

ACADEMIC ACHIEVEMENT AND STUDENT PERCEPTION OF  
IMPORTANCE OF NON-COGNITIVE CORRELATES

---

A Dissertation  
Presented to  
the Faculty of the College of Education  
University of Houston

---

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

---

by  
Nelson F. <sup>Franklin</sup> Eichman

December, 1970

558145

## ACKNOWLEDGMENTS

I wish to express profound gratitude to Dr. Stanley G. Sanders, chairman of the research committee, for his valuable contribution to the completion of this study. He gave freely of his time, made many constructive criticisms and suggestions, and provided continuous encouragement. Special recognition goes to Dr. Gene Atkinson, Dr. Joseph P. Carbonari, Jr., and Dr. Frank L. Stovall for their contributions and guidance as members of the committee.

Gratitude and acknowledgment is due Dr. R. L. McDonald whose encouragement and support provided the need and desire for graduate studies.

The assistance of Auther Mae McFadden and Yvonne Cudd in typing early drafts is sincerely appreciated.

The patience, understanding, and continuous encouragement of my wife, Wynelle, merits special recognition. To my boys, Keith and Kirk, goes my appreciation for being patient with their father's long and frequent absences during the writing of this dissertation.

And above all, I give thanks to my Lord and God for giving me the strength to meet the task.

ACADEMIC ACHIEVEMENT AND STUDENT PERCEPTION OF  
IMPORTANCE OF NON-COGNITIVE CORRELATES

---

An Abstract of a Dissertation  
Presented to  
the Faculty of the College of Education  
University of Houston

---

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

---

by  
Nelson F. Eichman  
December, 1970

Eichman, Nelson F. "Academic Achievement and Student Perception of Importance of Non-Cognitive Correlates." Unpublished Doctor's dissertation, University of Houston, December, 1970.

Committee Chairman: Stanley G. Sanders

## ABSTRACT

### Problem

The purpose of this study was three-fold: first, to identify factors which have been recognized in earlier research as being non-cognitive correlates of academic achievement; second, to develop an instrument which would measure the perceptions of students as to the relative importance of these non-cognitive correlates; and, third, to determine whether students' perceptions of the relative importance of non-cognitive correlates of academic achievement significantly affected academic success.

### Procedures

A thorough survey of the literature and research identified a list of predictors of academic achievement. This list was refined through consolidation of statements of similarity. The refined list was adapted to eleven statements in language appropriate for fifth-grade students. A pilot study was conducted in a neighboring school district.

The instrument utilized a simplified ranking procedure. Each student and teacher ranked the eleven statements as to importance with a ranking of one being the most important and

eleven being the least important. This provided a ranking of all eleven correlates in order of importance for each student and teacher. The instrument was administered to all fifth-grade students and teachers in the Lumberton Independent School District.

The S. R. A. Achievement Series subtest raw scores and teacher grades in language arts, English, history, mathematics, and science were obtained for each student. Achievement test scores, teacher grades, and the ranking of each non-cognitive correlate for each student were tabulated and prepared for computer processing. A computerized program of a one-way analysis of variance was used to treat the data. The level of significance was set at .05.

### Findings

Generally, students tended to rank their own attitudes and motivations as being slightly more important in determining academic success than did teachers. At the same time, teachers tended to consider parental attitudes and influences as more important while students viewed them as less important.

Significant relationships were not found between student perceptions of the relative importance of non-cognitive correlates and their academic success as measured by achievement test scores.

There was some evidence of significant relationship between importance of correlates and teacher grades received

by students. One statement failed to yield a significant F ratio. Significant relationships were found in five of the correlates, but the criterion requiring a minimum of two scores in each group was not met. Differences in mean grades were significant, but these differences might have been due to the lack of scores in some groups rather than the relative importance assigned to the statement. Significant differences in mean grades were found for the other five statements. These significant relationships with grades received existed for correlates concerned with the "student's self image," the "father's occupation," "parental expectations of further education," "parental expectations of the benefits of education," and "parental praise and reward of good grades."

Evidence was conflicting regarding the hypothesized relationship between pupils achievement test scores and their agreement or disagreement with teachers as to importance of the several correlates. For most correlates, relationships were not statistically significant. In those cases where F ratios were significant, the statements failed to meet the criterion requiring a minimum of two scores in each group.

Student agreement with three teachers and teacher grades did yield significant relationships for ten of the eleven statements. One statement failed to yield a significant relationship. Five statements were significant but failed to meet the criterion requiring a minimum of two scores in each

group. The analysis of the other five statements showed that students tended to score higher grades when agreeing with their teachers on the importance of the "student's self image" and "parental concept of value of education," yet score the lowest grades when agreeing with their teachers on importance of "perception of teacher interest." Students who disagreed with their teachers and ranked "student desire for good grades" and "parental educational plans for students" more important, tended to score higher grades.

Significant relationships were found in eight of the eleven statements for student agreement with one teacher and grades received. Three statements were not significant. Five statements were significant but had zero groups. Students who disagreed with teacher and ranked "student work habits and attitudes toward school" and "student educational goals" least important scored the highest grades. Students who disagreed with the teacher and ranked "parental educational plans" most important tended to score higher grades.

### Conclusions

Students and teachers generally tended to agree on the importance of the non-cognitive correlates. However, students seemed to accept more self-responsibility for academic success, while teachers gave slightly more weight to parental attitudes than did students.

Student achievement test scores do not seem to be related to their perception of the eleven non-cognitive correlates. Achievement test scores of students who ranked any given correlate most important did not differ significantly from test scores of students who ranked the same correlates as unimportant.

Teacher grades were shown to relate significantly to student agreement or disagreement with their teachers on the importance of the non-cognitive correlates. There was some slight, though not completely consistent, tendency for students who held parental or family influences to be less important, to receive slightly higher grades. This could be interpreted to mean that those students who ascribed more responsibility to families rather than themselves, tended to receive lower grades. This could also be interpreted as implying that those students who stressed importance of the pupils' own motivation tended to get higher grades, or that students who get higher grades tended to place more emphasis on their own attitudes and motivation.

The nature of relationships failed to present any clear or consistent trend. This could be due to the nature of the statements, insensitivity of the instrument, research design insufficiencies, the students themselves, or other uncontrollable factors. A more intensive study of teacher and student attitudes toward non-cognitive correlates of academic achievement is needed to clarify these relationships.

The apparent discrepancy between findings (no significant relationships between student perception of correlates and achievement test scores, but significant relationships between perception of correlates and achievement as measured by teacher grades) indicates that the two evaluations measure different things. Attitudes may be more influential in affecting the day-by-day performance which grades measure, but less related to the short-time, motivated situation which the test provides. However, there is clear evidence that these non-cognitive correlates are related to academic achievement of students. They do correlate. They are in fact "non-cognitive correlates" of academic achievement.

TABLE OF CONTENTS

| CHAPTER   | PAGE |
|---|------|
| I. INTRODUCTION . . . . .                                       | 1    |
| Purpose of the Study . . . . .                                  | 1    |
| The Problem . . . . .   | 2    |
| Statement of the Problem . . . . .                              | 2    |
| Need for Investigation of the Problem . . . . .                 | 2    |
| Limitations of the Study . . . . .                              | 3    |
| Limitation of the Sample . . . . .                              | 3    |
| Limitation of the Measures of Achievement . . . . .             | 4    |
| Limitation of Measurement of Non-cognitive<br>Factors . . . . . | 4    |
| Definitions of Terms Used . . . . .                             | 4    |
| Non-cognitive Correlates . . . . .                              | 4    |
| Teacher Grades . . . . .  | 4    |
| PINCAS . . . . .  | 5    |
| Description of Procedure . . . . .                              | 7    |
| Organization of the Report . . . . .                            | 8    |
| II. LITERATURE AND RESEARCH . . . . .                           | 9    |
| Introduction . . . . .  | 9    |
| Non-cognitive Correlates--An Overview . . . . .                 | 10   |
| Educational Plans and Goals . . . . .                           | 11   |
| Study Habits . . . . .  | 13   |
| Self-concepts . . . . .   | 14   |

| CHAPTER                                       | PAGE |
|---|------|
| Attitudes of Significant Others . . . . .     | 16   |
| Parents . . . . .                             | 16   |
| Teachers . . . . .                            | 20   |
| Students' peers . . . . .                     | 23   |
| Socioeconomic . . . . .                       | 25   |
| Summary . . . . .                             | 28   |
| Development of PINCAS . . . . .               | 33   |
| Design . . . . .                              | 33   |
| Scoring Method . . . . .                      | 33   |
| Pilot Study . . . . .                         | 34   |
| III. RESEARCH PROCEDURES . . . . .            | 35   |
| Hypotheses . . . . .                          | 35   |
| Development of Data Collection Instrument . . | 36   |
| Description of Subjects . . . . .             | 37   |
| Students . . . . .                            | 37   |
| Teachers . . . . .                            | 37   |
| Description of Measures Employed . . . . .    | 38   |
| Achievement Test Scores . . . . .             | 38   |
| Teacher Grades . . . . .                      | 38   |
| Statistical Treatment of Data . . . . .       | 39   |
| Summary . . . . .                             | 42   |
| IV. RESULTS OF THE STUDY . . . . .            | 44   |
| Student Ranking of Non-cognitive Correlates . | 45   |
| Comparison of Teacher and Student Rankings of |      |
| Importance of Non-cognitive Correlates . .    | 46   |

| CHAPTER   | PAGE |
|---|------|
| Findings Pertinent to First Hypothesis . . . .  | 47   |
| Relationship Between Importance of Corre-<br>lates and Student Achievement Test Scores                                  | 49   |
| Relationship Between Importance of Corre-<br>lates and Student Achievement as Mea-<br>sured by Teacher Grades . . . . . | 51   |
| Findings Pertinent to Second Hypothesis . . .   | 60   |
| Relationship Between Agreement and Student<br>Achievement Test Scores . . . . .   | 63   |
| Relationship Between Agreement and Student<br>Teacher Grades . . . . .  | 65   |
| Summary . . . . .   | 81   |
| V. SUMMARY AND CONCLUSIONS . . . . .  | 83   |
| Findings . . . . .  | 85   |
| Hypothesis 1 . . . . .  | 85   |
| Achievement test scores . . . . .   | 85   |
| Teacher grades . . . . .  | 86   |
| Hypothesis 2 . . . . .  | 87   |
| Achievement test scores . . . . .   | 87   |
| Teacher grades . . . . .  | 88   |
| Conclusions . . . . .   | 90   |
| BIBLIOGRAPHY . . . . .  | 93   |
| APPENDIXES . . . . .  | 101  |
| VITA . . . . .  | 115  |

LIST OF TABLES

| TABLE  | PAGE |
|--|------|
| 1. Analysis of Variance of Achievement Test Scores<br>for the Eleven Non-cognitive Correlates . . . . .                    | 50   |
| 2. Analysis of Variance of Teacher Grades for the<br>Eleven Non-cognitive Correlates . . . . .                             | 53   |
| 3. Analysis of Variance of Three Teacher Achieve-<br>ment Test Scores for the Eleven Non-cognitive<br>Correlates . . . . . | 64   |
| 4. Analysis of Variance of One Teacher Achieve-<br>ment Test Scores for the Eleven Non-cognitive<br>Correlates . . . . .   | 66   |
| 5. Analysis of Variance of Three Teacher Grades<br>for the Eleven Non-cognitive Correlates . . . . .                       | 68   |
| 6. Analysis of Variance of One Teacher Grades for<br>the Eleven Non-cognitive Correlates . . . . .                         | 77   |

## LIST OF FIGURES

| FIGURE  | PAGE |
|---|------|
| 1. Statement of Non-Cognitive Correlates . . . . .  | 6    |
| 2. Comparison of Teacher and Student Rankings of<br>Importance of Non-Cognitive Correlates . . . . .          | 48   |
| 3. Mean Grade Averages in Ranked Groups for<br>Statement Two . . . . .  | 55   |
| 4. Mean Grade Averages in Ranked Groups for<br>Statement Six . . . . .  | 57   |
| 5. Mean Grade Averages in Ranked Groups for<br>Statement Seven . . . . .                                      | 58   |
| 6. Mean Grade Averages in Ranked Groups for<br>Statement Eight . . . . .                                      | 59   |
| 7. Mean Grade Averages in Ranked Groups for<br>Statement Nine . . . . .                                       | 61   |
| 8. Mean Grade of Students Who Ranked Statement<br>Two Above, Equal, and Below Teacher<br>Rankings . . . . .   | 70   |
| 9. Mean Grade of Students Who Ranked Statement<br>Four Above, Equal, and Below Teacher<br>Rankings . . . . .  | 71   |
| 10. Mean Grade of Students Who Ranked Statement<br>Five Above, Equal, and Below Teacher<br>Rankings . . . . . | 73   |

| FIGURE   | PAGE |
|--|------|
| 11. Mean Grade of Students Who Ranked Statement<br>Six Above, Equal, and Below Teacher<br>Rankings . . . . .   | 74   |
| 12. Mean Grade of Students Who Ranked Statement<br>Seven Above, Equal, and Below Teacher<br>Rankings . . . . . | 75   |
| 13. Mean Grade of Students Who Ranked Statement<br>One Above, Equal, and Below Teacher<br>Rankings . . . . .   | 79   |
| 14. Mean Grade of Students Who Ranked Statement<br>Three Above, Equal, and Below Teacher<br>Rankings . . . . . | 80   |
| 15. Mean Grade of Students Who Ranked Statement<br>Six Above, Equal, and Below Teacher<br>Rankings . . . . .   | 82   |

## CHAPTER I

### INTRODUCTION

Most estimates of how well a particular student will perform in his studies are based primarily on past intellectual or cognitive performances such as teacher grades, rank in class, or scores on scholastic aptitude tests. Although these procedures have provided useful and sometimes accurate predictions of levels of achievement, it is recognized that non-cognitive factors also play an important part in academic success.<sup>1</sup>

#### I. PURPOSE OF THE STUDY

The purpose of this study was three-fold: first, to identify factors which have been recognized in earlier research as being non-cognitive correlates of academic achievement; second, to develop an instrument which would measure the perceptions of students as to the relative importance of these non-cognitive correlates; and third, to determine whether student perceptions of the relative importance of non-cognitive correlates of academic achievement significantly affected academic success.

---

<sup>1</sup>Maria Rizzo and John M. Newell, "Level of Aspiration, Aptitude and Academic Performance" (a paper presented to the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966), p. 3.

## II. THE PROBLEM

### Statement of the Problem

The problem was stated in the following divisions:

1. To investigate whether there is a relationship between (a) student perceptions of the relative importance of the eleven respective non-cognitive correlates and (b) the academic achievement of students.
2. To investigate whether academic achievement of students is related to the similarity or dissimilarity of student perceptions and teacher perceptions of the importance of these respective correlates.

### Need for Investigation of the Problem

One of the many problems that face educators as they implement programs designed to promote the "pursuit of excellence" is that of predicting the level of academic achievement of students.<sup>2</sup> Most estimates of how well a particular student will perform in his studies are based primarily on past intellectual or cognitive performances.<sup>3</sup>

---

<sup>2</sup>George R. Quinn and Charles A. Szuberla, "Relative Grading: A Consistent and Equitable Approach to the Evaluation of Student Achievement," The Clearing House, 37:490-94, April, 1963.

<sup>3</sup>Rizzo and Newell, loc. cit.

The adequacy and usefulness of critical decisions<sup>4</sup> which affect placement and educational planning in the public schools depend upon the validity of the criteria established. Educators making predictions based solely on scholastic criteria raised serious question about the cumulative data interpretation on the self-image, self-perception, aspiration, and personality development of students. It is recognized that non-cognitive correlates also play an important part in predicting the level of achievement of students.<sup>5</sup>

### III. LIMITATIONS OF THE STUDY

Elements which limited the scope and findings reported in this study included: (1) limitation of the sample, (2) limitation of the measures of achievement, (3) limitation of measurement of non-cognitive factors.

#### Limitation of the sample.

The study was limited to 115 students and four teachers selected from one elementary school of the Gulf Coast area of Texas.

---

<sup>4</sup>Charleta J. Dunn and Gerald T. Kowitz, A Statistical Analysis of Data Used in Critical Decision Making by Secondary School Personnel, Bureau of Education Research and Service, Monograph No. 320 (Houston: University of Houston, 1967), pp. 61-62.

<sup>5</sup>Rizzo and Newell, loc. cit.

### Limitation of the Measures of Achievement

The study was limited to the use of the S. R. A. Achievement Series, Multi-level Edition, Form C, which was administered in the spring of 1969, and to semester grades in mathematics, science, English, history, language arts, and overall average grades which was the mean of the five subject grades.

### Limitation of Measurement of Non-cognitive Factors

Limitation of perceptions to relative importance compared to one another (ranking) provided no real measure of strength of motivation of the various non-cognitive factors upon individual subjects.

## IV. DEFINITIONS OF TERMS USED

### Non-cognitive Correlates

Objectives which describe changes in interest, attitudes, values, and the development of appreciations and adequate adjustment.

### Teacher Grades

A composite evaluation of attitudes, daily work, or any other pertinent knowledge of the student which might contribute to the final grade given by the classroom teacher. In this study teacher grades were used as measures of academic

achievement. Semester grades, which include two nine-week reports and a semester test counted as equal parts, were utilized as teacher grades for this study.

Grades in mathematics, science, English, history, and language arts, and overall average grades were used in this study. The overall average grades will be the mean of the five subject grades.

Grades are expressed as numerical values, with seventy considered as a minimum score and one hundred as the maximum attainable grade.

#### PINCAS

The literature was reviewed and items were selected that were identified by authorities as correlates of academic achievement. The eleven non-cognitive correlates were adapted to eleven statements in language appropriate for fourth-grade students. These statements are shown in Figure 1. An instrument was designed to measure the perceptions of students and teachers as to the relative importance of these non-cognitive correlates of academic achievement.

This instrument utilizes a simplified ranking procedure. The students and teachers received eleven index cards. Each card contained one of the eleven non-cognitive statements of academic achievement. Each student ranked these eleven cards as to importance. This provided a ranking of all eleven correlates in order of importance for each student and each teacher.

1. The student has good work habits and good attitudes toward school.
2. The student definitely plans to graduate from high school and probably go on to college.
3. The student wants to make good grades and is happy when he does.
4. The student views himself as interested, ambitious, alert, careful, etc.
5. The student's parents and other important adults expect him to graduate from high school and go on to college.
6. The student's parents and other important adults encourage him to do good work in school and praise him when he gets good grades.
7. The student's parents and other important adults feel that a person must be well educated to be successful.
8. The student believes that his teacher is interested in him and is concerned about his welfare.
9. The student comes from a good middle class family.
10. The student's father is a professional (doctor, lawyer, banker) or a business manager, or a white collar worker.
11. The student's classmates and playmates are proud when they do good work in school.

FIGURE 1

STATEMENT OF NON-COGNITIVE CORRELATES

This instrument is called Perceptions of Importance of Non-cognitive Correlates of Academic Success and is hereafter referred to as PINCAS.

#### V. DESCRIPTION OF PROCEDURE

The literature was reviewed, PINCAS was developed and administered, and the responses related to standardized achievement scores and teacher grades for pupils were analyzed.

A survey was conducted of the publications and research related to this area of research. A list of predictors of significant influences on academic achievement was identified from the research. The initial list of predictors was refined through consolidating statements of similarity and eliminating statements that were not of concern to this study. A simplified ranking procedure was used, obtaining responses from students and teachers of their perceptions of the importance of the non-cognitive correlates of academic achievement.

A pilot study was conducted at a neighboring elementary school with fifth-grade students. Personal interviews and responses to the instrument were obtained from teachers, administrators, college professors, and students.

The revised instrument was administered to the student and teacher sample. The data were collected, grouped, and treated by analysis of variance to identify whether any significant difference existed.

## VI. ORGANIZATION OF THE REPORT

Chapter I has presented a statement of the problem, a need for the investigation, the limitations of the study, and a brief summary of the procedures used in obtaining, analyzing, and presenting the data.

Chapter II reviews the research and literature related to factors which have been identified as non-cognitive correlates of academic achievement and describes the development of the instrument (PINCAS).

Chapter III is devoted to the procedures of research utilized in determining relationship between PINCAS and academic success.

