principals have a Master's degree and the mean achievement scores of sixth grade students in schools where the principals have additional advanced educational degrees.

Tables 69 through 73 present the analysis of variance summaries for testing sixth grade students' achievement scores when grouped according to the principal's educational level. The levels tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Table 69 presents the analysis of variance summary for testing Non-White, male, sixth grade students' achievement

scores when grouped according to the principal's level of education. No difference significant at the 0.050 level was found. Statistical testing of these data resulted in an F ratio of 0.5722 and a probability of 0.5659.

Table 69

Comparison of Non-White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	21621.340	10810.6701	.5722	.5659
Within Groups	116	2191679.297	18893.7870		
Total	118	2213300.637			

$p > 0.050$

Table 70 presents the ANOVA summary for testing the achievement scores of Non-White, female, sixth grade students. The levels of education tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. The analysis indicated no difference significant at the 0.050 level, but yielded an F ratio of 1.1506 and a probability of 0.3199.

Table 70

Comparison of Non-White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	52334.046	26167.0229	1.1506	.3199
Within Groups	119	2706318.768	22742.1745		
Total	121	2758652.814			

$p > 0.050$

Data presented in Table 71 are the results of the analysis of variance testing of the achievement scores of White, male, sixth grade students according to the educational levels of the principals. The levels tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Statistical testing of these data did not reveal any differences significant at the 0.050 level between any of the levels. The F ratio was 0.1570 and the probability was 0.8548.

Table 72 presents the ANOVA summary for the testing of achievement scores of White, female, sixth grade students according to the educational levels of the principals. The levels of education tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. The analysis

indicated no difference significant at the 0.050 level, but yielded an F ratio of 1.1506 and a probability of 0.3199.

Table 71

Comparison of White Male Sixth Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	1756.1274	878.0637	.1570	.8548
Within Groups	155	866735.8928	5591.8445		
Total	157	868492.0202			

$p > 0.050$

Table 72

Comparison of White Female Sixth Grade Students' Achievement Scores Grouped According to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	5282.7549	2641.3775	.4719	.6247
Within Groups	155	867565.1287	5597.1944		
Total	157	872847.8836			

$p > 0.050$

Statistical testing of all sixth grade students' achievement scores according to the educational level of the principal did not reveal any differences significant at the 0.050 level. The educational levels tested were: (1) master's degree, (2) educational specialist, and (3) doctorate. Testing yielded an F ratio of .8098 and a probability of 0.4468, therefore, null hypothesis fourteen failed to be rejected. The ANOVA summary for this testing is presented in Table 73.

Table 73

Comparison of All Sixth Grade Students'
Achievement Scores Grouped According
to Principal's Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	92927.27	46463.6354	.8098	.4468
Within Groups	159	9123089.89	57377.9238		
Total	161	9216017.16			

$p > 0.050$

CHAPTER 5

Summary and Findings, Conclusions, Discussion, and Recommendations

The purpose of this study was to consider the specific demographic characteristics of elementary school principals in conjunction with the academic achievement of students, in an attempt to identify characteristics that might assist in the identification of effective principals. The characteristics tested were the principal's age, sex, race, tenure in the current position, total experience as a principal, level of previous teaching experience, and level of education. This chapter presents a summary and findings of the study, conclusions, discussion, and offers recommendations.

Summary and Findings

One of the consistent conclusions of the growing body of school effectiveness research has been that effective schools have effective leadership--usually the principal. This study reviewed much of the literature on effective schools and effective principals, attempting to identify the characteristics of a strong, effective principal which affected the academic achievement of students.

After a review of literature from which the identified characteristics were chosen, a survey instrument was constructed and sent to 255 elementary principals in North Carolina. Of the 255 surveys sent, 222 (87%) were returned and 166 (66.5%) were usable.

Third and sixth grade student achievement scores for the schools of the selected principals were obtained from the Department of Research, State Department of Public Instruction, in Raleigh, North Carolina. These scores were totaled by sex within race and the means were computer-matched to the respective principals.