Chapter IV contains the findings of the study.

Chapter V presents a summary of the procedures employed, the findings of the study, and the conclusions.

self concepts, attitudes of significant others, and socioeconomic environment.

### Educational Plans and Goals

A number of writers have identified the educational plans and goals of students and their parents as being predictors or correlates of academic achievement.

Finger and Silverman<sup>3</sup> indicated that the extent of academic planning of students is strongly related to elementary school marks. While no cause and effect relationship was proven, it was apparent from their research that a student's education plan bears a significant relationship to his performance in elementary school. Students who showed a pronounced drop in performance at the junior high school level had lower achievement goals during elementary school than those who went on to earn the same or higher grades.

An investigation of educational plans preferences of 351 upper-middle class junior high school pupils by Krippner<sup>4</sup> indicated that most of them were expected to attend college. This expectancy was apparently so strong that pupils' dislike of school and poor achievement did not deter most boys and

---

<sup>3</sup>John A. Finger, Jr. and Morton Silverman, "Changes in Academic Performance in the Junior High School" (a paper presented at the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966), p. 9.

<sup>4</sup>Stanley Krippner, "Educational Plans and Preferences of Upper-middle Class Junior High School Pupils," Vocational Guidance Quarterly, 13:257-260, Summer, 1965.

girls from agreeing with their parents that higher education should be given higher priority among their plans for the future.

Joiner and others<sup>5</sup> state that theory leads us to believe that students consider others, both in internal communications or self-dialogue and in face-to-face encounters, when planning their education. The findings of his study confirmed that a student's educational plan level is likely to be dependent upon his conception of the educational expectations held for him by his parents and his friends. The findings also confirmed that a student's educational plan level is more dependent upon his conception of how far his parents expect him to go in school than upon his conception of the educational expectations of friends.

McClelland and others<sup>6</sup> mention three generalizations that are important for achievement. First, the achiever should believe that the world is orderly and amenable to rational mastery and that a person can and should make plans which will control his destiny. Secondly, there must be a willingness to make one's way in life. Thirdly, the achiever should prefer

---

<sup>5</sup>Lee M. Joiner and others, "Student Definitions of the Educational Expectations of Others and Development of Educational Plans: A Longitudinal Study of High School Males" (a paper presented at the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966), pp. 1-29.

<sup>6</sup>David McClelland and others, The Achievement Motive (New York: Appleton-Century-Crofts, Inc., 1963), pp. 186-87.

individual recognition or credit for work done, rather than collective credit as a member of a group.

### Study Habits

Another important correlate of academic achievement has been identified as the possession of proper study habits. A meaningful relationship seems to exist between students' achievement levels and their knowledge of the proper methods of study.

An experimental program<sup>7</sup> designed to raise achievement level of culturally deprived elementary students has brought illuminating evidence. The rationale of this program centered around the concept that children will achieve more if they learn early to develop sound work habits and attitudes. The results in two experimental schools revealed that children had overall gains of 5.4 months in reading during the five-month period while children in the control group showed an overall gain of only 2.7 months in reading during the same period.

Stephens also held that one of the areas that has been neglected in the field of education is that of teaching good study habits. He maintained that teachers are too concerned with making sure the students have learned certain arbitrary materials and do not spend adequate time or effort on teaching students how to study.<sup>8</sup> He found that many students go through

---

<sup>7</sup>Mildred B. Smith and Carl I. Brahce, "Foscus on Achievement," Educational Leadership, 20:314-18, February, 1963.

<sup>8</sup>John M. Stephens, The Psychology of Classroom Learning (New York: Holt, Rinehart and Winston, Inc., 1965), pp. 200-26.

school and never learn to use the card catalogue and the library effectively, never know how to use the dictionary and reference materials, and never learn how to organize and retain the contents of the materials studied.

Becker's study of pupil-teacher relationships indicated that the teacher feels that he has a better chance of success when his pupils are interested in attending and working hard in school, and are trained at home in such a way that they are bright and quick at school work. His problems arise in teaching those groups who do not meet these specifications, for in these cases his teaching techniques, tailored to the perfect student, are inadequate to cope with the reality, and he is left with a feeling of having failed in performing his basic task.<sup>9</sup>

### Self Concepts

A third important correlate influencing scholarship is the student's self concept. The student's view of himself, reinforced or altered by the views of parents, teachers, and peers, has a decided effect in motivating higher achievement.

Payne and Farquhar<sup>10</sup> consider academic motivation as that which initiates and sustains learning and which may be

---

<sup>9</sup>Howard S. Becker, "Social-class Variations in the Teacher-Pupil Relationship," The Journal of Educational Sociology, 25:453, May, 1952.

<sup>10</sup>David A. Payne and William W. Farquhar, "The Dimensions of an Objective Measure of Academic Self-Concept," Journal of Educational Psychology, 53:187-92, December, 1962.

viewed as a subset of intervening variables that influence scholarship. Some of the ways in which well-motivated students see themselves are as interested, efficient, purposeful, organized, consistent, and studious.

According to Salbodin and Campbell<sup>11</sup> the child's self-perception has a great influence upon his academic achievement. The teacher through interaction alters the child's perception of the self. That is, the child's perception of self tends to agree with what he perceives to be the teacher's attitude toward him. Findings revealed that (1) boys' achievement was higher in programmed work, (2) girls' achievement was higher in class work, and (3) elementary children pattern their behavior after the teacher.

Rizzo and Newell<sup>12</sup> in their study of freshman students at Tufts University placed students in two categories of achievement, a high risk group who were predicted to be less successful and a low risk group who were predicted to be more successful in scholastic achievement at the college level. Students whose academic achievement was low were placed in a high risk group, while those whose academic achievement was high was placed in a low risk group on the basis of predicted

---

<sup>11</sup>June Salbodin and Paul Campbell, "Do Children's Perceptions Influence Beginning Reading Achievement?" Elementary School Journal, 67:423-27, May, 1967.

<sup>12</sup>Marie Rizzo and John M. Newell, "Level of Aspiration, Aptitude and Academic Performance" (a paper presented to the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966), p. 3.

grade-point averages, which were determined by SAT scores and high rank in class. The findings showed it was the low risk group that indicated higher rank scores on the level of aspiration measures. Increase in level of aspiration each time occurred for the low risk group. In analyzing the discrepancy score results, the high risk group was clearly less realistic in their individual estimates than was the low risk group. Finally, in actual performance, as reflected by grade-point average and SAT scores, it was the low risk group that was superior.<sup>13</sup>

Coleman found that the self concept of students was influenced more by their age peers than by adults.<sup>14</sup>

#### Attitudes of Significant Others

The student's self concept can be strengthened or changed by the opinions and attitudes of others. Among these outside influences, there are three sets of individuals who particularly affect the student's view of himself: his parents, his teachers, and his peers.

Parents. Parental expectations are a most significant factor in student motivation toward higher academic achievement through an improved self concept.

---

<sup>13</sup>Ibid., pp. 10-11.

<sup>14</sup>James S. Coleman, The Adolescent Society (New York: The Free Press of Glencoe, 1961).

Bloom's research found that a student's achievement level is likely to be related to the value placed on education by the significant adult in the individual's life and the extent to which school achievement is motivated and reinforced by parents or other significant adults. He studied the type of home environment which contributed to success in learning, and described an ideal "abundant home environment model." In Bloom's abundant home environment model, value is placed on school learning by the parents and child. About 80 percent of the parents in Bloom's abundant homes have plans for higher education for their children. School learning is reinforced in these homes, and there is an interest in school affairs. There are intellectual interests in the family, and good work habits are encouraged.

However, it is what the parents do in the home, rather than their status, that makes for an abundant home environment. Bloom states that the home environment is relevant to educational achievement because of six variables: (1) achievement press, (2) language models in the home, (3) academic guidance provided in the home, (4) stimulation provided to explore various aspects of the larger environment, (5) intellectual interest and activities in the home, and (6) work habits emphasized in the home.<sup>15</sup>

---

<sup>15</sup>Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley & Sons, Inc., 1964), p. 190.

Joiner and other's<sup>16</sup> study confirmed that a student's educational plan level is likely to be dependent upon his conception of the educational expectation held for him by his parents and his friends. The findings also confirmed that a student's educational plan level is more dependent upon his conception of how far his parents expect him to go in school than upon his conception of the educational expectation of friends.

One experiment provided evidence that programs<sup>17</sup> designed to raise the achievement of children who lack the necessary motivation to achieve adequately must involve working with these children's significant others for the purpose of getting them to expect more of these children. The students tended to internalize the expectations of the significant others and, therefore, to expect more of themselves. It was predicted that this change in their attitudes and values would take place as they learned their values from significant others. The significant others for elementary school children were assumed to be parents and teachers. In the parent-teacher meetings, mothers and fathers learned their attitudes and values greatly influenced those of their children. The parents were made to understand that without awareness and intent, they were not setting the kind of example that brings about desirable

---

<sup>16</sup>Joiner and others, loc. cit.

<sup>17</sup>Smith and Brahce, loc. cit.

attitudes and habits toward schoolwork. Parents were impressed that they must do more than tell their children that they need to achieve in school. They were frequently reminded that they must show the children that their schoolwork is important. The parents were given suggestions of activities and behavior which provide at home a climate conducive to academic achievement.

The results in the two experimental schools revealed that children had overall gains of 5.4 months in reading during the five-month period while children in the control group showed an overall gain of 2.7 months in reading during the same period.

Especially in the last decade, new studies as well as careful analysis of older data began to contradict the doctrine of fixed intelligence. In a number of studies, infants raised in single family homes consistently scored better on IQ and other development tests than did infants raised in orphanages. Clearly, what went on outside the child's head influenced (either stimulated or frustrated) what was going on inside.<sup>18</sup> These studies seemed to show that intellectual potential was not fixed at birth and that environment, the circumstances of the home, the education of the natural or foster parents, and the influences to which the growing child is exposed could make a difference in intellectual development. The implication

---

<sup>18</sup>Ibid.

was that if we could learn to encourage more of the intellectual potential that humans are born with, we could rear new generations much more intelligent than ever before.<sup>19</sup>

Herriott<sup>20</sup> questioned the utility of status characteristics of the family as direct antecedents of behaviors. He believes that status characteristics such as education and income of parents gain their limited predictive power through association with other phenomena. Interactions which occur within the family are examples of other phenomena. This would account for the poor showing of family influence as compared to peer group when family influence is assessed by measurements of socioeconomic status.

Teachers. The attitudes of his teachers toward a student also influence the views a student has of his own capabilities.

Eargle<sup>21</sup> stated that evidence can be found to support the theory that the attitude of a teacher toward his students is a determinant of academic achievement. Goldberg<sup>22</sup> concluded

---

<sup>19</sup>Samuel G. Sava, "When Learning Comes Easy," Saturday Review, 51:102-04, 119, November, 1968.

<sup>20</sup>Robert Herriott, "Some Social Determinants of Educational Aspiration," Harvard Educational Review, 32:157-77, Spring, 1963.

<sup>21</sup>Zane E. Eargle, "Social Class and Student Success," The High School Journal, 44:162-69, February, 1963.

<sup>22</sup>Marian L. Goldberg and A. Henry Passow, "The Effects of Ability Grouping," Education, 82:482-87, April, 1962.

the variation in achievement is influenced more strongly by teachers and group differences in individual classrooms than by ability range, position, or even intellectual ability of the pupils.

According to Chambers<sup>23</sup> the achieving student is better able to focus his learning upon what the teacher feels is important. The underachiever's inability to perceive the attitudes of others, including their teachers, may have some relationship to lack of achievement.

Gordon and Wood<sup>24</sup> found relationships between pupil-teacher agreement on self-reports and accuracy on the self-report as an estimate of actual test rank as well as between direction of error on both self-report and test estimate between teacher and pupils. The pupils were consistent in direction (over or under estimation) on both measures. Teachers were closer to correct estimates of test ranks than were pupils. Teacher-pupil disagreement seems to be related to perceptual distortion in the same direction by both.

Differences in teacher perceptions of their students' ability to do school work have important consequences. They lead, in the first place, to differences in actual teaching

---

<sup>23</sup>F. M. Chambers, "Empathy and Scholastic Success," The Personnel and Guidance Journal, 36:282-84, December, 1957.

<sup>24</sup>Ira J. Gordon and Patricia C. Wood, "The Relationship Between Pupil Self-Evaluation, Teacher Evaluation of the Pupil and Scholastic Achievement," The Journal of Educational Research, 56:440-43, April, 1963.

technique. Further, the teacher feels that when these ability differences are recognized by his superiors, there will be corresponding variation in the amount of work he is expected to accomplish.<sup>25</sup>

Skinner also recognized the importance of the teacher's role. He analyzed the teaching scene by noting that the student seems to have a natural curiosity, a love of knowledge, and an inherent wish to learn. Yet showing or telling a student does not ensure his learning. Skinner defined teaching as an "arrangement of contingencies of reinforcements under which behavior changes." What is missing in the classroom, and the reason why teachers fail, is the lack of positive reinforcement, and the overuse of negative reinforcement.<sup>26</sup>

Shaheen also recognized that teachers' attitudes toward children also have much effect upon learning. He contended that educators are making few efforts to come to grips with the real solution--a major shift in attitudes of teachers and administrators toward children. "What is so urgently needed is attitudinal change, not curricular change or change in teaching techniques."<sup>27</sup>

We need the good school of which John Fischer speaks:

---

<sup>25</sup>Becker, loc. cit.

<sup>26</sup>B. F. Skinner, "Why Teachers Fail," Saturday Review, 47:98-102, October, 1965.

<sup>27</sup>Thomas A. Shaheen, "Importance of Attitude," I D E A, 6-7, Summer Quarter, 1969.

. . . one where children know they are welcome and respected, where every day they experience some measure of success, and where they are constantly reminded that what they do really makes a difference.<sup>28</sup>

Students' peers. The social mores and educational expectations operating within a student's peer group also affect that student's concept of himself.

Coleman<sup>29</sup> believes that the schools cannot make adolescents conform to what the adult society values by approval or disapproval. Only by working through the value system of the adolescents can the school reach the adolescent cultures. Coleman's data and analyses provide a basis for challenging the view that family background, as measured by socioeconomic status, exerts as great an influence on the development of educational plans as does the peer group. Coleman has stated:

. . . what our society has done is set apart in an institution of their own, adolescents for whom home is little more than a dormitory and whose world is made of activities peculiar to their fellows.<sup>30</sup>

Students are more often motivated toward higher scholastic achievement when such achievement is valued by the leaders of their peer groups. The general pattern of grades among the leading crowd was found to be consistent with the social rewards

---

<sup>28</sup> Ibid.

<sup>29</sup> Coleman, loc. cit.; see also James S. Coleman and Edward L. McDill, "Family and Peer Influences in College Plans of High School Students," Sociology of Education, 38:112-16, Winter, 1965.

<sup>30</sup> James S. Coleman, "The Adolescent Subculture and Academic Achievement," American Journal of Sociology, 65:339, January, 1960.

for grades in Coleman's study. For example, in the two schools in which good grades were valued, the leading crowd had the highest average grades. Also the leading crowd was made up of those who (1) came from the right families and (2) were leaders in activities.<sup>31</sup>

Taylor also found that students are influenced by the academic performance and attitudes of their classmates. As the student grows older, the influence grows stronger. A child who attends school with a majority of other children who value academic success, who do well in school, and for whom college is a foregone conclusion, is more likely to share these values and to perform well than if he attends school with children who do not have great hopes of success and who perform poorly.<sup>32</sup>

Joiner and others<sup>33</sup> stated that Coleman's data and analysis provide a basis for challenging the view that family background, as measured by socioeconomic status, exerts as great an influence on the development of educational plans as does the peer group.

The influences exerted by these parents, teachers, and peers, by tending to improve or downgrade a student's view of himself, can significantly affect his academic achievement,

---

<sup>31</sup>Coleman, Adolescent Society, p. 87.

<sup>32</sup>William L. Taylor, "Quotes," The School Administrator, 7, Summer, 1969.

<sup>33</sup>Joiner and others, op. cit., pp. 2-3.

their favorable attitudes improving his scholarship expectations while their unfavorable views lower his possibilities for academic excellence.

### Socioeconomic

Many studies have shown that there is a definite relationship between educational achievement and the socioeconomic position of a student.

Havighurst, in a nine-year longitudinal study, found that as early as the sixth grade it was possible to identify those who would go furthest in school, and who would achieve success in later life by combining data on the student's personal and social adjustment, socioeconomic status, and intellectual ability.<sup>34</sup> Four determinants were examined: (1) having a keen mind, (2) accepting oneself, (3) being accepted by others, and (4) coming from a middle-class family. Some children, though possessing only two of the four characteristics, exhibited a pattern of success through college. However, possession of all four determinants was found to be a very accurate predictor of success.<sup>35</sup>

---

<sup>34</sup>Robert J. Havighurst and others, Growing Up in River City (New York: John Wiley & Sons, Inc., 1962), pp. 36-161.

<sup>35</sup>Ibid.

Baker<sup>36</sup> and Curry<sup>37</sup> discovered that with students of high ability, the socioeconomic factor is not always significant. Curry also discovered that arithmetic is relatively free from the influence of socioeconomic conditions.

Eargle<sup>38</sup> contends that some educators support the theory that the social class of a child can be used to predict rather accurately his success, or lack of success, in school. They would contend that this is true because the attitude of the teacher toward his students is, in most instances, affected by the social class to which the child belongs.

Becker<sup>39</sup> analyzed the manner in which the public school teacher reacts to the cultural differences of students and, in so doing, perpetuates the discrimination of our educational system against the lower-class child. The teachers distinguished three social-class groups with which they came in contact: (1) a bottom stratum, probably equivalent to the lower-lower and upper-lower class; (2) an upper stratum, probably equivalent to the upper-middle class; and (3) a middle stratum,

---

<sup>36</sup>Robert L. Baker, "The Influence of Mental Ability on Achievement When Socio-Economic Status is Controlled," The Journal of Experimental Education, 30:255-58, December, 1961.

<sup>37</sup>Robert O. Curry, "The Effect of Social-Economic Status on the Scholastic Achievement of Sixth Grade Children," The British Journal of Educational Psychology, 32:46-49, January, 1962.

<sup>38</sup>Eargle, op. cit., p. 163.

<sup>39</sup>Becker, loc. cit.

probably equivalent to the lower-middle and parts of the upper-lower class.

Deutsch<sup>40</sup> states that lower-class children have not learned to pay attention. Their habits of seeing, hearing, and listening have not been trained in the family situation. The middle-class child, conversely, is encouraged from babyhood in discrimination of sound, sight, and judgment, all of which constitute reading readiness.

Hill and Giammatteo's<sup>41</sup> study strengthened the accumulative evidence that socioeconomic status affects school achievement. Children from lower socioeconomic areas had not by the third grade overcome their culture deficiency. It seemed evident that all scholastic achievement areas reported in this study were affected by socioeconomic factors.

McClelland held that the child is affected by the father's occupation in that it tends to place him within a certain cultural context or social status.<sup>42</sup> While the child may eventually be permitted to choose which attitudes he will adopt

---

<sup>40</sup>Martin Deutsch, "The Disadvantaged Child and the Learning Process," Education in Depressed Areas, ed. A. H. Passow (New York: Bureau of Publications, Teachers College, Columbia University Press, 1963), pp. 163-79.

<sup>41</sup>Edwin H. Hill and Michael C. Giammatteo, "Socio-Economic Status and Its Relationship to School Achievement in the Elementary School," Elementary English, 40:265-70, March, 1963.

David McClelland and others, Talent and Society (Princeton: D. Van Nostrand Company, Inc., 1958), p. 18.

for himself, his early exposure to values in his home will form a serious restraint on his freedom.

Bloom approaches environment from two sides, the home and the school. Each of these two environments can be described as being abundant or deprived. There are many arguments for providing abundant school environments, but one of the most important is in relationship to the very rapid growth of selected characteristics in the early years.<sup>43</sup> This suggests a need for a highly effective school environment in the primary grades.

## II. SUMMARY

From the review of the literature described above, eleven separate and distinct non-cognitive correlates of academic achievement were identified. These are described below, along with an indication of the authors or authorities who recognized the respective correlates.

The student has good work habits and good attitudes toward school. The correlate was recognized in the works of Stephens,<sup>44</sup> Smith and Brahce,<sup>45</sup> and Finger and Silverman.<sup>47</sup>

---

<sup>43</sup>Bloom, op. cit., p. 18.

<sup>44</sup>Stephens, loc. cit.

<sup>45</sup>Smith and Brahce, loc. cit.

<sup>46</sup>Bloom, op. cit., p. 123.

<sup>47</sup>Finger and Silverman, loc. cit.

The student definitely plans to graduate from high school and probably go on to college. Finger and Silverman<sup>48</sup> and Krippner's<sup>49</sup> investigations indicated that academic and educational planning is strongly related to elementary school marks and plans for higher education.

The student wants to make good grades and is happy when he does. Rizzo and Newell<sup>50</sup> found in their study of student achievement that students of low achievement predicted higher rank scores on the level of aspiration measures.

The student views himself as interested, ambitious, alert, careful, etc. Payne and Farquhar,<sup>51</sup> Campbell,<sup>52</sup> Goldberg and Passow<sup>53</sup> stated that the child's self perception has a great influence upon his academic achievement.

The student's parents and other important adults expect him to graduate from high school and go on to college. Bloom,<sup>54</sup>

---

<sup>48</sup> Ibid.

<sup>49</sup> Krippner, loc. cit.

<sup>50</sup> Rizzo and Newell, loc. cit.

<sup>51</sup> Payne and Farquhar, loc. cit.

<sup>52</sup> Salbodin and Campbell, loc. cit.

<sup>53</sup> Goldberg and Passow, loc. cit.

<sup>54</sup> Bloom, loc. cit.

Krippner,<sup>55</sup> and Joiner and others<sup>56</sup> confirmed that a student's educational plans level is likely to be dependent upon his conception of the educational expectation held for him by his parents and significant others.

The student's parents and other important adults encourage him to do good work in school and praise him when he gets good grades. Bloom,<sup>57</sup> Smith and Brahce,<sup>58</sup> and Skinner<sup>59</sup> found that parental attitudes and values greatly influence those of their children and teachers should be more positive and less negative in their reinforcement in learning.

The student's parents and other important adults feel that a person must be well educated to be successful. Bloom<sup>60</sup> and McClelland<sup>61</sup> found that intellectual interest and activities of parents and significant others are important factors in student motivation toward higher academic achievement.

The student believes that his teacher is interested in him and is concerned about his welfare. Eargle,<sup>62</sup> and Goldberg

---

<sup>55</sup>Krippner, loc. cit.

<sup>56</sup>Joiner and others, op. cit., pp. 1-29.

<sup>57</sup>Bloom, loc. cit.

<sup>58</sup>Smith and Brahce, loc. cit.

<sup>59</sup>Skinner, loc. cit.

<sup>60</sup>Bloom, op. cit., p. 123.

<sup>61</sup>McClelland, loc. cit.      <sup>62</sup>Eargle, loc. cit.

and Passow,<sup>63</sup> Shaheen,<sup>64</sup> Salbodin and Campbell,<sup>65</sup> and Chambers<sup>66</sup> concluded that the child's self-perception of the teachers' attitude toward him greatly influences his academic success.

The student comes from a good middle class family.  
Krippner,<sup>67</sup> Becker,<sup>68</sup> Havighurst,<sup>69</sup> Bloom,<sup>70</sup> Eargle,<sup>71</sup> Baker,<sup>72</sup> Curry,<sup>73</sup> Deutsch,<sup>74</sup> and Hill<sup>75</sup> present evidence that middle class parents encourage good work habits, place value on school learning, show interest in school affairs, and set good examples for their children to follow.

The student's father is a professional (doctor, lawyer, banker) or a business manager or a white collar worker.

---

<sup>63</sup>Goldberg and Passow, loc. cit.

<sup>64</sup>Shaheen, loc. cit.

<sup>65</sup>Salbodin and Campbell, loc. cit.

<sup>66</sup>Chambers, loc. cit.

<sup>67</sup>Krippner, loc. cit.

<sup>68</sup>Becker, op. cit., pp. 451-65.

<sup>69</sup>Havighurst, loc. cit.

<sup>70</sup>Bloom, op. cit., pp. 123-24.

<sup>71</sup>Eargle, loc. cit.

<sup>72</sup>Baker, loc. cit.

<sup>73</sup>Curry, loc. cit.

<sup>74</sup>Deutsch, loc. cit.

<sup>75</sup>Hill, loc. cit.

Herriott,<sup>76</sup> McClelland,<sup>77</sup> and Sava<sup>78</sup> concluded that the child is affected by the father's occupation in that it tends to place him within a certain cultural context or social status.

Their studies seemed to show that intellectual potential was not fixed at birth and that environment, the circumstances of the home, the education of the natural or foster parents, and the influences to which the growing child is exposed could make a difference in intellectual development.

The student's classmates and playmates are proud when they do good work in school. Skinner,<sup>79</sup> Coleman,<sup>80</sup> Coleman and McGill,<sup>81</sup> Joiner and others,<sup>82</sup> Taylor,<sup>83</sup> and Herriott<sup>84</sup> analyzed the teaching scene by noting that students are influenced by the academic performance and attitudes of their classmates.

---

<sup>76</sup>Herriott, loc. cit.

<sup>77</sup>McClelland, Talent and Society, loc. cit.

<sup>78</sup>Sava, loc. cit.

<sup>79</sup>Skinner, loc. cit.

<sup>80</sup>Coleman, Adolescent Society, loc. cit.

<sup>81</sup>Coleman and McDill, loc. cit.

<sup>82</sup>Joiner and others, op. cit., pp. 2-3.

<sup>83</sup>Taylor, loc. cit.

<sup>84</sup>Herriott, loc. cit.

### III. DEVELOPMENT OF PINCAS

#### Design

A survey was conducted of the publications and research related to non-cognitive correlates of academic achievement. A list of predictors of significant influences on academic achievement was identified from the research. The initial list of predictors was refined through consolidating statements of similiarity and eliminating statements that were not of concern to this study. The refined non-cognitive correlates were adapted to eleven statements in language appropriate for fifth-grade students. The statements are shown in Figure 1.<sup>85</sup>

An instrument was designed to measure the perceptions of students and teachers as to the relative importance of these non-cognitive correlates. Each of the eleven non-cognitive statements were listed on an index card.

#### Scoring Method

A simplified ranking procedure was used with all fifth-grade students and teachers. The students and teachers received eleven index cards. Each card contained one of the eleven non-cognitive statements of academic achievement. Each student and teacher ranked these eleven cards as to importance. This provided a ranking of all eleven non-cognitive correlates of academic achievement in order of importance for each student and each teacher.

---

<sup>85</sup>Supra, p. 6.

Pilot Study

A pilot study was conducted at a neighboring elementary school with fifth-grade students. Personal interviews and responses to the instrument were obtained from the students in the pilot study, teachers, administrators, and college professors. The instrument was revised and administered to the student and teacher sample.

## CHAPTER III

### RESEARCH PROCEDURES

The purpose of this chapter is to present, systematically, the techniques and procedures employed in such a way that the methods of research may be readily reviewed and/or replicated in similar studies.

The steps employed were developed and treated in the following order:

1. Hypotheses
2. Development of the Data Collection Instrument
3. Description of Subjects
4. Description of Measures Employed
5. Statistical Treatment of Data
6. Summary

#### I. HYPOTHESES

The purpose of this investigation was to determine whether there was a relationship between students' perceptions of the relative importance of the eleven respective non-cognitive correlates and their academic achievement.

The specific null hypotheses that were treated statistically in this investigation are as follows:

1. There is no significant relationship between students' perceptions of relative importance of the

eleven respective non-cognitive correlates and students' academic success as measured by teachers' grades and academic achievement test scores.

2. There is no significant relationship between (a) the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and (b) students' academic achievement as measured by teachers' grades and academic achievement test scores.

The .05 level of confidence was required for rejection of each of the above stated null hypotheses.

## II. DEVELOPMENT OF DATA COLLECTION INSTRUMENT

A survey was conducted of the publication and research related to this area of research. A list of predictors of significant influences on academic achievement was identified from the research. The initial list of predictors was refined through consolidating statements of similarity and eliminating statements that were not of concern to this study. The refined list of non-cognitive correlates was adapted to eleven statements in language appropriate for fifth-grade students.

A pilot study was conducted with fifth-grade students at O'Neal Elementary School in Silsbee, Texas. Personal interviews and responses to the instrument were obtained from

students, teachers, administrators, and university professors.

The revised instrument contained eleven statements of non-cognitive correlates of academic achievement. The eleven statements are presented in Figure 1.

This instrument utilized a simplified ranking procedure. Each student and teacher received eleven index cards. Each card contained one of the eleven non-cognitive statements of academic achievement. Each student and teacher ranked these eleven cards as to importance. This provided a ranking of all eleven correlates in order of importance for each student and each teacher.

### III. DESCRIPTION OF SUBJECTS

#### Students

All fifth-grade students in the Lumberton Independent School District who were coded as original entries in the class register and were in attendance at the close of the school year were included in this study. This involved a total number of 115 students.

#### Teachers

Four fifth-grade classroom teachers in the Lumberton Independent School District were included in this study. This comprises all of the teachers who teach regular academic subjects to the fifth-grade students. "Special" teachers of vocal

music, physical education, and band were not included even though they did teach their respective subject to the fifth-grade students.

#### IV. DESCRIPTION OF MEASURES EMPLOYED

##### Achievement Test Scores

The S. R. A. Achievement Series, Multi-level Edition, Form C<sup>1</sup> was administered as one instrument to determine level of student achievement. Interpretation of test results were made through ranking of students for comparison purposes.

The achievement tests were administered in the Spring, 1969. Subtest raw scores in language arts, English, mathematics, history, science, and total raw scores were used in this study.

##### Teacher Grades

Teacher grades were also used as a measure of academic achievement. Teacher grades are the composite evaluation of attitudes, daily work, tests, or any pertinent knowledge of the student which might contribute to his final grade.

Grades in mathematics, science, English, history, and language arts were obtained for each student. Semester grades, which include two nine-week reports and a semester test, counted

---

<sup>1</sup>Louis P. Thorp and others, S. R. A. Achievement Series, Multi-level Edition, Form C (Chicago: Science Research Association, 1963).

as equal parts, were utilized as teacher grades for this study. The overall average grades were the mean of the five subject grades. Grades were expressed as numerical values, with seventy considered as a minimum score and one hundred as the maximum attainable grade.

#### V. STATISTICAL TREATMENT OF DATA

Data related to the first hypothesis (There is no significant relationship between student's perceptions of relative importance of the eleven respective non-cognitive correlates and students' academic success as measured by teacher grades and academic achievement test scores.) were collected and analyzed as follows:

1. The PINCAS Instrument was administered to the teachers. Analysis of the use of this instrument provided a rank order of the statements relative to their importance to academic achievement. Rankings were determined for individual teachers, and these were used for further analysis related to the hypothesis. A composite ranking for teachers as a group was compiled and was of interest, although not directly applicable to the hypotheses.
2. The students received eleven index cards. Each card contained one of the eleven non-cognitive statements of academic achievement. Each student then ranked the eleven statements as to importance.

3. For each statement, a score was assigned based upon eleven points for a choice by the student as the most important correlate, ten points for a choice as the second most important, nine points for a third choice, etc. A composite list was then developed with the statement receiving the highest number of points becoming statement one, the statement receiving the second highest number of points becoming statement number two, etc., and the statement receiving the least number of points becoming statement number eleven.
4. Students were classified in groups as follows: All students who ranked statement one first constituted one group. Students who ranked statement one second constituted a second group. Continuation of this procedure established eleven groups.
5. The achievement test scores and grades for each student were collected. Each was treated as a dependent variable. The achievement test scores and grades were arranged and tabulated separately according to group membership.
6. A one-way analysis of variance was performed to determine if there were statistically significant differences between groups. This procedure of grouping and testing was repeated for each of the eleven statements.

7. This complete procedure was followed for composite test scores and for each of the subtest scores.

Data related to the second hypothesis (There is no significant relationship between (a) the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and (b) students' academic achievement as measured by teacher grades and academic achievement test scores.) were collected and analyzed as follows:

1. Each teacher ranked the eleven non-cognitive statements in the manner described in item two above.
2. The teacher's ranking of statement one was compared to each student's ranking of statement one for all students assigned to the teacher.
3. The students were classified into three groups as follows:
  - a. Students who ranked statement one more than one step above the teacher's ranking of statement one.
  - b. Students who ranked statement one equal to the teacher's ranking of statement one. A ranking by the students of one above or one below the teacher's were considered equal to teacher's ranking.
  - c. Students who ranked statement one more below the teacher's ranking of statement one.

4. The students' achievement test scores were arranged by these three groups and were treated in a one-way analysis of variance to determine if significant differences exist.

This procedure was repeated for groups of students classified according to each statement in the manner described in the three parts a, b, and c.

Thus similarities or differences were identified for each student with each of the teachers to whom he was assigned.

This procedure was followed for composite test scores and for each subtest score. In analyzing variances for the respective test scores, students were grouped according to their similarities to, or difference from, the teacher who taught the class in the subject most closely related to the subtest score being considered.

5. The same procedure described in 1, 2, 3, and 4 above was followed, using grades rather than achievement test scores as the dependent variable. Average grades were analyzed and treated.

## VI. SUMMARY

This chapter has presented the research procedure used in conducting this study. The purpose of the investigation was to determine the relationship between academic achievement and students' perceptions of the relative importance of

non-cognitive correlates. The study was limited to all fifth-grade teachers and fifth-grade students in the Lumberton Independent School District who were coded as original entries in the class register.

The development of the PINCAS Instrument involved analyzing previous research and publications, identifying predictors of significant influences on academic achievement, refining and consolidating statements of similarity, eliminating statements that were not of concern to this study, conducting a pilot study, and drafting the final instrument.

A one-way analysis of variance was used in the treatment of the data with the level of confidence set at .05.

The results of the data have been incorporated into chapters four and five, and are presented in table and textual form.

## CHAPTER IV

### RESULTS OF THE STUDY

The basic plan of this study involved the analysis of student and teacher perceptions of non-cognitive correlates of academic achievement. Eleven statements were selected through an extensive review of the research. Each statement was placed on a separate card and ranked by all fifth-grade students and teachers of the cooperating school district. The S. R. A. Achievement Series, Multilevel Edition, Form C and teacher grades were used as measures of academic achievement.

This chapter presents an analysis of the relationship between student perceptions of the relative importance of the eleven respective non-cognitive correlates and their academic achievement.

It was hypothesized that there would be no significant relationship between student perception of the relative importance of the eleven respective non-cognitive correlates and their academic achievement and that there would be no significant relationship between the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and student academic achievement.

The hypotheses were analyzed separately using the student achievement test scores and teacher grades as the dependent variables. The eleven statements were analyzed individually for each hypothesis.

Students were classified in groups for each statement according to their ranking of that statement. A one-way analysis of variance was carried out and an F ratio was obtained for each statement, for both hypotheses.

When the F ratio obtained was significant at the .05 level of confidence, additional analysis was required. A criterion was established and followed in analyzing the significant statements. For each significant statement, a minimum of two scores in each group or category was required before additional examinations or analysis were performed.

Tables were designed to present the mean of the achievement test scores and/or the teacher grades for each statement analyzed.

#### I. STUDENT RANKING OF NON-COGNITIVE CORRELATES

The students received eleven index cards. Each card contained a statement of one of the eleven non-cognitive correlates of academic achievement. Each student then ranked the eleven statements as to importance.

For each statement, a score was assigned based upon eleven points for a choice by the student as the most important

correlate, ten points for a choice as the second most important, nine points for a third choice, etc. A composite list was then developed with the statement receiving the highest number of points becoming statement number one, the statement receiving the second highest number of points becoming statement number two, etc., and the statement receiving the least number of points becoming statement number eleven.

The student rankings of the eleven statements tended to cluster in three groups. The five statements that directly relate to student attitudes toward the school and conditions were ranked most important by the students. Statements related to parental attitudes and perceptions were ranked as less important and fell in the second group. The third group consists of statements which pertain to socioeconomic status and peer relationships.

## II. COMPARISON OF TEACHER AND STUDENT RANKINGS OF IMPORTANCE OF NON- COGNITIVE CORRELATES

The students and teachers ranked each of the eleven statements of non-cognitive correlates. Students and teachers agreed on statement one, "the student has good work habits and good attitudes toward school." They also agreed on statement five, the student's perception of teacher attitude toward him, statement six, parental and other significant adults educational level expectations, and statement seven, parental and

other significant adults value of education. See Figure 2 for these comparisons.

There tended to be agreement on statement two, student self concepts, statement three, student educational plans, statement nine, father's occupation, statement ten, peer influences, and statement eleven, middle class family concept.

However, the students and teachers disagreed on statement four, "the student wants to make good grades and is happy when he does." The students ranked this statement four, or important, and the teachers ranked it eight, or not very important. Students ranked "parents and other significant adults encourage and reward students for good grades" as statement eight, or not important, whereas the teachers ranked it two, or very important.

Generally, students tended to rank their own attitudes and motivations as being slightly more important in determining academic success than did teachers. At the same time, teachers tended to consider parental attitudes and influences as more important while students viewed them as less important.

### III. FINDINGS PERTINENT TO FIRST HYPOTHESIS

The findings involved the statistical analysis of the relationship between student perceptions of the relative importance of the eleven non-cognitive correlates and the academic achievement of students. It was hypothesized that there would

| Student<br>Rankings |   | Teacher<br>Rankings |
|---------------------|---|---------------------|
| 1                   | The student has good work habits and good attitudes toward school.  | 1                   |
| 2                   | The student views himself as interested, ambitious, alert, careful, etc.  | 3                   |
| 3                   | The student definitely plans to graduate from high school and probably go on to college.  | 4                   |
| 4                   | The student wants to make good grades and is happy when he does.  | 8                   |
| 5                   | The student believes that his teacher is interested in him and is concerned about his welfare.                                    | 5                   |
| 6                   | The student's parents and other important adults expect him to graduate from high school and go on to college.                    | 6                   |
| 7                   | The student's parents and other important adults feel that a person must be well educated to be successful.                       | 7                   |
| 8                   | The student's parents and other important adults encourage him to do good work in school and praise him when he gets good grades. | 2                   |
| 9                   | The student's father is a professional (doctor, lawyer, banker) or a business manager, or a white collar worker.                  | 11                  |
| 10                  | The student's classmates and playmates are proud when they do good work in school.  | 9                   |
| 11                  | The student comes from a good middle class family.  | 10                  |

FIGURE 2

COMPARISON OF TEACHER AND STUDENT RANKINGS OF  
IMPORTANCE OF NON-COGNITIVE CORRELATES

be no significant relationship between student perceptions of relative importance of the eleven non-cognitive correlates and student academic success as measured by academic achievement test scores and by teacher grades.

Relationship Between Importance  
of Correlates and Student  
Achievement Test Scores

The statement receiving highest rankings in importance was "the student has good work habits and good attitudes toward school." This became statement one.

Students were divided into eleven groups, those ranking this statement as number one, those ranking it as number two, those ranking it as number three, and so forth, with the final group consisting of those who ranked the statement as number eleven, or least important. Mean achievement test scores were calculated for each of the eleven groups.

As shown in Table I, the F ratio obtained for the achievement test factor on statement one was below the required F at the .05 level of significance. The difference obtained between the means could have occurred by chance alone in 5 percent of a series of trials.

In other words, test scores of students who rated good work habits and good attitudes toward school as relatively unimportant did not differ significantly from test scores of students who rated it as quite important.