Analysis of variance and t tests were performed to determine if significant differences existed in the academic achievement of students when compared by the characteristics of the principals. Analysis of variance was used to test the characteristics of age, tenure in the current position, total experience (as a principal), and education. The t test was performed to test the characteristics of sex, teaching experience, and race.

Based on the results of analyzing the data, the findings of this study were as follows:

1. Age of the principal was not found to be a significant factor with any age or sex/race group in terms of student achievement scores.
2. Level of education of the principal was not found to be a significant factor with any age or

sex/race group in terms of student achievement scores.

3. Tenure in the current position was found to be a significant factor for Non-White, female, third grade students in terms of student achievement scores.
4. Tenure in the current position was found to be a significant factor, in terms of student achievement scores, for all sixth grade students when considered as a group, but not for any of the sex/race groups.
5. Total administrative experience was also found to be a significant factor, in terms of student achievement scores, for all sixth grade students when considered as a group, but not for any of the sex/race groups.
6. Sex of the principal was found to be a significant factor, in terms of student achievement scores, only for White, female, third grade students.
7. Race of the principal was found to be a significant factor, in terms of student achievement scores, for third grade students.

8. Prior teaching experience was found to be a significant factor, in terms of student achievement scores, only for Non-White, male, sixth grade students.

Conclusions

As this study was concerned only with North Carolina principals and students, any conclusions or generalizations drawn from the above findings should be considered applicable only to North Carolina. Based on the findings of the study, the following conclusions seem warranted:

1. It appears that school boards need not place too much emphasis on any of the characteristics studied when employing principals for schools with both third and sixth grades. The race and sex of the applicant might be considered more strongly when hiring for a school with only the primary grades.
2. There is no significant difference in the achievement scores of students in schools administered by principals of different ages.
3. There is no significant difference in the student achievement scores in schools administered by principals with a Master's Degree and schools administered by principals with higher degrees.

4. The sex of the principal of a school is not a factor in achievement of students except possibly for White, female, third grade students.
5. The achievement scores of third grade students may be higher in schools having a White principal.
6. Third grade achievement scores are significantly higher in schools administered by a White principal than in schools administered by a Non-White principal.
7. Tenure in the current position may be a factor in the achievement scores of sixth grade students and possibly for Non-White, female, third grade students.
8. Total administrative experience may be a factor in the achievement scores of sixth grade students.

Discussion

School boards and superintendents, when hiring an elementary principal, often use the characteristics studied in this investigation as a basis for selection or rejection. From the findings of this study, this researcher concludes that these characteristics are not significant factors in student achievement, particularly at the sixth grade level. This is not to imply that the principal is not critical to an effective school--for other studies have

established that fact--but to state that these characteristics apparently are not critical in order to be an effective principal.

School boards and superintendents may not be hiring the best candidate when they use one of these characteristics as the final determining factor, yet it is realized that these are the more tangible, and therefore the more easily compared, attributes of the candidates. It is also often necessary to establish acceptable minimums for certain of these characteristics, but beyond that, reliance on them is questionable.

What then, should school boards and superintendents use for selection criteria? That would be difficult to state with any certainty, for education and achievement of students are a complex interplay of tangible and intangible attributes involving the student, the teacher, and the principal. This interplay could have obscured differences in this study. Perhaps future studies can isolate and focus on some of these intangibles in the principal.

Recommendations

The following recommendations are based on the findings of this study and have implications for future research:

1. Additional research should be conducted to refine the findings shown in this study for the characteristics which appeared to be partially effective, such as sex, race, tenure in the current position, and total administrative experience.
2. Future studies might consider the race of the principal in relation to the predominant race of the students.
3. This study might be replicated and use outlier techniques to identify schools and principals for study.
4. Future studies should be stratified for sex and race.
5. Future studies might consider the apparently intangible characteristics, such as personality, a smile, or the non-threatening but reinforcing presence of the principal.