Table 1  
 Analysis of Variance of Achievement Test Scores  
 for the Eleven Non-cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares | Mean Square | F Ratio | Significance |
|-----------|-------------------|----------------|-------------|---------|--------------|
| 1         | 10                | 319.10         | 39.10       | 1.90    | NS           |
|           | 44                | 902.12         | 20.05       |         |              |
| 2         | 10                | 78.32          | 7.83        | .30     | NS           |
|           | 44                | 1138.32        | 25.87       |         |              |
| 3         | 10                | 421.39         | 42.13       | 1.69    | NS           |
|           | 44                | 1094.80        | 24.88       |         |              |
| 4         | 10                | 93.64          | 9.36        | .39     | NS           |
|           | 44                | 1051.54        | 23.89       |         |              |
| 5         | 10                | 39.33          | 3.93        | .15     | NS           |
|           | 44                | 1092.04        | 24.81       |         |              |
| 6         | 10                | 90.47          | 9.04        | .37     | NS           |
|           | 44                | 1069.22        | 24.30       |         |              |
| 7         | 10                | 178.55         | 17.85       | .65     | NS           |
|           | 44                | 1191.65        | 27.08       |         |              |
| 8         | 10                | 56.40          | 5.64        | .22     | NS           |
|           | 44                | 1118.29        | 25.41       |         |              |
| 9         | 10                | 155.64         | 15.56       | .66     | NS           |
|           | 44                | 1026.92        | 23.33       |         |              |
| 10        | 10                | 188.74         | 18.87       | .84     | NS           |
|           | 44                | 982.02         | 22.31       |         |              |
| 11        | 10                | 83.55          | 8.35        | .30     | NS           |
|           | 44                | 1212.71        | 27.56       |         |              |

NS - No significant difference.

For each of the other ten correlates or statements, the same procedure was followed. Students were assigned to eleven groups, depending upon how they ranked the statement, and a mean test score was calculated for each of the groups.

Analysis of variance are shown in Table I for mean test scores on each of the statements of correlates. F scores ranged from .15 to 1.69. None of the F ratios were significant at the .05 level. An F ratio of 2.05 was required for significance at this level. In other words, test scores of students who ranked any given correlates as very important, did not differ significantly from test scores of students who ranked the same correlate as unimportant.

The null hypothesis as stated was not rejected. Significant relationships did not exist between student perceptions of the relative importance of non-cognitive correlates and their academic success as measured by achievement test scores. The analysis of variance with achievement test scores and student rankings as to importance of the non-cognitive correlates failed to yield a significant F ratio at the .05 level of significance with any of the eleven statements. The variation among groups could have occurred due to chance.

Relationship Between Importance of  
Correlates and Student Achievement  
as Measured by Teacher Grades

However, relationship between perceived importance of non-cognitive correlates and academic achievement was also

tested, using teacher grades as criteria of achievement. Where the relationship between importance of correlates and pupils standard achievement test scores did not prove to be significant, there was some evidence of significant relationship between importance of correlates and teacher grades received by students. As in the previous set of tests, groups were formed for each of the respective correlate statements and significance of differences in mean grades were analyzed. Results are shown in Table II.

In the case of one of the eleven correlates, no significant relationship was found. Statement eleven, "the student comes from a good middle class family," failed to yield a significant F ratio.

In the case of five correlates, significant relationships were found, but the criterion requiring a minimum of two scores in each group was not met. Differences in mean grades were significant, but these differences might have been due to the lack of scores in some groups rather than to the relative importance or unimportance assigned to the statement. These correlate statements were the ones concerned with student work habits and attitudes toward school, student educational plans, student desire for good grades, student perception of teacher interest, and attitudes and values of student peer groups.

Table 2  
 Analysis of Variance of Teacher Grades for the  
 Eleven Non-cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares   | Mean Square   | F Ratio | Significance |
|-----------|-------------------|------------------|---------------|---------|--------------|
| 1         | 10<br>44          | 1320.87<br>12.73 | 132.08<br>.28 | 456.70  | *            |
| 2         | 10<br>44          | 6.56<br>11.08    | .65<br>.25    | 2.60    | .05          |
| 3         | 10<br>44          | 1324.65<br>12.63 | 132.46<br>.28 | 461.13  | *            |
| 4         | 10<br>44          | 6.10<br>11.10    | .61<br>.25    | 2.41    | *            |
| 5         | 10<br>44          | 52.65<br>16.86   | 5.26<br>.38   | 13.73   | *            |
| 6         | 10<br>44          | 9.39<br>11.98    | .93<br>.27    | 3.45    | .05          |
| 7         | 10<br>44          | 6.44<br>9.95     | .64<br>.22    | 2.85    | .05          |
| 8         | 10<br>44          | 8.50<br>9.91     | .85<br>.22    | 3.77    | .05          |
| 9         | 10<br>44          | 16.55<br>11.71   | 1.65<br>.26   | 6.21    | .05          |
| 10        | 10<br>44          | 17.48<br>18.90   | 1.74          | 4.07    | *            |
| 11        | 10<br>44          | 2.81<br>12.27    | .28<br>.27    | 1.00    | NS           |

NS - No significant difference.

\* - Significant at .05 level, but criterion of two scores not met.

.05 - Significant at .05 level.

In the cases of the other five correlate statements, significant differences in mean grades were found and criterion met. Teacher grades received by pupils did tend to relate to the relative importance or unimportance of the correlates as perceived by the pupils. These correlate statements were the ones concerned with student self image, parental expectations of further education, parental expectations of the benefits of education, parental praise and reward of good grades, and father's occupation.

Table II shows the ratios for each of the eleven correlate statements. Figures 3 through 7 show the analysis of mean grade averages for the eleven ranking groups for each of the respective correlates which showed significant relationships and which met the criteria of having a minimum of two scores in each group.

When the nature of the significant relationships was examined for each of the five related correlates, the following findings were disclosed.

The mean grades for each ranked group did not establish a consistent pattern for correlate statement number two, "the student views himself as interested, ambitious, alert, careful, etc." The higher means did appear to cluster around the middle ranked groups. Students who ranked statement two as most important, or as least important, tended to receive lower teacher grades.

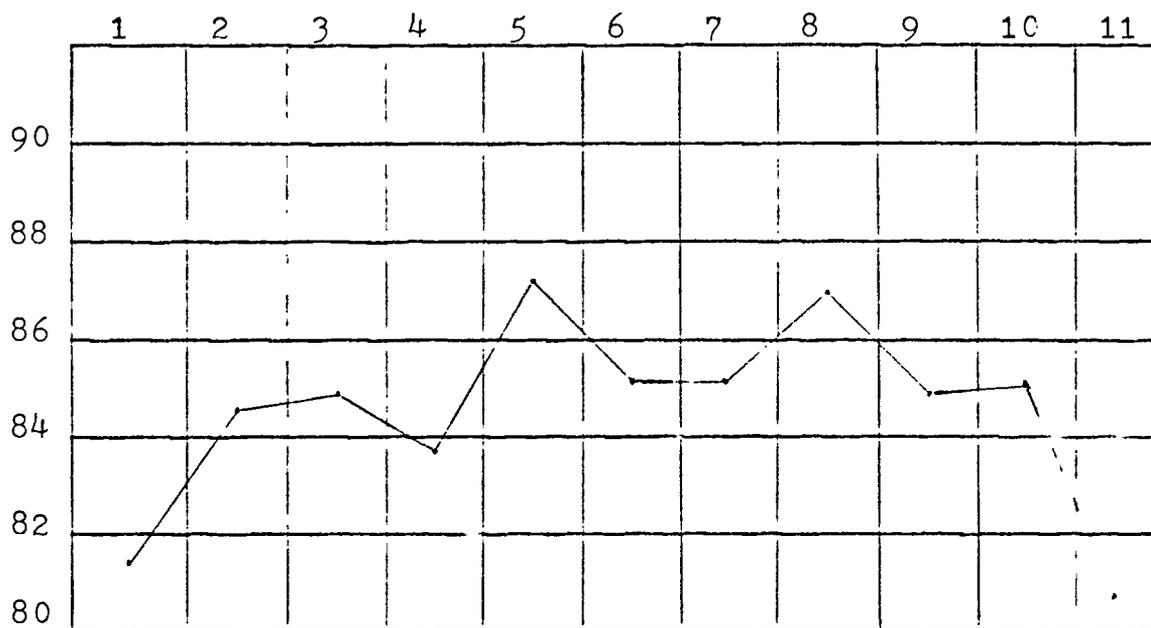


FIGURE 3

MEAN GRADE AVERAGES IN RANKED  
GROUPS FOR STATEMENT TWO

The analysis of student rankings of statement six, "the student's parents and other important adults expect him to graduate from high school and go on to college," obtained a significant F ratio. The F ratio is presented in Table II. Figure 4 presents the means of student grades for each ranked group of statement six. The mean grades of the students were not consistent with the rank order of the statement. Group eleven, consisting of the students who gave this statement the least important ranking, had the highest grade average. Students who ranked statement six least important, tended to score higher grades.

The student ranking of statement seven, "the student's parents and other important adults feel that a person must be well educated to be successful," and teacher grades, presented a significant relationship. The F ratio obtained was significant. The mean grades for each ranked group in statement seven are presented in Figure 5. There was a slight tendency for students who ranked statement seven as most important to score higher teacher grades. Students who ranked the statement least important tended to score slightly lower teacher grades.

A significant relationship was obtained in analyzing student ranking of statement eight, "the student's parents and other important adults encourage him to do good work in school and praise him when he gets good grades" and their achievement as measured by teacher grades. Figure 6 shows

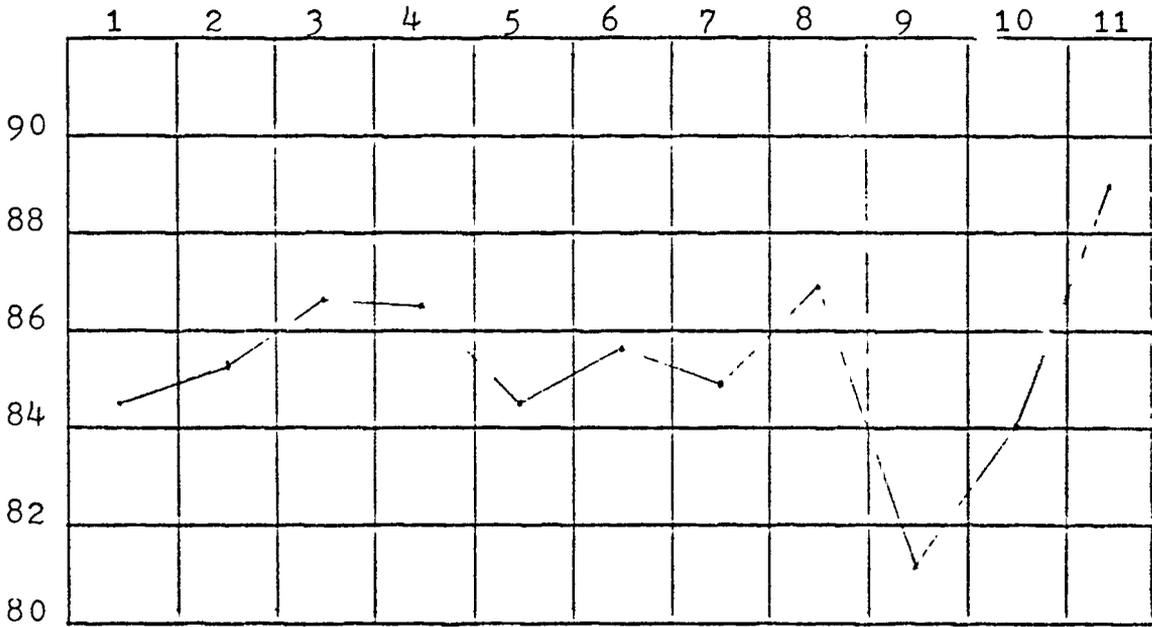


FIGURE 4

MEAN GRADE AVERAGES IN RANKED  
GROUPS FOR STATEMENT SIX

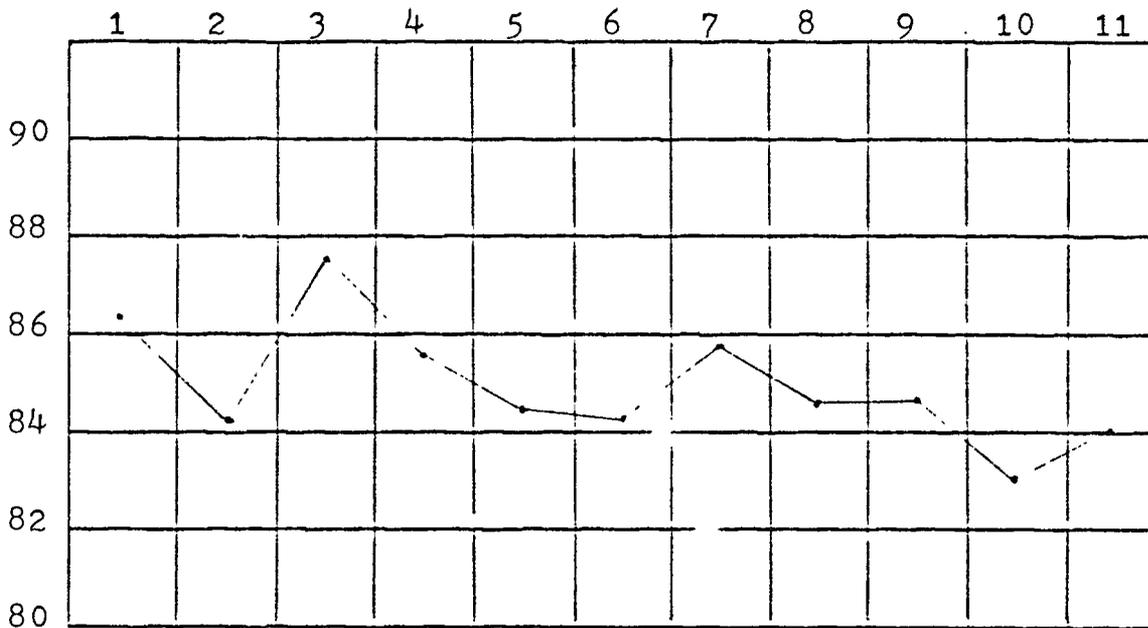


FIGURE 5

MEAN GRADE AVERAGES IN RANKED GROUPS  
FOR STATEMENT SEVEN

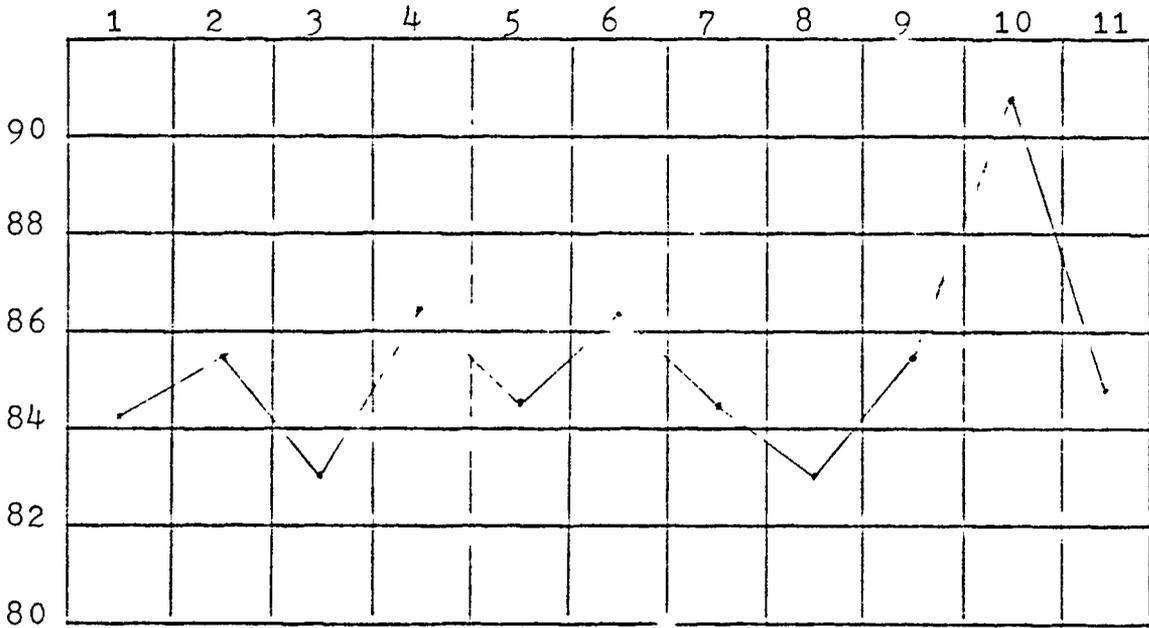


FIGURE 6

MEAN GRADE AVERAGES IN RANKED GROUPS  
FOR STATEMENT EIGHT

the mean grades for each ranked group for statement eight. The pattern of grades appears to be inconsistent. The composite ranking of both students and teachers was five for this statement. Students who rated this statement eighth, ninth, or eleventh in importance tended to score slightly lower grades, yet a ranking of ten yielded the highest mean grade of all.

Relationship between the student ranking of statement nine, "the student's father is a professional (doctor, lawyer, banker) or a business manager, or a white collar worker," and teacher grades was significant. The mean grades for each ranked group of statement nine are presented in Figure 7. The pattern of mean grades ranged from a low of 82 and 80 in the first and second groups to a high of 90 in the sixth group. Students who ranked statement nine as being of medium importance tended to score higher teacher grades, while students who ranked the statement as least important received slightly lower grades, and those who considered it most important received the lowest grades of all.

#### IV. FINDINGS PERTINENT TO SECOND HYPOTHESIS

The findings involved the statistical analysis of relationship between the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and

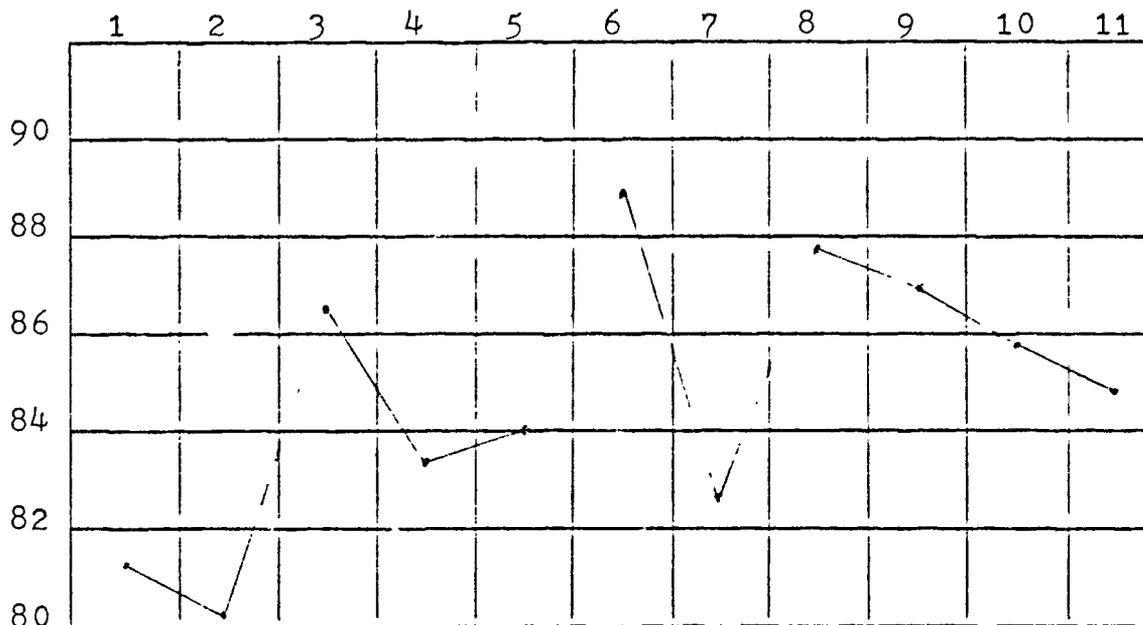


FIGURE 7

MEAN GRADE AVERAGES IN RANKED  
GROUPS FOR STATEMENT NINE

student academic achievement as measured by academic achievement test scores and teacher grades.

It was hypothesized that there would be no significant relationship between the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and student academic achievement as measured by academic achievement test scores and teacher grades.

The students were classified into three groups based on their ranking of each correlate. One group was comprised of students who ranked a given statement more than one step above the teacher ranking of that statement. The second group included students who ranked a given statement equal to the teacher ranking of the statement. (A ranking by the students of only one step above or one below the teacher ranking was considered equal to the teacher ranking.) The third group consisted of students who ranked a given statement more than one step below the teacher ranking of that statement.

The student achievement test scores were averaged for each of these three groups. This procedure was repeated for each correlate. The same procedure was then followed using average teacher grades rather than achievement test scores.

It was necessary to work with two separate populations--students taught in a self-contained classroom by only one teacher, and students who were taught in a departmentalized

situation and taught by more than one teacher. For the former, the student agreement or disagreement with a single teacher group was analyzed. For the larger group, student agreement or disagreement with the average ranking for a three-teacher group was analyzed.

Relationship Between Agreement  
and Student Achievement  
Test Scores

The relationship between student agreement or disagreement with their teachers' perception of the importance of the non-cognitive correlates and their achievement test scores were analyzed.

Student agreement and student achievement test scores were analyzed separately for students who had three teachers and students who had only one teacher.

The analysis of agreement for students with their teachers and their achievement test scores, Table III, failed to yield a significant relationship in ten of the eleven non-cognitive correlates. Statement ten, "the student's classmates and playmates are proud when they do good work in school," did show a significant relationship. However, the analysis failed to meet the criterion requiring a minimum of two scores in each group. The difference obtained could have been caused by the zero group alone.

Table 3

Analysis of Variance of Three Teacher Achievement  
Test Scores for the Eleven Non-  
cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares | Mean Square | F Ratio | Significance |
|-----------|-------------------|----------------|-------------|---------|--------------|
| 1         | 10                | 430.54         | 43.05       | 1.97    | NS           |
|           | 44                | 957.51         | 21.76       |         |              |
| 2         | 10                | 64.19          | 6.41        | .23     | NS           |
|           | 44                | 1223.67        | 27.81       |         |              |
| 3         | 10                | 456.72         | 45.67       | 1.66    | NS           |
|           | 44                | 1206.58        | 27.42       |         |              |
| 4         | 10                | 94.00          | 9.40        | .36     | NS           |
|           | 44                | 1130.64        | 25.69       |         |              |
| 5         | 10                | 38.65          | 3.86        | .13     | NS           |
|           | 44                | 1240.67        | 28.19       |         |              |
| 6         | 10                | 105.96         | 10.59       | .40     | NS           |
|           | 44                | 1150.55        | 26.14       |         |              |
| 7         | 10                | 150.17         | 15.01       | .52     | NS           |
|           | 44                | 1268.49        | 28.82       |         |              |
| 8         | 10                | 51.78          | 5.17        | .18     | NS           |
|           | 44                | 1226.80        | 27.88       |         |              |
| 9         | 10                | 175.87         | 17.58       | .68     | NS           |
|           | 44                | 1137.14        | 24.84       |         |              |
| 10        | 10                | 530.90         | 53.09       | 2.44    | *            |
|           | 44                | 954.61         | 21.69       |         |              |
| 11        | 10                | 62.62          | 6.26        | .21     | NS           |
|           | 44                | 1295.29        | 29.43       |         |              |

\* - Significant, but criterion of two scores per group not met.

As shown in Table IV, student agreement with one teacher and achievement test scores failed to yield a significant relationship in six of the eleven non-cognitive correlates. The agreement on five statements, two, four, five, eight, and nine, were significantly related to achievement test scores. Again, however, each of the five statements failed to meet the criterion requiring at least two scores in each group. The zero groups alone could have caused the difference.

Although no significant relationships were found, the statement that there are no relationships cannot be made realistically. Within the limitations of this research, no significant relationships were found, but the possibility of relationship still exists.

#### Relationship Between Agreement and Students' Teacher Grades

The analysis of relationship between student agreement with their teachers on perception of the importance of the statements of non-cognitive correlates and academic achievement as measured by teacher grades did reveal evidence of significant relationships.

Relationships between student agreement or disagreement with their teachers' perception on the importance of the non-cognitive correlates were analyzed separately for students with three teachers and students with one teacher.

Table 4

Analysis of Variance of One Teacher Achievement  
Test Scores for the Eleven Non-  
cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares   | Mean Square    | F Ratio | Significance |
|-----------|-------------------|------------------|----------------|---------|--------------|
| 1         | 2<br>12           | 1.11<br>169.59   | .55<br>14.13   | .03     | NS           |
| 2         | 2<br>12           | 133.74<br>114.55 | 66.87<br>9.54  | 7.00    | *            |
| 3         | 2<br>12           | 3.39<br>168.11   | 1.69<br>14.00  | .12     | NS           |
| 4         | 2<br>12           | 176.42<br>166.17 | 88.21<br>13.84 | 6.37    | *            |
| 5         | 2<br>12           | 133.53<br>113.36 | 66.76<br>9.44  | 7.06    | *            |
| 6         | 2<br>12           | .92<br>174.51    | .46            | .03     | NS           |
| 7         | 2<br>12           | 2.64<br>179.71   | 1.32<br>14.97  | .08     | NS           |
| 8         | 2<br>12           | 115.34<br>97.22  | 57.67<br>8.10  | 7.11    | *            |
| 9         | 2<br>12           | 132.90<br>111.48 | 66.45<br>9.29  | 7.15    | *            |
| 10        | 2<br>12           | .23<br>168.53    | .11<br>14.04   | .00     | NS           |
| 11        | 2<br>12           | .18<br>189.36    | .09<br>15.78   | .00     | NS           |

\* - Significant, but criterion of two scores per group not met.

Student agreement with three teachers and their teacher grades did yield significant relationships for ten of the eleven non-cognitive correlates. Statement ten failed to yield a significant relationship.

Statements one, three, eight, nine, and eleven were significant but were not analyzed further because of criterion requiring a minimum of two scores in each group. These correlates were the ones concerned with student work habits and attitudes toward school, student educational plans, parental encouragement and reward of good grades, father's occupation, and socioeconomic status of family

Significant relationships were found between degree of agreement and student grades on statements two, four, five, six, and seven. These correlates dealt with student self image, student desire for good grades, student perception of teacher interest, parental educational plans for students, and parental concept of value of education.

Table V shows the F ratios for each of the eleven correlate statements. Figures 8 through 12 present the analysis of mean grade averages for the three groups for each of the correlates which showed significant relationships and which met the criteria requiring a minimum of two scores in each group.

When the nature of the significant relationships was examined for each of the five related correlates, the following findings were disclosed.

Table 5

Analysis of Variance of Three Teacher Grades for  
the Eleven Non-cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares   | Mean Square   | F Ratio | Significance |
|-----------|-------------------|------------------|---------------|---------|--------------|
| 1         | 10<br>44          | 1318.77<br>15.00 | 131.87<br>.34 | 386.63  | *            |
| 2         | 10<br>44          | 10.21<br>11.76   | 1.02<br>.26   | 3.81    | .05          |
| 3         | 10<br>44          | 1318.08<br>12.41 | 131.80<br>.28 | 467.20  | *            |
| 4         | 10<br>44          | 7.43<br>12.70    | .74<br>.28    | 2.57    | .05          |
| 5         | 10<br>44          | 52.48<br>18.09   | 5.24<br>.41   | 12.76   | .05          |
| 6         | 10<br>44          | 11.86<br>13.93   | 1.18<br>.31   | 3.74    | .05          |
| 7         | 10<br>44          | 7.66<br>10.10    | .76<br>.22    | 3.33    | .05          |
| 8         | 10<br>44          | 8.60<br>9.78     | .86<br>.22    | 3.86    | *            |
| 9         | 10<br>44          | 39.11<br>13.62   | 3.91<br>.30   | 12.62   | *            |
| 10        | 10<br>44          | 5.45<br>13.47    | .54<br>.30    | 1.70    | NS           |
| 11        | 10<br>44          | 1314.28<br>16.92 | 131.42<br>.38 | 342.62  | *            |

NS - No significant difference.

\* - Significant, but criterion of two scores per group not met.

.05 - Significant at .05 level.

The analysis of student agreement with three teachers and their teacher grades resulted in a significant relationship for statement two, "the student views himself as interested, ambitious, alert, careful, etc." The F ratio obtained was significant at the .05 level of confidence. Figure 8 shows the mean grade for each group of students according to their ranking of statement two. The students who ranked statement two equal to the teachers had a higher mean grade than the student who ranked the statement above or below the teacher ranking. Students who ranked statement two less important than their teachers tended to score the lowest grades.

The analysis of student agreement with three teachers on correlate statement four, "the student wants to make good grades and is happy when he does," and their teacher grades showed a significant relationship. The significant F ratio of 2.57 was obtained. The student mean grade for each group is presented in Figure 9. Students who agreed with the teacher had a mean grade of 86.0. Students who disagreed with the teacher and ranked statement four above the teacher had a mean grade of 86.5. Students who ranked the statement below the teacher had a mean grade of 84.1.

Relationship between agreement on statement five, "the student believes that his teacher is interested in him and is concerned about his welfare," and three teacher grades yielded a significant relationship. The significant F ratio of 12.76 was

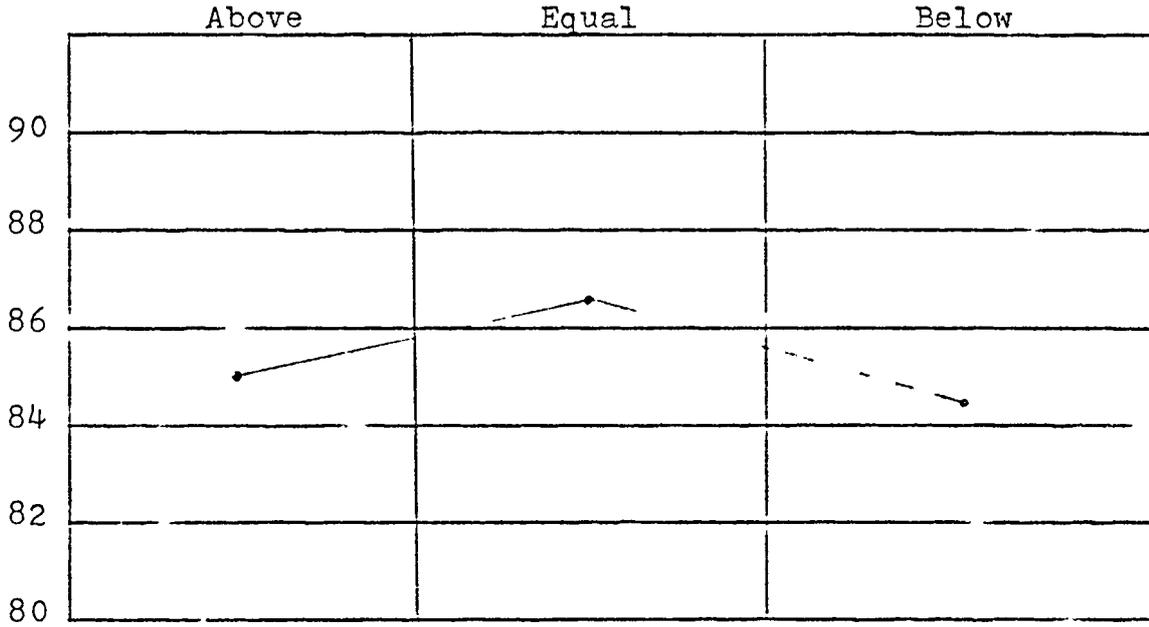


FIGURE 8

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT TWO ABOVE, EQUAL AND BELOW TEACHER RANKINGS

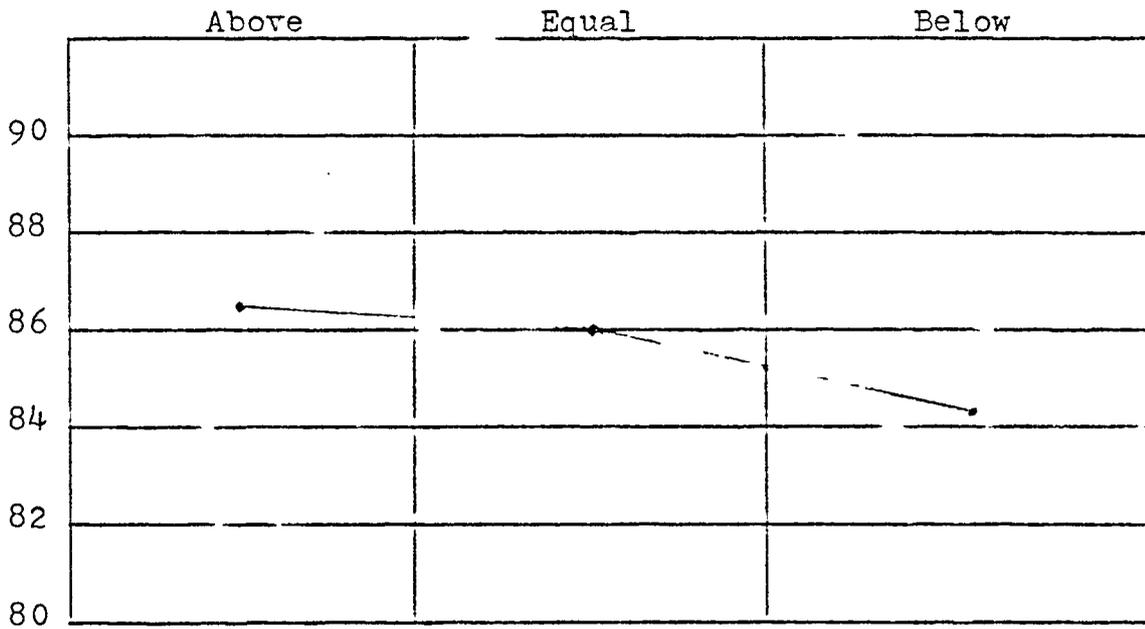


FIGURE 9

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT FOUR  
ABOVE, EQUAL AND BELOW TEACHER RANKINGS

obtained. Figure 10 presents the student mean grade for each group. The mean grade for students who agreed with the teacher ranking of statement five was 84.7. The students who ranked the statement above the teacher achieved a mean of 85.7. Students who ranked the statement below the teacher rank scored a mean grade of 86.6. Students tended to score higher grades if they disagreed with the teacher.

The analysis of student agreement with three teachers on statement six, "the student's parents and other important adults expect him to graduate from high school and go on to college," and teacher grades, presented a significant relationship. The student mean grade for each group is plotted in Figure 11. Students who ranked statement six equal to the teachers had a mean grade of 85.3. The student who ranked the statement above the teachers scored 84.4 as a mean grade. The students who ranked statement six below the teacher ranking had a mean grade of 85.4. Students who ranked the statement more important than the teacher tended to score the lower grades.

The analysis of statement seven, "the student's parents and other important adults feel that a person must be well educated to be successful," on student agreement with three teachers and their teacher grades presented a significant relationship. Student mean grades in each group for statement seven is presented in Figure 12. The students who agree with the teacher rankings had a mean grade of 85.4. The students who disagreed

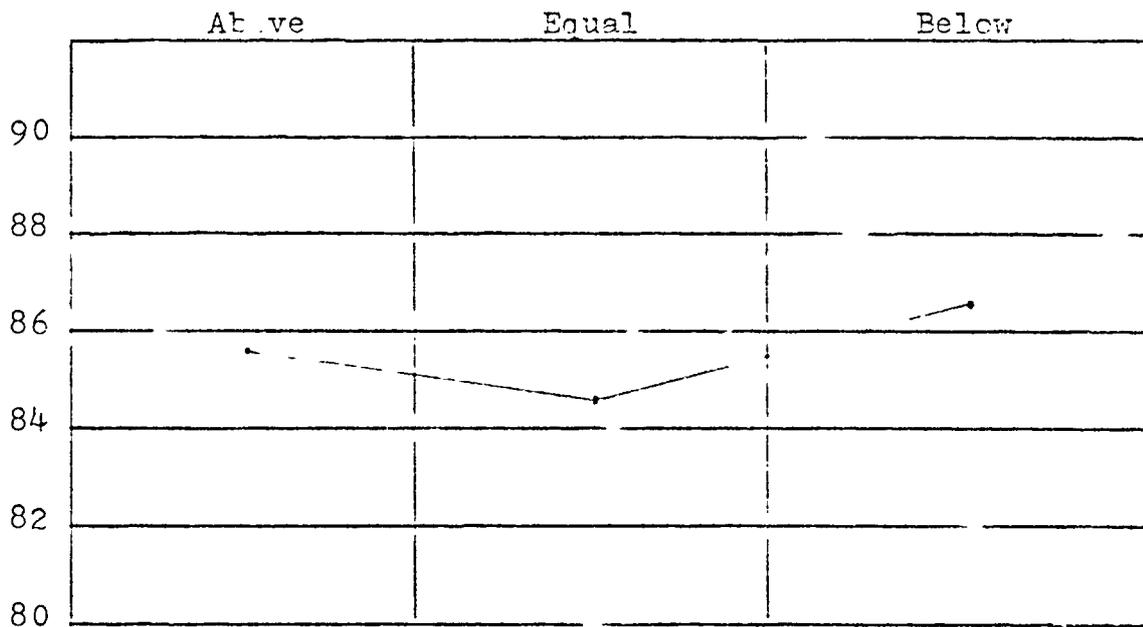


FIGURE 10

MEAN GRADES OF STUDENTS WHO RANKED STATEMENT FIVE  
ABOVE, EQUAL AND BELOW TEACHER RANKINGS

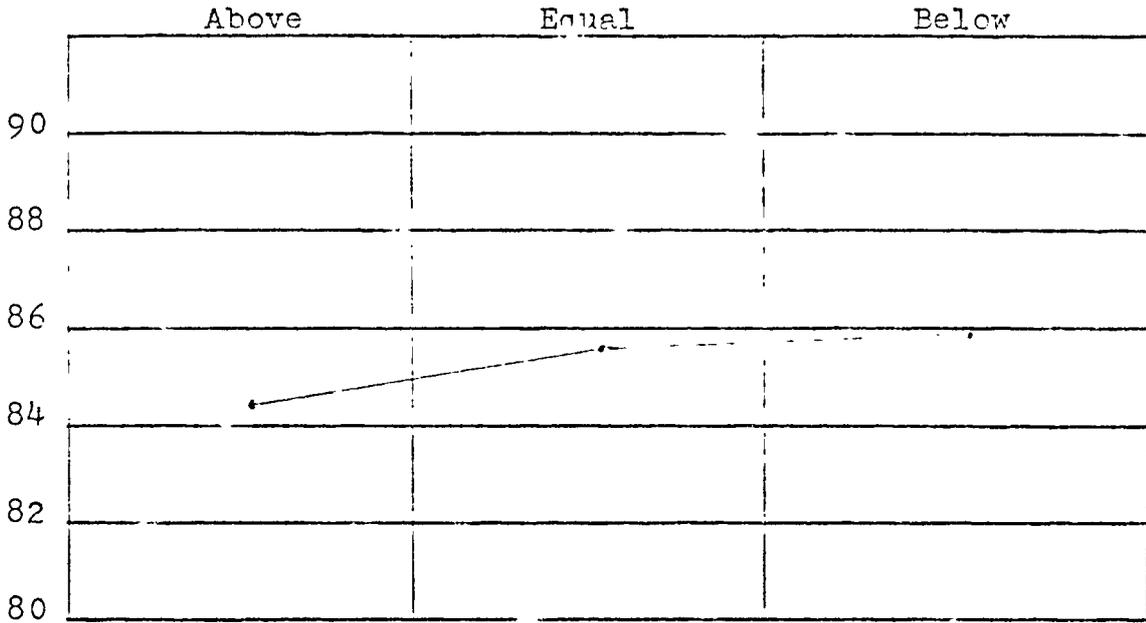


FIGURE 11

MEAN GRADE C STUDENTS WHO RANKED STATEMENT SIX ABOVE, EQUAL AND BELOW TEACHER RANKINGS

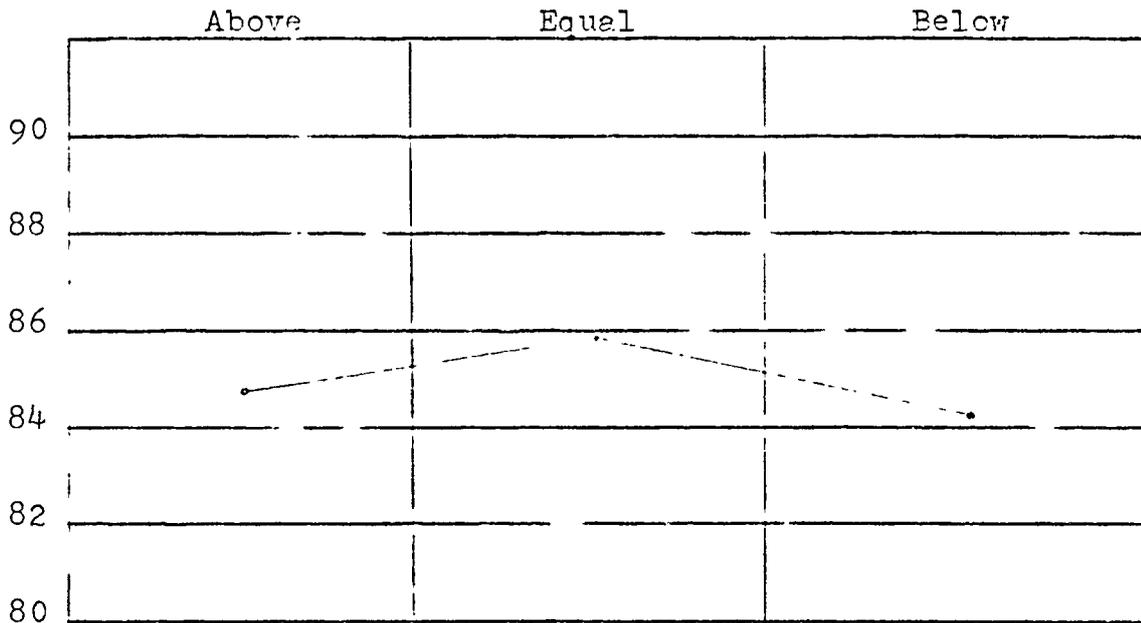


FIGURE 12

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT SEVEN  
ABOVE, EQUAL AND BELOW TEACHER RANKINGS

with the teacher and ranked the statement above the teacher ranking had a mean grade of 84.8. The students who disagreed and ranked the statement below the teacher ranking had a mean grade of 84.1. Students who agreed with the teacher tended to score higher grades.