BIBLIOGRAPHY

Bibliography

- Alexander, Lamar. "Five Deep Ruts Hurting our Schools."
Address at Founder's Day, University of the South.
October 1984.
- Alkire, Gary F., and Patrick C. Dorin. "Elementary
Principals: How Do We Compare with Middle Managers in
Industry?" Education 99 (Summer 1979): 381-84.
- American Association of School Administrators. The Right
Principal for the Right School. Washington: American
Association of School Administrators, 1967.
- Austin, Gilbert R. "Exemplary Schools and the Search for
Effectiveness." Educational Leadership 37, no. 1
(1979): 10-14.
- . "Exemplary Schools and Their Identification." New
Direction for Testing and Measurement 10 (1981):
31-48.
- Baltzell, D. Catherine, and Robert A. Dentler. "Selecting
American School Principals: A Sourcebook for
Educators." ERIC Reproduction Document ED236 811.
- . "Selecting American School Principals: Executive
Summary." Cambridge, Mass.: Abt Associates, 1983
(ERIC Reproduction Document ED239 421).
- Barth, Roland S. "Reflections on the Principalship."
Thrust for Educational Leadership 9, no. 5 (1980):
4-7.
- Benjamin, Robert. "The Rose in the Forest." Principal 60,
no. 4 (1981): 11-15.
- Blumberg, Arthur, and William Greenfield. The Effective
Principal. Boston: Allyn and Bacon, 1980.
- Bossert, Steven T., et al. "The Instructional Management
Role of the Principal." Educational Administration
Quarterly 18, no. 3 (1982): 32-64.
- Champion, Dean J. Basic Statistics for Social Research.
2nd ed. New York: Macmillan, 1981.
- Carlson, T. R. Administrators and Reading. New York:
Harcourt Brace Jovanovich, 1972.

- De Bevoise, Wynn. "Synthesis of Research on the Principal as Instructional Leader." Educational Leadership 41, no. 5 (1984): 14-20.
- Department of Elementary School Principals. The Elementary School Principalship in 1968--A Research Study. Washington, D.C.: Department of Elementary School Principals, National Education Association, 1968.
- Dwyer, David C. "The Search for Instructional Leadership: Routines and Subtleties in the Principal's Role." Educational Leadership 41, no. 5 (1984): 32-37.
- Gross, Neal, and Robert E. Herriott. Staff Leadership in Public Schools: A Sociological Inquiry. New York: John Wiley and Sons, 1965.
- Gross, Neal, and Anne E. Trask. The Sex Factor and the Management of Schools. New York: John Wiley and Sons, 1976.
- Heim, John, and Lewis Perl. The Educational Function: Implications for Educational Manpower Policy. IPE Monograph no. 4. Ithaca: Cornell University, 1974.
- Hencley, Stephen P., Lloyd E. McCleary, and J. H. McGrath. The Elementary School Principalship. New York: Dodd, Mead, 1970.
- Hinkle, Dennis E., William Wiersma, and Stephen G. Jurs. Applied Statistics for the Behavioral Sciences. Boston: Houghton Mifflin, 1979.
- Horine, Mary Ellen. "A Profile Analysis of Women Employed as Elementary School Principals in North Carolina." DAI, 45 (1984): 1254A.
- Leithwood, K. A., and D. J. Montgomery. "The Role of the Elementary School Principal in Program Improvement." Review of Educational Research 52, no. 3 (1982): 309-39.
- Manasse, A. Lorri. "Improving Conditions for Principal Effectiveness: Policy Implications of Research." Elementary School Journal 85, no. 3 (1985): 439-63.
- McCurdy, Jack. The Role of the Principal in Effective Schools: Problems and Solutions. Arlington: American Association of School Administrators, 1983.
- Miller, W. C. "Can a Principal's Improved Behavior Result in Higher Pupil Achievement?" Educational Leadership 33 (1976): 336-38.