The analysis of agreement for students with one teacher and their teacher grades yielded a significant relationship in eight of the eleven non-cognitive correlates. Statements seven, ten, and eleven were not significant. Statements two, four, five, eight, and nine were significant but had zero groups. These correlates dealt with student self image, student desire for good grades, student perception of teacher interest, parental encouragement and reward of good grades, and the father's occupation. Further examination was not performed because criterion requiring at least two scores in each group was not met. The differences obtained could have been caused by the zero group alone.

Significant relationships were found between degree of agreement of student grades on statement one, three, and six. These three correlates dealt with student work habits and attitudes toward school, student educational goals, and parental educational plans for students.

Table VI shows the F ratios for each of the eleven correlate statements. Figures 13 through 15 present the analysis of mean grade averages for the three groups for each of the

Table 6

Analysis of Variance of One Teacher Grades for  
the Eleven Non-cognitive Correlates

| Statement | Degree of Freedom | Sum of Squares | Mean Square | F Ratio | Significance |
|-----------|-------------------|----------------|-------------|---------|--------------|
| 1         | 2                 | 5.49           | 2.74        | 5.14    | .05          |
|           | 12                | 6.41           | .53         |         |              |
| 2         | 2                 | 962.77         | 481.38      | **      | *            |
|           | 12                | 3.66           | .30         |         |              |
| 3         | 2                 | 7.45           | 3.72        | 6.03    | .05          |
|           | 12                | 7.41           | .61         |         |              |
| 4         | 2                 | 991.97         | 495.98      | 897.41  | *            |
|           | 12                | 6.63           | .55         |         |              |
| 5         | 2                 | 964.47         | 482.23      | **      | *            |
|           | 12                | 4.02           | .33         |         |              |
| 6         | 2                 | 6.21           | 3.10        | 6.40    | .05          |
|           | 12                | 5.81           | .48         |         |              |
| 7         | 2                 | 1.88           | .94         | 1.25    | NS           |
|           | 12                | 9.02           | .75         |         |              |
| 8         | 2                 | 974.31         | 487.15      | **      | *            |
|           | 12                | 2.67           | .22         |         |              |
| 9         | 2                 | 932.45         | 466.22      | **      | *            |
|           | 12                | 4.41           | .36         |         |              |
| 10        | 2                 | 2.65           | 1.32        | 2.65    | NS           |
|           | 12                | 5.99           | .49         |         |              |
| 11        | 2                 | 3.35           | 1.67        | 2.35    | NS           |
|           | 12                | 8.55           | .71         |         |              |

NS - No significant difference.

\* - Significant, but criterion of two scores per group not met.

\*\* - F ratio approaches infinity.

.05 - Significant at .05 level.

correlates which showed significant relationships and which met the criterion requiring a minimum of two scores in each group.

In examining the nature of the significant relationships for each of the three related correlates the following findings were disclosed.

The analysis of student agreement with their teacher on importance of "the student has good work habits and good attitudes toward school" and their teacher grades presented a significant relationship. Figure 13 presents student mean grades in graphic form according to their ranking of statement one. Students ranking statement one higher than the teacher received a mean grade of 80. Students ranking the statement equal to the teacher had a mean grade of 85.3. Students ranking statement one below the teacher had a mean grade of 87.2.

An analysis of student agreement with one teacher and their teacher grades presented a significant relationship for statement three, "the student definitely plans to graduate from high school and probably go on to college." Figure 14 presents mean grades of students in each group. Students who agreed with the teacher ranking were placed in the equal group and scored the lowest grades--79.6. Students who ranked the statement above the teacher averaged 84.8 in teacher grades, and students who ranked the statement below the teacher averaged 80.2 in teacher grades. Students who agreed with the teacher on the importance of statement three tended to score the lowest grades.

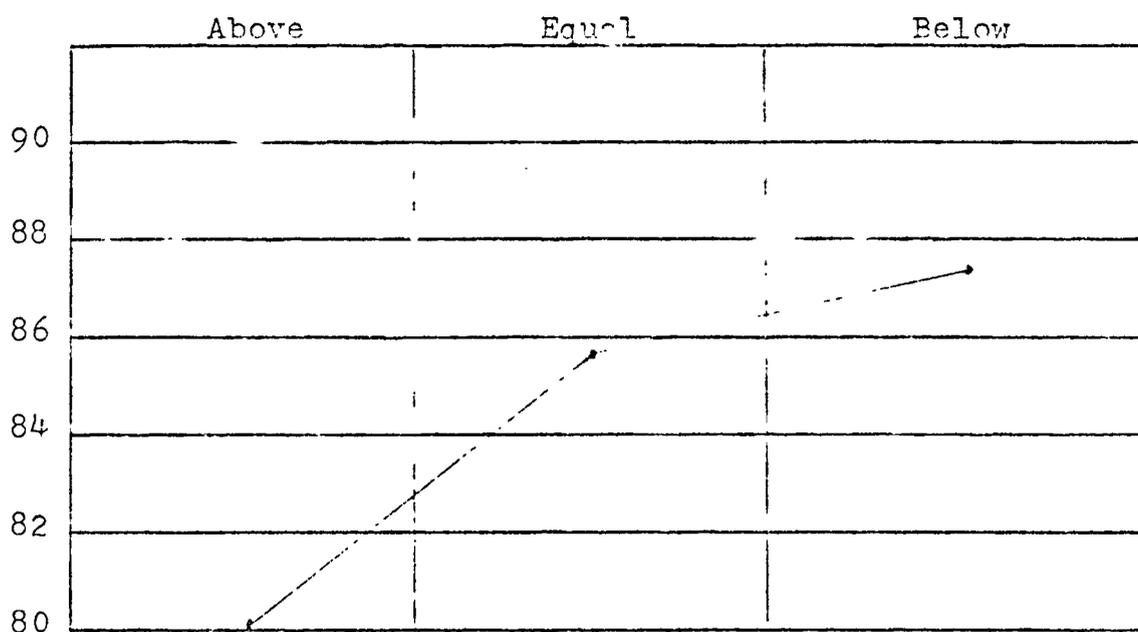


FIGURE 13

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT ONE  
ABOVE, EQUAL AND BELOW TEACHER RANKINGS

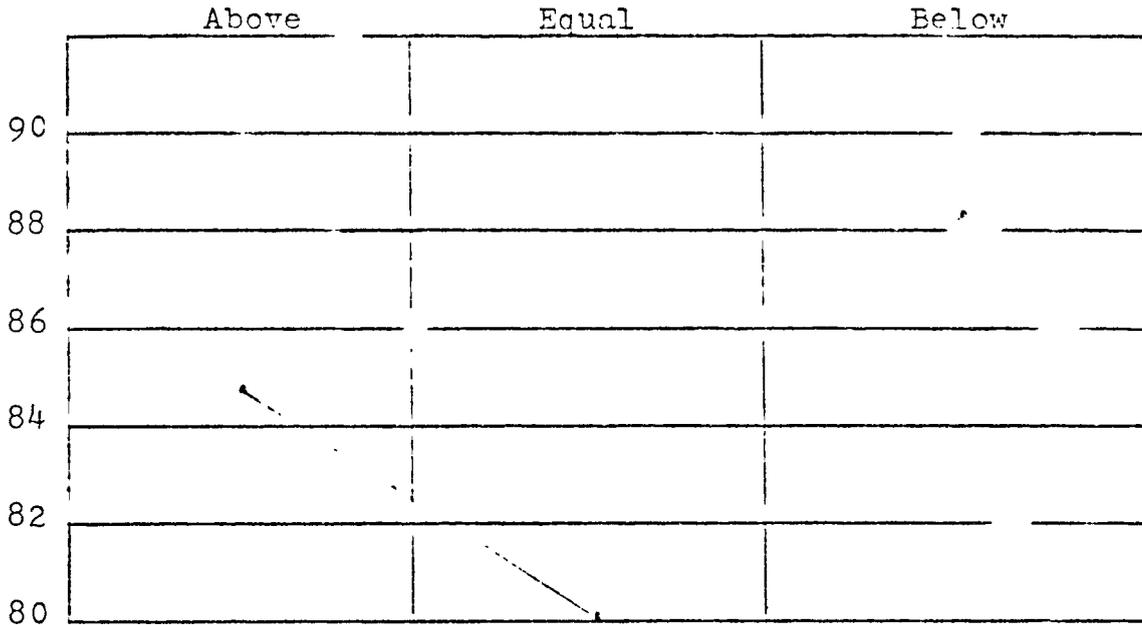


FIGURE 14

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT THREE ABOVE, EQUAL AND BELOW TEACHER RANKINGS

"The student's parents and other important adults expect him to graduate from high school and go on to college" became statement six. Student agreement with one teacher and their teacher grades presented a significant relationship for statement six. Figure 15 presents the mean grade for each group of students. Students who ranked statement six equal to the teachers ranking achieved a mean grade of 84.6. The students in the above group scored 89.4 for a group mean grade as opposed to an 81.6 mean grade for the students in the group who ranked the statement below the teacher. Students who ranked statement six more important tended to score much higher grades than students who ranked the statement less important.

### Summary

The null hypothesis was rejected. Significant relationships did exist between the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and student academic success as measured by teacher grades.

Analysis of student agreement or disagreement with their teachers regarding relative importance of the eleven non-cognitive correlates of academic achievement and of the grades which students received indicated the presence of a significant relationship. However, the data failed to reveal any consistent pattern which might explain the nature of, or reason for, this relationship.

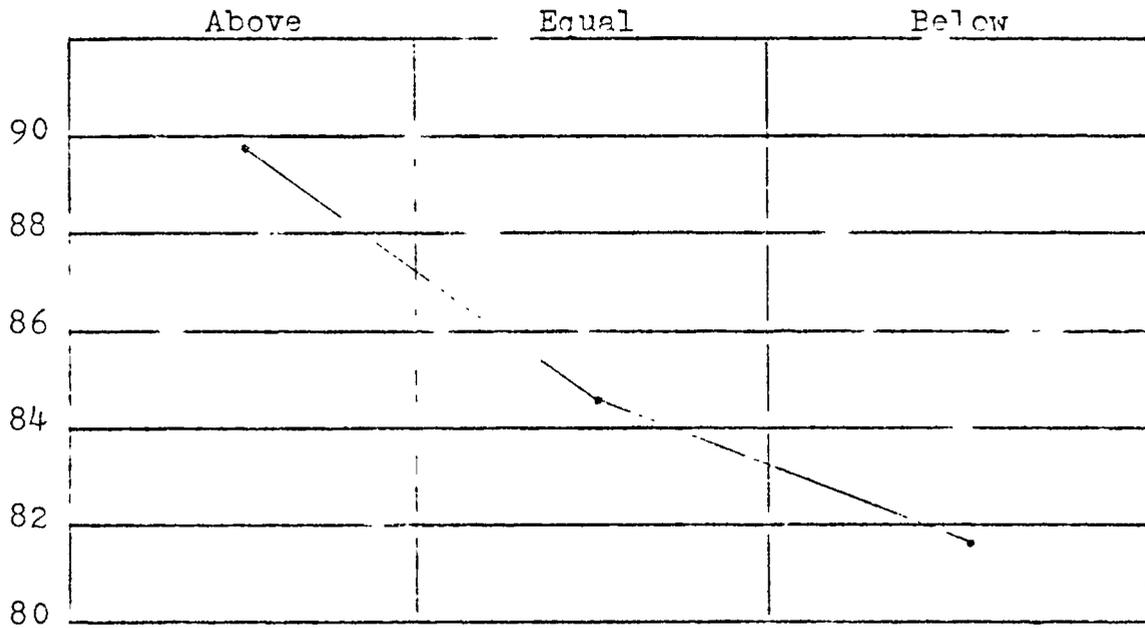


FIGURE 15

MEAN GRADE OF STUDENTS WHO RANKED STATEMENT SIX ABOVE, EQUAL AND BELOW TEACHER RANKINGS

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The purpose of this study was to determine whether students' academic achievement was significantly related to their perceptions of the importance of eleven statements of non-cognitive correlates, and whether their achievement was related to their agreement or disagreement with their teachers' perceptions of the importance of these same non-cognitive correlates of academic achievement.

Educators and parents for years have been concerned with the child's ability to achieve in school. Review of the literature shows much research regarding cognitive correlates of academic achievement. However, these previous studies based on cognitive abilities have not adequately predicted a student's academic achievement. The concern has led to investigation of the possible role in achievement of the non-cognitive factors.

In this study, two specific questions were investigated.

1. Does a student's academic achievement measurably relate to his attitudes as to what is important in determining academic success or lack of success?
2. Do students who agree with their teachers as to which are more important non-cognitive correlates

tend to achieve more academic success than those students who disagree with their teachers?

A thorough survey of literature and research identified a list of predictors of academic achievement. This list was refined through consolidation of statements of similarity. Statements regarding the cognitive domain were eliminated. This left a list of eleven non-cognitive correlates of academic achievement. Each of the eleven correlates were expressed in language appropriate for elementary school students, and these constituted an instrument called PINCMS (Perceptions of Importance of Non-Cognitive Correlates of Academic Success).

The instrument utilized a simplified ranking procedure. Each student and teacher in the research sample ranked the eleven statements as to importance with a ranking of one being the most important and eleven being the least important. This provided a ranking of all eleven correlates in order of importance for each student and each teacher. The instrument was administered to all fifth-grade students and teachers in the Lumberton Independent School District. Thus the sample was composed of 108 students who completed the total school year and four teachers who taught regular academic subjects.

The S. R. A. Achievement Series subtest raw scores and teachers' grades in language arts, English, history, mathematics and science were obtained for each student. Total achievement test scores and average teacher grades were obtained. Raw

test scores, teacher grades, and the ranking of each non-cognitive correlate statement for each student were tabulated and prepared for computer processing. A computerized program of one-way analysis of variance was used to treat the data. The level of significance was set at .05.

## I. FINDINGS

The findings of this research is presented for both hypotheses. Each hypothesis is reported in two divisions: achievement test scores and teacher grades.

### Hypothesis 1

There is no significant relationship between student perception of the relative importance of the eleven respective non-cognitive correlates and their academic achievement as measured by academic achievement test scores and teacher grades.

Achievement test scores. Significant relationships were not found between student perceptions of the relative importance of non-cognitive correlates and their academic success as measured by achievement test scores. None of the F ratios were significant at the .05 level. Test scores of students who ranked any given correlate as very important, did not differ significantly from test scores of students who ranked the same correlates as unimportant.

Teacher grades. There was some evidence of significant relationship between importance of correlates and teacher grades. One statement, "the student comes from a good middle class family," failed to yield a significant F ratio. Significant relationships were found for five correlates, but the criterion requiring a minimum of two scores in each group was not met. Differences in mean grades were significant, but these differences might have been due to the lack of scores in some group rather than to the relative importance assigned to the statement. These correlates were the ones concerned with the student work habits and attitudes toward school, student educational plans, student desire for good grades, student perception of teacher interest, and attitudes and values of student peer groups.

In the case of the other five statements, significant differences in mean grades were found and criterion met. Teacher grades received by pupils did tend to relate to the relative importance or unimportance of the correlates as perceived by the pupils.

Students who ranked statement two, "the student views himself as interested, ambitious, alert, careful, etc.," either as most important, or as least important, tended to receive lower teacher grades than did students who gave it less extreme rankings.

Students who ranked statement six, "the students' parents and other important adults expect him to graduate from high school and go on to college," least important, tended to score higher grades.

There was a slight tendency for students' to score higher teacher grades when they ranked statement seven, "the student's parents and other important adults feel that a person must be well educated to be successful," most important.

Students who ranked statement eight, "the student's parents and other important adults encourage him to do good work in school and praise him when he gets good grades," least important, tended to score slightly lower grades.

Students who ranked statement nine, "the student's father is a professional (doctor, lawyer, banker) or a business manager, or a white collar worker," as being of medium importance tended to score higher teacher grades.

### Hypothesis 2

There is no significant relationship between the degree of agreement or disagreement of students and teachers in their respective perceptions of the importance of the eleven non-cognitive correlates and student academic achievement as measured by academic achievement test scores and teacher grades.

Achievement test scores. The analysis of agreement for students with three teachers and their achievement test

scores failed to yield a significant relationship in ten of the eleven non-cognitive correlates. Statement ten, "the student's classmates and playmates are proud when they do good work in school," did show a significant relationship but failed to meet the criterion requiring a minimum of two scores in each group. The difference obtained could have been caused by the zero group alone.

Student agreement with one teacher and achievement test scores failed to yield a significant relationship in six of the eleven non-cognitive correlates. The agreement on the other five statements were significantly related to achievement test scores. Again, however, each of the five statements failed to meet the criterion requiring at least two scores in each group. The zero groups alone could have caused the differences.

Teacher grades. Student agreement with three teachers and their grades did yield significant relationships for ten of the eleven non-cognitive correlates. Statement ten failed to yield a significant relationship.

Statements one, three, eight, nine, and eleven were significant but were not analyzed further because of criterion requiring a minimum of two scores in each group was not met.

Significant relationships were found between degree of agreement and student grades on statements two, four, five,

six, and seven. Students who agreed with three teachers as to the importance of statement two, "the student views himself as interested, ambitious, alert, careful, etc.," tended to score higher grades than those who disagreed.

Students who disagreed with three teachers on the importance of statement four, "the student wants to make good grades and is happy when he does," and ranked it as more important than did the teachers, tended to score the highest grades.

Students who agreed with the three teachers on the importance of statement five, "the student believes that his teacher is interested in him and is concerned about his welfare," scored the lowest grades.

Students who agreed with three teachers on statement six, "the student's parents and other important adults expect him to graduate from high school and go on to college," or ranked it as less important than the teachers, also tended to score the highest grades.

Students who agreed with three teachers on the importance of statement seven, "the student's parents and other important adults feel that a person must be well educated to be successful," scored the highest grades.

The analysis of agreement for students with one teacher and their teacher grades yielded a significant relationship in eight of the eleven non-cognitive correlates. Statements seven, ten, and eleven were not significant. Statements two, four,

five, eight, and nine were significant but had zero group .

Students who disagreed with their teacher on the importance of statement one, "the student has good work habits and good attitudes toward school," and ranked it less important, tended to score the highest grades.

Students who agreed with the teacher on the importance of statement three, "the student definitely plans to graduate from high school and probably go on to college," tended to score the lowest grades.

Students who disagreed with the teacher on the importance of statement six, "the student's parents and other important adults expect him to graduate from high school and go on to college," and ranked it more important, tended to score the highest grades.

## II. CONCLUSIONS

Students and teachers generally tended to agree on the importance of the non-cognitive correlates. However, students seemed to accept more self-responsibility for academic success, while teachers gave slightly more weight to parental attitudes than did students.

Student achievement test scores do not seem to be related to their perception of the eleven non-cognitive correlates. Achievement test scores of students who ranked any given correlate most important did not differ significantly

from test scores of students who ranked the same correlates as unimportant. There was some evidence of significant relationships between student agreement with teachers on the importance of the non-cognitive correlates and their achievement test scores. However, in every case of significant relationship, one of the groups failed to meet the criterion requiring a minimum of two scores. This absence of scores could have caused the differences.

Teacher grades were shown to relate significantly to student ranking in importance of the correlates and their agreement or disagreement with their teachers on the importance of the non-cognitive correlates. There was some slight, though not completely consistent, tendency for students who held parental or family influences to be less important, to receive slightly higher grades. This could be interpreted to mean that those students who ascribed more responsibility to families rather than themselves, tended to receive lower grades.

Those students who stressed importance of the pupils' own motivation tended to get higher grades, or students who get higher grades tended to place more emphasis on student's own attitude and motivation. In other words, students who score high grades tend to credit themselves by placing importance on their own attitudes and values toward academic success, whereas, students who score low grades tended to place the blame or emphasis on their parents' attitudes and values toward academic achievement.

With regard to the basic question, is academic achievement related to pupils perceptions of importance of the non-cognitive correlates, there is conflicting evidence. There is an apparent discrepancy between the fact that there are significant relationships between student perceptions of the correlates and teacher grades, but no significant relationship between student perceptions and their standardized achievement test scores. While both purport to measure achievement, evidently teacher grades and the achievement tests do measure different things. Perhaps teachers consider attitudes when making their evaluations. Maybe teachers focus on the student's feelings while the student is learning. Teacher grades are a continuous day-by-day evaluation while standardized achievement tests are more of a short-time sampling. Perhaps both tests and grades measure validly, but attitudes, or non-cognitive correlates are more influential in affecting the persistent, consistent performance which grades measure, but less related to the short-time, motivated performance which a test situation provides. Perhaps the inconsistency is due to weakness of design or instrument.

The nature of relationships failed to present any clear or consistent trend. This could be due to the nature of the statements, insensitivity of the instrument, research design insufficiencies, the students themselves, or other uncontrollable factors. A more intensive study of teacher and student

attitudes toward non-cognitive correlates of academic achievement is needed to clarify these relationships. However, there is clear evidence that these non-cognitive correlates are related to academic achievement of students. They do correlate. They are in fact "non-cognitive correlates" of academic achievement.

## BIBLIOGRAPHY

## BIBLIOGRAPHY

### A. BOOKS

- Berly, D. E. Structure and Director in Thinking. New York: John Wiley & Son., Inc., 1965.
- Bloom, Benjamin S. Stability and Change in Human Characteristics. New York: John Wiley & Sons, Inc., 1964.
- \_\_\_\_\_, and David R. Krathwohl. Taxonomy of Educational Objectives: Handbook I. Cognitive Domain. New York: David McKay Publishing Company, 1956.
- Bloom, Benjamin S., and Frank R. Peters. The Use of Academic Prediction Scales for Counseling and Selecting College Entrants. New York: The Free Press of Glencoe, 1961.
- Burner, Jerome D. The Process of Education. Cambridge: Harvard University Press, 1961.
- Coleman, James S. The Adolescent Society. New York: The Free Press of Glencoe, 1961.
- Deutsch, Martin. "The Disadvantaged Child and the Learning Process," Education in Depressed Areas, ed. A. H. Passow. New York: Bureau of Publications, Teachers College, Columbia University Press, 1963.
- Dinkmeyer, Don C. Child Development: The Emerging Self. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965.
- Ford, G. W., and Lawrence Pugno (eds.). The Structure of Knowledge and the Curriculum. Chicago: Rand McNally and Company, 1964.
- Fruckter, Benjamin. Introduction of Factor Analysis. Princeton: D. Van Nostrand Company, Inc., 1954.
- Havighurst, Robert J., and others. Growing Up in River City. New York: John Wiley & Sons, Inc., 1962.
- Heath, Robert W. New Curricula. New York: Harper & Row, Publishers, 1964.
- Honzik, Marjorie P., and others (eds.). "The Stability of Mental Test Performance Between Two and Eighteen Years," Reading in Educational Psychology. New York: The Macmillan Company, 1955.

- Ilg, Francis L., and Louise B. Ames. School Readiness--Behavior Tests Used at the Gesell Institute. New York: Harper & Row, Publishers, 1964.
- Jerhoff, John R. Procedures for Assessment of Pupil Achievement. Minneapolis: Educational Research and Development Council, University of Minnesota, 1965.
- Jersild, Arthur T. The Psychology of Adolescence. New York: The Macmillan Company, 1957.
- Lingren, Henry Clay. Educational Psychology in the Classroom. New York: John Wiley & Sons, Inc., 1962.
- Lucio, William H. (ed.). Reading in American Education. Chicago: Scott, Foresman and Company, 1963.
- McClelland, David, and others. The Achievement Motive. New York: Appleton-Century-Crofts, Inc., 1963.
- \_\_\_\_\_. Talent and Society. Princeton: D. Van Nostrand Company, Inc., 1958.
- Olson, Willard. Child Development. 2d ed. Boston: D. C. Heath and Company, 1959.
- Packard, Vance. The Status Seeker. New York: David McKay Publishing Company, 1959.
- Piaget, Jean, and Barbel Inhelder. The Growth of Logical Thinking from Childhood to Adolescence. New York: Basic Books, Inc., 1958.
- Saylor, J. Galen, and William M. Alexander. Curriculum Planning for Modern Schools. New York: Holt, Rinehart and Winston, Inc., 1966.
- Stephens, John M. The Psychology of Classroom Learning. New York: Holt, Rinehart and Winston, Inc., 1965.
- Thorp, Louis P., and others. S. R. A. Achievement Series, Multi-level Edition, Form C. Chicago: Science Research Association, 1963.
- Thurstone, L. L. Primary Mental Abilities. Psychometric Monograph, Serial No. 1. Chicago: The University of Chicago Press, 1939.
- Torrence, E. Paul. Rewarding Creative Behavior. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965.

B. PUBLICATIONS OF LEARNED SOCIETIES  
AND OTHER ORGANIZATIONS

- Deutsch, Martin. M minority Groups and Class Status as Related to Social and Personality Factors in Scholastic Achievement. Monograph. New York: Society for Applied Anthropology, 1960.
- Dunn, Charleta J., and Gerald T. Kowitz. A Statistical Analysis of Data Use in Critical Decision Making by Secondary School Personnel. Bureau of Education Research and Service, Monograph No. 320. Houston: University of Houston, 1967.
- Kowitz, Gerald T., and Leo G. Mahoney. Sex-linked Factors in Reading and Arithmetic Achievement. Bureau of Education Research and Services, Monograph No. 14. Houston: University of Houston, 1965.
- Sontag, Lester W., and others. Mental Growth and Personality: A Longitudinal Study. Monograph of the Society for Research in Child Development, Vol. XXIII. Yellow Springs, Ohio: Antioch Press, 1958.

C. PERIODICALS

- Baker, Robert L. "The Influence of Mental Ability of Achievement When Socio-Economic Status is Controlled," The Journal of Experimental Education, 30:255-58, December, 1961.
- Becker, Howard S. "Social-class Variations in the Teacher-Pupil Relationship," The Journal of Educational Sociology, 25:453, May, 1952.
- Bruner, Jerome S. "The Course of Cognitive Growth," American Psychologist, 19:1-5, January, 1964.
- Eucher, Charles A. "Health, P. E. and Academic Achievement," National Education Association Journal, 54:38-40, May, 1965.
- Chambers, F. M. "Empathy and Scholastic Success," The Personal and Guidance Journal, 30:282-84, December, 1957.
- Coleman, James S. "The Adolescent Subculture and Academic Achievement," American Journal of Sociology, 65:337-47, January, 1961.

- \_\_\_\_\_, and Edward L. McDill. "Family and Peer Influences in College Plans of High School Students," Sociology of Education, 38:112-26, Winter, 1965.
- Coleman, W., and Edward E. Cureton. "Intelligence and Achievement: The 'Jangle Fallacy' Again," Educational and Psychological Measurement, 14:350-52, Summer, 1964.
- Crandall, W. "Motivation and Ability Determinants of Young Children's Intellectual Achievement Behaviors," Child Development, 33:643-61, March, 1962.
- \_\_\_\_\_, and others. "Parents' Attitudes and Behaviors and Grade School Children's Academic Achievement," Journal of Genetic Psychology, 104:53-66, March, 1964.
- Curry, Robert O. "The Effect of Social-Economic Status on the Scholastic Achievement of Sixth Grade Children," The British Journal of Educational Psychology, 32:46-49, February, 1962.
- Davidson, Helen, and Gerhard Lang. "Children's Perceptions of Their Teachers' Feelings Toward Them Related to Self-Perception, School Achievement and Behavior," Journal of Experimental Education, 29:107-18, December, 1960.
- Davis, O. L., and Kaoru Yomomato. "Creative Thinking and Achievement Items Responses of Elementary School Pupils: A Preliminary Investigation," Peabody Journal of Education, 42:349-55, May, 1965.
- Dorevan, Elizabeth. "Social Status and Success Striving," Journal of Abnormal and Social Psychology, 51:219-23, March, 1956.
- Drews, Elizabeth Monroe. "Achievement," Educational Leadership, 20:11-15, 55, October, 1962.
- Eargle, Zane E. "Social Class and Student Success," The High School Journal, 44:162-69, February, 1963.
- Gilmore, John V. "Parental Influences on Academic Achievement," Normlin II, 2:1-3, Summer, 1969.
- Goldberg, Martin L., and A. Henry Passow. "The Effects of Ability Grouping," Education, 82:482-87, April, 1962.
- Gordon, Ira J., and Patricia C. Wood. "The Relationship Between Pupil Self-Evaluation, Teacher Evaluation of the Pupil and Scholastic Achievement," The Journal of Educational Research, 54:440-43, April, 1963.

- Grimes, Jessie W. "Compulsivity, Anxiety and School Achievement," Merrill-Palmer Quarterly of Behavior and Development, 7:247-71, 1961.
- Guilford, Joy P. "Three Faces of Intellect," American Psychologist, 14:469-79, August, 1959.
- Heath, Robert W. "Curriculum, Cognitive, and Educational Measurement," Educational and Psychological Measurement, 14:339-53, Spring, 1964.
- Herrriott, Robert. "Some Social Determinants of Educational Aspiration," Harvard Educational Review, 32:157-77, Spring, 1963.
- Hill, Edwin H., and Michael C. Giannatteeo. "Socio-Economic Status and Its Relationship to School Achievement in the Elementary School," Elementary English, 40:265-70, March, 1963.
- Hott, Leland and Manford Sonstegaard. "Relating Self Conception to Curriculum Development," The Journal of Educational Research, 58:348-51, April, 1965.
- Kowitz, Gerald T., and Charles Armstrong. "Patterns of Academic Achievement," Journal of Educational Measurement, 2:2:207-12, December, 1965.
- Krippner, Stanley. "Educational Plans and Preferences of Upper-middle Class Junior High School Pupils," Vocational Guidance Quarterly, 13:257-60, Summer, 1965.
- Loughlin, Leo J., and others. "An Investigation of Sex Differences by Intelligence, Subject Matter Area, Grade, and Achievement Level on Three Anxiety Scales," Journal of Genetic Psychology, 106:207-15, June, 1965.
- Parks, Emory C. "Factors Relating to Underachievement," School and Community, 49:22-23, November, 1962.
- Payne, David A., and William A. Farguhar. "The Dimensions of an Objective Measure of Academic Self-Concept," Journal of Educational Psychology, 53:187-92, December, 1962.
- Quinn, George R., and Charles A. Szuberla. "Relative Grading: A Consistent and Equitable Approach to the Evaluation of Student Achievement," The Clearing House, 37:49-94, April, 1963.
- Salcedin, June, and Paul Campbell. "Do Children's Perceptions Influence Beginning Reading Achievement?" Elementary School Journal, 67:423-27, May, 1967.

- Sava, Samuel G. "When Learning Comes Easy," Saturday Review, 51:102-04, 119, November, 1968.
- Schmuck, Richard, and Elmer Van Egmond. "Sex Differences in the Relationship to Perceptions Performance," Psychology in the School, 2:32-40, January, 1965.
- Shabben, Thomas A. "Importance of Attitude," I D E A, 6-7, Summer Quarter, 1969.
- Shaw, Melville C., and John T. McCuen. "The Onset of Academic Underachievement in Bright Children," Journal of Educational Leadership, 51:102-08, September, 1960.
- Skinner, B. F. "Why Teachers Fail," Saturday Review, 47:98-102, October, 1965.
- Slocumb, Don B. "In Gidding All Teachers Grades Alike," Texas Outlook, 49:20-32, June, 1965.
- Smith, Mildred B., and Carl I. Brahce. "Focus on Achievement," Educational Leadership, 20:314-18, February, 1963.
- Stoker, H. W., and R. P. Kropp. "Measurement of Cognitive Process," Journal of Educational Measurement, 1:39-42, June, 1964.
- Taylor, William L. "Quotes," The School Administrator, 7, Summer, 1969.
- Worell, L. "Level of Aspiration and Academic Success," Journal of Educational Psychology, 1:45-54, February, 1959.

#### D. MISCELLANEOUS MATERIALS

- Finger, John A., Jr., and Morton Silverman. "Changes in Academic Performances in the Junior High School." A paper presented at the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966.
- Joiner, Lee M., and others. "Student Definitions of the Educational Expectations of Others and the Development of Educational Plans: A Longitudinal Study of High School Males." A paper presented at the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966.

Rizzo, Maria, and John M. Newell. "Level of Aspiration, Aptitude and Academic Performance." A paper presented at the American Educational Research Association Annual Convention, Chicago, Illinois, February 18, 1966.

APPENDIXES

APPENDIX A

INDIVIDUAL DATA FOR STUDENT RANKING OF THE  
ELEVEN NCJ -COGNITIVE CORRELATES

| Student | Correlates |    |    |    |    |    |    |    |    |    |    |
|---------|------------|----|----|----|----|----|----|----|----|----|----|
|         | 1          | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 |
| 1       | 1          | 3  | 6  | 4  | 2  | 9  | 5  | 8  | 11 | 10 | 7  |
| 2       | 5          | 9  | 7  | 3  | 4  | 2  | 1  | 6  | 8  | 11 | 10 |
| 3       | 4          | 11 | 8  | 10 | 9  | 7  | 3  | 1  | 2  | 5  | 6  |
| 4       | 3          | 4  | 5  | 7  | 6  | 1  | 10 | 8  | 9  | 11 | 2  |
| 5       | 6          | 8  | 1  | 9  | 10 | 2  | 5  | 4  | 3  | 7  | 11 |
| 6       | 8          | 2  | 5  | 4  | 10 | 3  | 1  | 6  | 11 | 7  | 9  |
| 7       | 2          | 9  | 3  | 10 | 5  | 4  | 6  | 7  | 1  | 11 | 8  |
| 8       | 2          | 1  | 3  | 4  | 11 | 7  | 8  | 9  | 10 | 6  | 5  |
| 9       | 9          | 8  | 10 | 1  | 2  | 6  | 3  | 5  | 4  | 11 | 7  |
| 10      | 1          | 3  | 7  | 10 | 9  | 2  | 5  | 4  | 6  | 11 | 8  |
| 11      | 2          | 10 | 4  | 5  | 11 | 9  | 8  | 6  | 7  | 1  | 3  |
| 12      | 1          | 2  | 7  | 6  | 3  | 5  | 4  | 9  | 10 | 11 | 8  |
| 13      | 4          | 10 | 2  | 6  | 5  | 3  | 8  | 7  | 11 | 1  | 9  |
| 14      | 9          | 10 | 7  | 8  | 4  | 1  | 3  | 11 | 5  | 2  | 6  |
| 15      | 7          | 1  | 10 | 4  | 6  | 11 | 9  | 5  | 8  | 2  | 3  |
| 16      | 3          | 6  | 4  | 1  | 7  | 2  | 5  | 9  | 11 | 8  | 10 |
| 17      | 1          | 2  | 3  | 4  | 9  | 6  | 8  | 5  | 7  | 10 | 11 |
| 18      | 3          | 11 | 7  | 8  | 10 | 9  | 5  | 6  | 1  | 2  | 4  |
| 19      | 1          | 4  | 3  | 2  | 5  | 6  | 7  | 10 | 9  | 11 | 8  |

## APPENDIX A - continued

| Student | Correlates |    |    |   |   |    |    |    |    |    |    |
|---------|------------|----|----|---|---|----|----|----|----|----|----|
|         | 1          | 2  | 3  | 4 | 5 | 6  | 7  | 8  | 9  | 10 | 11 |
| 20      | 7          | 11 | 8  | 1 | 4 | 5  | 2  | 6  | 10 | 3  | 9  |
| 21      | 2          | 6  | 4  | 1 | 5 | 3  | 8  | 1  | 9  | 11 | 7  |
| 22      | 1          | 10 | 8  | 3 | 9 | 4  | 2  | 11 | 6  | 5  | 7  |
| 23      | 2          | 1  | 4  | 6 | 7 | 3  | 10 | 5  | 9  | 11 | 8  |
| 24      | 1          | 2  | 10 | 6 | 5 | 7  | 4  | 11 | 8  | 3  | 9  |
| 25      | 3          | 5  | 2  | 1 | 6 | 4  | 7  | 9  | 10 | 11 | 8  |
| 26      | 2          | 9  | 1  | 4 | 8 | 5  | 7  | 3  | 10 | 11 | 6  |
| 27      | 6          | 11 | 5  | 9 | 1 | 2  | 8  | 7  | 4  | 10 | 3  |
| 28      | 1          | 2  | 3  | 6 | 8 | 9  | 10 | 4  | 5  | 11 | 7  |
| 29      | 3          | 9  | 4  | 1 | 7 | 5  | 8  | 6  | 11 | 10 | 2  |
| 30      | 8          | 3  | 1  | 7 | 6 | 5  | 4  | 2  | 9  | 11 | 10 |
| 31      | 5          | 1  | 6  | 7 | 2 | 8  | 3  | 4  | 10 | 11 | 9  |
| 32      | 2          | 9  | 3  | 1 | 8 | 7  | 6  | 4  | 10 | 11 | 5  |
| 33      | 2          | 4  | 9  | 1 | 3 | 5  | 6  | 7  | 8  | 11 | 10 |
| 34      | 2          | 5  | 6  | 1 | 4 | 3  | 8  | 10 | 9  | 11 | 7  |
| 35      | 1          | 2  | 4  | 3 | 8 | 2  | 9  | 6  | 10 | 11 | 5  |
| 36      | 5          | 1  | 8  | 4 | 5 | 6  | 2  | 7  | 11 | 10 | 9  |
| 37      | 1          | 4  | 2  | 7 | 9 | 3  | 8  | 5  | 10 | 11 | 6  |
| 38      | 1          | 5  | 3  | 2 | 9 | 7  | 8  | 4  | 11 | 10 | 6  |
| 39      | 1          | 6  | 4  | 2 | 9 | 10 | 8  | 3  | 7  | 11 | 5  |
| 40      | 1          | 6  | 2  | 4 | 7 | 3  | 8  | 5  | 10 | 11 | 9  |
| 41      | 4          | 9  | 1  | 2 | 8 | 6  | 7  | 3  | 10 | 11 | 5  |