- Morris, Van Cleve, et al. Principals in Action. Columbus, OH: Charles E. Merrill Publishing, 1984.
- Newberry, Alan J. H. "What not to Look for in an Elementary School Principal." National Elementary Principal 56, no. 4 (1977): 41-44.
- Parramore, Barbara, James J. Davies, and Susan MacGregor. "Do Schools Make a Difference? An Analysis of Third to Sixth Grade Achievement Gains in a North Carolina Study." North Carolina Educational Leadership 2, no. 2 (1986): 33-41.
- Robinson, Glen E., and Alan W. Block. "The Principal and Achievement: A Summary of 22 Studies." Principal 62, no. 2 (1982): 53-57.
- Rosseau, Alan J. "The Elementary School Principal: What Training and Experience Factors Contribute to His Success." Oregon School Study Council Bulletin 1971 (ERIC ED 081 072).
- Sergiovanni, Thomas J. "Leadership and Excellence in Schooling." Educational Leadership 41, no. 5 (1984): 4-15.
- Stogdill, R. H. Handbook of Leadership. New York: Free Press, 1974.
- Summers, Anita A., and Barbara L. Wolfe. "Which School Resources Help Learning? Efficiency and Equity in Philadelphia Public Schools." Business Review, February 1975.
- Sweeney, James. "Research Synthesis on Effective School Leadership." Educational Leadership 39, no. 5 (1982): 346-52.
- The Effective Principal: A Research Summary. Reston: National Association of Secondary School Principals, 1982.
- Trump, J. Lloyd. "Principal Most Potent Factor in Determining School Excellence." NASSP Bulletin, 56 (March 1972): 3-9.
- Walker, Donald E. The Effective Administrator. San Francisco: Jossey-Bass, 1979.
- Wolcott, Harry F. The Man in the Principal's Office: An Ethnography. New York: Holt, Rinehart, and Winston, 1973.

APPENDIX A



East Tennessee State University
College of Education

Department of Supervision and Administration • Box 19000A • Johnson City, Tennessee 37614-0002 • (615) 929-4415, 4430

January 10, 1986

(Each superintendent received an individually addressed letter)

Dear :

I am presently completing the requirements for the Ed.D. degree in educational administration at East Tennessee State University. This letter is to request your permission to survey certain principals in your system who have been selected by a random sampling process. Please indicate your approval on the enclosed form. A stamped, self-addressed envelope is also enclosed for your convenience in replying.

The purpose of my study is to compare achievement scores of third and sixth grade students based upon certain demographic characteristics of the principals. No comparisons will be made between systems or individual schools.

Be assured I realize my responsibilities as to confidentiality. No systems, schools or individuals will be identified in the study.

If you desire a copy of the findings from this study, please so indicate in your response.

Let me thank you in advance for your consideration of this project. Your assistance in helping me complete this study will be greatly appreciated.

Sincerely,

Floyd H. Edwards, Ed.D.
Major Advisor

Winston A. Riddle
Doctoral Student

Enclosure

APPENDIX B



East Tennessee State University
College of Education

Department of Supervision and Administration • Box 19000A • Johnson City, Tennessee 37614-0002 • (615) 929-4415, 4430

February 3, 1986

(Each superintendent received an individually addressed letter)

Dear :

Two weeks ago I mailed a letter to you requesting permission to survey certain principals in your system for research toward my dissertation at East Tennessee State University. As of now, I have not received your reply.

In the event that my original letter did not supply sufficient information for you to make a decision, I am enclosing a copy of the letter and the questionnaire I plan to send to the principals. The questionnaire is very brief and will take only a few minutes to fill out. Your approval does not obligate the principals in any way. If questions remain, I will be glad to answer by mail or telephone. My telephone number is 704-668-4976 and I am usually home by five p.m.

Will you please take just a minute to indicate your approval on the enclosed form and return it in the stamped, self-addressed envelope provided?

Thank you for your cooperation. Your help in the completion of this research is greatly appreciated.

Sincerely,

Winston A. Riddle
Doctoral Student

Enclosures (3)

APPENDIX C

I hereby (_____ grant) (_____ deny) permission to Winston A. Riddle to conduct his survey of selected principals in this school system as requested in his letter of January 10, 1986.

Superintendent _____ County Schools

APPENDIX D



**East Tennessee State University
College of Education**

Department of Supervision and Administration • Box 19000A • Johnson City, Tennessee 37614-0002 • (615) 929-4415, 4430

February 6, 1986

(Each principal received an individually addressed letter)

Dear :

May I ask that you take a very few minutes from your busy schedule to complete the enclosed data gathering instrument and return it to me in the enclosed stamped, self-addressed envelope?

I am completing the requirements for the Ed.D. degree in educational administration at East Tennessee State University. This letter is to request your assistance in collecting data for my dissertation.

Your name was selected at random as a data source and no one else in your system knows that you have been asked to participate in this study. Your superintendent has approved the surveying of principals in your system but does not know which ones were selected.

Your honest responses will be much appreciated and a prompt return is encouraged. The responses will remain anonymous, your privacy will be safeguarded and all data will be treated in strict confidence. No comparisons will be made between data of individual schools, systems or principals. The information regarding school name and code is needed in order to determine those who have not responded. If you desire a copy of the findings of this study, please so indicate in your response.

Thank you for your assistance and prompt response.

Sincerely,

Floyd H. Edwards, Ed.D.
Major Advisor

Winston A. Riddle
Doctoral Student

Enclosures (2)

APPENDIX E

PERSONAL CHARACTERISTICS OF PRINCIPALS

1. School Name _____ Code _____

2. Are you (____) Male (____) Female?

3. What is your ethnic origin?

_____ American Indian	_____ White
_____ Black	_____ Oriental
_____ Hispanic	

4. What is your age?

_____ Less than 26	_____ 41 - 45
_____ 26 - 30	_____ 46 - 50
_____ 31 - 35	_____ 51 - 55
_____ 36 - 40	_____ Over 55

5. How many years of experience as principal of this school do you have? _____

6. How many total years of experience as a principal do you have? _____

7. How many years teaching experience do you have, in each of these areas?

_____ K - 3	_____ 7 - 9
_____ 4 - 6	_____ 10 - 12

8. What is the highest degree you have earned?

_____ BA/BS	_____ MA/MS/M.Ed.
_____ Ed.S.	_____ Ed.D./Ph.D.

9. Were you principal of this school during the school year 1984-1985? _____ Yes _____ No

If not, at which school were you principal?

School Name _____

How many years? _____

Not a principal 1984-1985 _____

VITA

VITA

WINSTON A. RIDDLE

- Personal Data:** Date of Birth: February 19, 1935
Place of Birth: Black Mountain,
North Carolina
Marital Status: Married
- Education:** Black Mountain Elementary School;
Black Mountain High School;
Black Mountain, North Carolina.
Berea College, Berea, Kentucky; vocational
agriculture, B.S., 1957.
Western Carolina University, Cullowhee,
North Carolina; middle grades education,
M.A., 1973.
Western Carolina University, Cullowhee,
North Carolina; educational adminis-
tration, Ed.S., 1976.
East Tennessee State University, Johnson
City, Tennessee; educational adminis-
tration, Ed.D., 1987.
- Professional Experience:** Teacher, Upchurch Junior High School;
Raeford, North Carolina, 1970-1972.
Teacher, Clinchfield Elementary School;
Marion, North Carolina, 1972-1975.
Principal, Clinchfield Elementary School;
Marion, North Carolina, 1975-1976.
Teacher, Eastfield Elementary School;
Marion, North Carolina, 1976-1977.
Reading Specialist, McDowell County
Schools; Marion, North Carolina,
1977-1983.
Assistant Principal, West Marion Elemen-
tary School; Marion, North Carolina,
1983-1985.
Doctoral Fellow, College of Education, East
Tennessee State University; Johnson City,
Tennessee, 1985.
Teacher, West Marion Elementary School,
Marion, North Carolina, 1986-1987
- Honors and Awards:** Phi Delta Kappa.
Competent Toastmaster; Toastmasters,
International, 1986.