## APPENDIX A - continued

| Student | Correlates |    |   |    |    |    |    |   |    |    |    |
|---------|------------|----|---|----|----|----|----|---|----|----|----|
|         | 1          | 2  | 3 | 4  | 5  | 6  | 7  | 8 | 9  | 10 | 11 |
| 42      | 1          | 9  | 5 | 3  | 8  | 2  | 4  | 7 | 10 | 6  | 11 |
| 43      | 3          | 5  | 4 | 7  | 6  | 8  | 1  | 2 | 10 | 9  | 11 |
| 44      | 1          | 2  | 3 | 8  | 7  | 4  | 9  | 5 | 10 | 11 | 6  |
| 45      | 3          | 1  | 6 | 2  | 7  | 8  | 4  | 5 | 9  | 10 | 11 |
| 46      | 4          | 8  | 1 | 3  | 10 | 11 | 9  | 2 | 6  | 7  | 5  |
| 47      | 1          | 3  | 4 | 9  | 8  | 6  | 7  | 5 | 11 | 10 | 2  |
| 48      | 2          | 8  | 1 | 10 | 5  | 9  | 3  | 7 | 4  | 11 | 6  |
| 49      | 10         | 7  | 2 | 6  | 8  | 1  | 9  | 3 | 4  | 11 | 5  |
| 50      | 5          | 1  | 4 | 3  | 2  | 10 | 3  | 6 | 9  | 11 | 7  |
| 51      | 1          | 9  | 2 | 10 | 3  | 8  | 4  | 7 | 11 | 6  | 5  |
| 52      | 2          | 3  | 4 | 1  | 11 | 7  | 10 | 5 | 6  | 9  | 8  |
| 53      | 1          | 8  | 2 | 3  | 9  | 4  | 7  | 5 | 10 | 11 | 6  |
| 54      | 4          | 1  | 6 | 2  | 5  | 7  | 3  | 8 | 9  | 10 | 11 |
| 55      | 5          | 1  | 3 | 4  | 6  | 10 | 9  | 2 | 8  | 7  | 11 |
| 56      | 1          | 4  | 6 | 7  | 8  | 9  | 10 | 2 | 5  | 3  | 11 |
| 57      | 7          | 8  | 5 | 1  | 9  | 2  | 3  | 6 | 4  | 10 | 11 |
| 58      | 2          | 9  | 6 | 5  | 10 | 4  | 8  | 2 | 3  | 11 | 7  |
| 59      | 1          | 5  | 4 | 2  | 7  | 10 | 3  | 8 | 6  | 11 | 9  |
| 60      | 8          | 10 | 7 | 11 | 9  | 6  | 1  | 5 | 4  | 2  | 3  |
| 61      | 6          | 1  | 2 | 8  | 7  | 5  | 4  | 3 | 10 | 11 | 9  |
| 62      | 3          | 10 | 4 | 7  | 8  | 5  | 6  | 1 | 2  | 11 | 9  |
| 63      | 10         | 1  | 2 | 5  | 9  | 4  | 7  | 3 | 8  | 11 | 6  |

## APPENDIX A - continued

| Student | Correlates |    |    |    |    |    |   |    |    |    |    |
|---------|------------|----|----|----|----|----|---|----|----|----|----|
|         | 2          | 3  | 4  | 5  | 6  | 7  | 8 | 9  | 10 | 11 |    |
| 64      | 2          | 7  | 4  | 1  | 5  | 8  | 7 | 3  | 10 | 11 | 6  |
| 65      | 9          | 1  | 2  | 4  | 3  | 11 | 5 | 10 | 6  | 7  | 8  |
| 66      | 8          | 7  | 1  | 2  | 9  | 11 | 3 | 10 | 4  | 5  | 6  |
| 67      | 6          | 1  | 5  | 9  | 2  | 3  | 7 | 4  | 10 | 11 | 8  |
| 68      | 9          | 10 | 6  | 5  | 7  | 1  | 2 | 8  | 3  | 4  | 11 |
| 69      | 1          | 2  | 3  | 4  | 5  | 6  | 7 | 8  | 11 | 10 | 9  |
| 70      | 7          | 8  | 3  | 6  | 9  | 1  | 5 | 4  | 10 | 11 | 2  |
| 71      | 8          | 10 | 2  | 3  | 9  | 4  | 5 | 1  | 6  | 11 | 7  |
| 72      | 1          | 9  | 3  | 6  | 10 | 8  | 7 | 2  | 4  | 11 | 5  |
| 73      | 4          | 11 | 7  | 5  | 2  | 6  | 9 | 8  | 1  | 10 | 3  |
| 74      | 3          | 7  | 5  | 1  | 8  | 6  | 2 | 9  | 11 | 10 | 4  |
| 75      | 10         | 1  | 3  | 2  | 6  | 4  | 9 | 8  | 7  | 11 | 5  |
| 76      | 5          | 1  | 2  | 8  | 3  | 7  | 9 | 4  | 10 | 11 | 6  |
| 77      | 3          | 5  | 2  | 1  | 8  | 9  | 6 | 7  | 10 | 11 | 4  |
| 78      | 4          | 3  | 8  | 5  | 2  | 6  | 1 | 9  | 10 | 11 | 7  |
| 79      | 1          | 8  | 2  | 10 | 9  | 3  | 5 | 4  | 7  | 11 | 6  |
| 80      | 1          | 5  | 2  | 3  | 10 | 4  | 7 | 6  | 8  | 9  | 11 |
| 81      | 1          | 3  | 7  | 2  | 11 | 6  | 8 | 4  | 5  | 9  | 10 |
| 82      | 1          | 6  | 3  | 2  | 7  | 8  | 9 | 4  | 10 | 11 | 5  |
| 83      | 1          | 7  | 3  | 2  | 10 | 6  | 8 | 9  | 5  | 11 | 4  |
| 84      | 4          | 5  | 10 | 1  | 6  | 7  | 2 | 3  | 11 | 8  | 9  |
| 85      | 3          | 1  | 5  | 6  | 2  | 4  | 9 | 7  | 11 | 10 | 8  |
| 86      | 1          | 2  | 4  | 3  | 6  | 7  | 8 | 5  | 10 | 11 | 9  |

## APPENDIX A - continued

| Student | Correlates |    |    |   |    |   |    |    |    |    |    |
|---------|------------|----|----|---|----|---|----|----|----|----|----|
|         | 1          | 2  | 3  | 4 | 5  | 6 | 7  | 8  | 9  | 10 | 11 |
| 87      | 2          | 1  | 8  | 4 | 3  | 5 | 6  |    | 10 | 11 | 7  |
| 88      | 1          | 5  | 2  | 7 | 8  | 6 | 3  | 4  | 11 | 10 | 9  |
| 89      | 1          | 6  | 2  | 4 | 7  | 5 | 8  | 3  | 10 | 11 | 9  |
| 90      | 1          | 7  | 3  | 2 | 8  | 5 | 6  | 4  | 10 | 11 | 9  |
| 91      | 1          | 5  | 3  | 2 | 8  | 6 | 9  | 4  | 10 | 11 | 7  |
| 92      | 1          | 10 | 6  | 2 | 5  | 4 | 3  | 9  | 7  | 11 | 8  |
| 93      | 1          | 2  | 5  | 7 | 3  | 4 | 11 | 10 | 8  | 9  | 6  |
| 94      | 2          | 9  | 1  | 5 | 6  | 8 | 4  | 7  | 11 | 10 | 3  |
| 95      | 10         | 7  | 8  | 9 | 2  | 4 | 6  | 2  | 11 | 3  | 1  |
| 96      | 1          | 3  | 2  | 4 | 8  | 5 | 11 | 6  | 9  | 10 | 7  |
| 97      | 1          | 8  | 4  | 2 | 9  | 3 | 7  | 5  | 10 | 11 | 6  |
| 98      | 1          | 3  | 2  | 4 | 9  | 5 | 6  | 8  | 10 | 11 | 7  |
| 99      | 1          | 7  | 3  | 5 | 8  | 4 | 10 | 2  | 9  | 11 | 6  |
| 100     | 1          | 4  | 3  | 8 | 5  | 7 | 6  | 2  | 10 | 11 | 9  |
| 101     | 1          | 5  | 2  | 8 | 10 | 3 | 4  | 6  | 11 | 9  | 7  |
| 102     | 1          | 3  | 2  | 4 | 5  | 7 | 6  | 8  | 10 | 11 | 9  |
| 103     | 7          | 1  | 10 | 4 | 3  | 5 | 2  | 9  | 11 | 8  | 6  |
| 104     | 1          | 9  | 3  | 7 | 8  | 6 | 4  | 2  | 10 | 11 | 5  |
| 105     | 1          | 6  | 3  | 2 | 7  | 5 | 8  | 11 | 9  | 10 | 4  |
| 106     | 1          | 5  | 2  | 3 | 8  | 6 | 10 | 7  | 9  | 11 | 4  |
| 107     | 1          | 6  | 3  | 2 | 8  | 7 | 9  | 4  | 10 | 11 | 5  |
| 108     | 1          | 5  | 2  | 4 | 7  | 9 | 8  | 3  | 10 | 11 | 6  |

APPENDIX B

INDIVIDUAL DATA FOR TEACHER GRADES  
AND ACHIEVEMENT TEST SCORES

| Student | Subject |          |      |         |                |
|---------|---------|----------|------|---------|----------------|
|         | English | Language | Math | Science | Social Studies |
| 1       | 65      | 70       | 65   | 65      | 50*            |
|         | 45      | 17       | 19   | 17      | 14**           |
| 2       | 95      | 90       | 95   | 90      | 90             |
|         | 63      | 32       | 56   | 15      | 12             |
| 3       | 90      | 85       | 85   | 85      | 85             |
|         | 46      | 26       | 35   | 1       | 10             |
| 4       | 90      | 90       | 95   | 88      | 80             |
|         | 55      | 27       | 41   | 15      | 9              |
| 5       | 90      | 95       | 90   | 80      | 90             |
|         | 63      | 26       | 43   | 13      | 11             |
| 6       | 85      | 85       | 75   | 75      | 80             |
|         | 54      | 13       | 33   | 19      | 19             |
| 7       | 80      | 85       | 80   | 78      | 80             |
|         | 42      | 17       | 38   | 15      | 11             |
| 8       | 85      | 80       | 85   | 75      | 70             |
|         | 51      | 33       | 48   | 22      | 15             |
| 9       | 90      | 95       | 85   | 80      | 83             |
|         | 83      | 42       | 38   | 20      | 17             |
| 10      | 95      | 90       | 90   | 80      | 95             |
|         | 62      | 29       | 58   | 23      | 16             |
| 11      | 95      | 90       | 90   | 80      | 80             |
|         | 69      | 21       | 38   | 19      | 16             |
| 12      | 90      | 90       | 90   | 78      | 88             |
|         | 66      | 27       | 37   | 14      | 12             |
| 13      | 90      | 95       | 90   | 88      | 90             |
|         | 75      | 45       | 36   | 15      | 18             |

\*Teacher grades

\*\*Achievement test scores

## APPENDIX B - continued

| Student | English   | Language | Math     | Science  | Social Studies |
|---------|-----------|----------|----------|----------|----------------|
| 14      | 90<br>50  | 90<br>26 | 85<br>49 | 85<br>17 | 88<br>21       |
| 15      | 90<br>68  | 88<br>22 | 88<br>53 | 80<br>16 | 90<br>8        |
| 16      | 85<br>80  | 85<br>52 | 85<br>67 | 88<br>35 | 80<br>34       |
| 17      | 85<br>91  | 88<br>63 | 70<br>55 | 90<br>26 | 80<br>18       |
| 18      | 78<br>89  | 80<br>60 | 80<br>66 | 80<br>33 | 80<br>22       |
| 19      | 88<br>82  | 95<br>33 | 88<br>66 | 90<br>24 | 88<br>19       |
| 20      | 88<br>65  | 85<br>53 | 70<br>67 | 90<br>27 | 85<br>22       |
| 21      | 95<br>95  | 98<br>55 | 90<br>73 | 95<br>34 | 88<br>26       |
| 22      | 88<br>89  | 85<br>56 | 85<br>77 | 85<br>36 | 80<br>19       |
| 23      | 75<br>79  | 80<br>47 | 70<br>49 | 70<br>28 | 75<br>17       |
| 24      | 80<br>74  | 88<br>35 | 80<br>39 | 80<br>17 | 80<br>18       |
| 25      | 88<br>94  | 95<br>49 | 80<br>73 | 85<br>21 | 80<br>18       |
| 26      | 88<br>96  | 90<br>55 | 80<br>76 | 88<br>30 | 80<br>30       |
| 27      | 70<br>68  | 70<br>42 | 60<br>42 | 75<br>28 | 70<br>11       |
| 30      | 88<br>101 | 90<br>69 | 85<br>76 | 85<br>26 | 80<br>24       |
| 31      | 80<br>78  | 88<br>47 | 80<br>60 | 88<br>20 | 80<br>22       |

## APPENDIX B - continued

| Student | Subjects |          |      |         |                |
|---------|----------|----------|------|---------|----------------|
|         | English  | Language | Math | Science | Social Studies |
| 32      | 85       | 90       | 80   | 90      | 80             |
|         | 86       | 47       | 55   | 26      | 15             |
| 33      | 85       | 88       | 75   | 88      | 85             |
|         | 92       | 53       | 71   | 23      | 13             |
| 34      | 90       | 90       | 78   | 83      | 88             |
|         | 84       | 53       | 60   | 27      | 17             |
| 35      | 85       | 90       | 85   | 90      | 80             |
|         | 102      | 52       | 56   | 22      | 23             |
| 36      | 95       | 90       | 85   | 88      | 85             |
|         | 99       | 58       | 75   | 30      | 20             |
| 37      | 85       | 88       | 78   | 85      | 75             |
|         | 93       | 48       | 75   | 25      | 16             |
| 38      | 85       | 88       | 70   | 85      | 75             |
|         | 95       | 31       | 44   | 28      | 17             |
| 39      | 90       | 90       | 78   | 80      | 78             |
|         | 82       | 34       | 52   | 20      | 16             |
| 40      | 85       | 88       | 78   | 90      | 78             |
|         | 75       | 55       | 75   | 27      | 27             |
| 41      | 80       | 80       | 68   | 75      | 70             |
|         | 70       | 37       | 54   | 17      | 13             |
| 42      | 90       | 85       | 78   | 88      | 88             |
|         | 88       | 63       | 60   | 32      | 25             |
| 43      | 85       | 90       | 78   | 90      | 85             |
|         | 81       | 62       | 60   | 34      | 23             |
| 44      | 75       | 80       | 75   | 85      | 80             |
|         | 61       | 35       | 62   | 18      | 26             |
| 45      | 85       | 90       | 88   | 90      | 90             |
|         | 64       | 53       | 68   | 33      | 31             |
| 46      | 85       | 85       | 80   | 85      | 80             |
|         | 82       | 44       | 72   | 29      | 29             |
| 47      | 95       | 90       | 90   | 90      | 88             |
|         | 108      | 69       | 91   | 24      | 23             |

## APPENDIX B - continued

| Student | Subject |          |      |         |                |
|---------|---------|----------|------|---------|----------------|
|         | English | Language | Math | Science | Social Studies |
| 48      | 95      | 95       | 95   | 88      | 80             |
|         | 71      | 34       | 52   | 17      | 16             |
| 49      | 85      | 90       | 78   | 95      | 88             |
|         | 78      | 56       | 51   | 39      | 27             |
| 50      | 88      | 85       | 75   | 80      | 80             |
|         | 57      | 39       | 40   | 15      | 13             |
| 51      | 85      | 85       | 75   | 75      | 75             |
|         | 79      | 42       | 37   | 14      | 13             |
| 52      | 88      | 90       | 85   | 85      | 80             |
|         | 47      | 31       | 46   | 15      | 21             |
| 53      | 85      | 85       | 80   | 85      | 70             |
|         | 45      | 27       | 37   | 11      | 11             |
| 54      | 85      | 85       | 85   | 85      | 80             |
|         | 61      | 28       | 43   | 20      | 17             |
| 55      | 85      | 78       | 80   | 75      | 80             |
|         | 46      | 26       | 39   | 13      | 15             |
| 56      | 85      | 85       | 88   | 95      | 78             |
|         | 65      | 38       | 55   | 25      | 20             |
| 57      | 85      | 90       | 75   | 78      | 78             |
|         | 86      | 52       | 53   | 24      | 23             |
| 58      | 68      | 78       | 65   | 75      | 75             |
|         | 53      | 23       | 45   | 12      | 20             |
| 59      | 95      | 95       | 90   | 90      | 90             |
|         | 68      | 41       | 57   | 24      | 14             |
| 60      | 85      | 90       | 90   | 85      | 80             |
|         | 55      | 42       | 65   | 15      | 17             |
| 61      | 88      | 90       | 95   | 95      | 80             |
|         | 74      | 50       | 64   | 32      | 24             |
| 62      | 85      | 85       | 78   | 78      | 80             |
|         | 52      | 28       | 32   | 16      | 17             |
| 63      | 80      | 85       | 70   | 85      | 80             |
|         | 68      | 34       | 43   | 18      | 10             |

## APPENDIX B - continued

| Student | Subject |          |      |         |                |
|---------|---------|----------|------|---------|----------------|
|         | English | Language | Math | Science | Social Studies |
| 64      | 70      | 70       | 70   | 75      | 75             |
|         | 52      | 25       | 38   | 20      | 10             |
| 65      | 85      | 90       | 88   | 80      | 80             |
|         | 76      | 34       | 49   | 15      | 6              |
| 66      | 85      | 88       | 78   | 90      | 85             |
|         | 71      | 41       | 48   | 35      | 23             |
| 67      | 88      | 90       | 95   | 88      | 90             |
|         | 72      | 37       | 60   | 27      | 16             |
| 68      | 88      | 95       | 78   | 88      | 90             |
|         | 63      | 32       | 34   | 20      | 16             |
| 69      | 88      | 90       | 86   | 85      | 90             |
|         | 76      | 37       | 44   | 16      | 11             |
| 70      | 85      | 88       | 75   | 88      | 85             |
|         | 62      | 26       | 26   | 19      | 14             |
| 71      | 75      | 80       | 75   | 80      | 90             |
|         | 66      | 29       | 43   | 14      | 18             |
| 72      | 88      | 88       | 80   | 85      | 85             |
|         | 65      | 33       | 34   | 13      | 13             |
| 73      | 90      | 95       | 95   | 95      | 90             |
|         | 74      | 37       | 58   | 19      | 16             |
| 74      | 85      | 85       | 85   | 85      | 85             |
|         | 65      | 42       | --   | 22      | 21             |
| 75      | 85      | 85       | 85   | 80      | 90             |
|         | 71      | 30       | 33   | 14      | 16             |
| 76      | 80      | 85       | 78   | 85      | 85             |
|         | 80      | 47       | 54   | 33      | 19             |
| 77      | 70      | 85       | 75   | 85      | 70             |
|         | 55      | 28       | 35   | 20      | 22             |
| 78      | 88      | 85       | 75   | 85      | 75             |
|         | 55      | 34       | 56   | 19      | 17             |
| 79      | 95      | 85       | 90   | 95      | 85             |
|         | 106     | 40       | 56   | 26      | 16             |
| 80      | 95      | 90       | 88   | 85      | 88             |
|         | 94      | 45       | 55   | 21      | 13             |

## APPENDIX B - continued

| Student | Subject |          |      |         |                |
|---------|---------|----------|------|---------|----------------|
|         | English | Language | Math | Science | Social Studies |
| 81      | 88      | 97       | 80   | 85      | 88             |
|         | 116     | 68       | 95   | 42      | 42             |
| 82      | 95      | 90       | 95   | 85      | 88             |
|         | 125     | 64       | 88   | 34      | 33             |
| 83      | 90      | 85       | 90   | 80      | 85             |
|         | 120     | 58       | 87   | 22      | 19             |
| 84      | 88      | 90       | 88   | 88      | 88             |
|         | 99      | 68       | 84   | 28      | 29             |
| 85      | 88      | 88       | 88   | 85      | 85             |
|         | 114     | 56       | 86   | 40      | 26             |
| 86      | 88      | 85       | 95   | 80      | 85             |
|         | 109     | 51       | 92   | 30      | 32             |
| 87      | 95      | 90       | 90   | 90      | 90             |
|         | 122     | 72       | 92   | 36      | 42             |
| 88      | 88      | 90       | 90   | 88      | 88             |
|         | 108     | 63       | 95   | 40      | 37             |
| 89      | 85      | 90       | 90   | 80      | 88             |
|         | 107     | 73       | 87   | 40      | 33             |
| 90      | 95      | 88       | 88   | 85      | 88             |
|         | 89      | 52       | 79   | 30      | 24             |
| 91      | 85      | 88       | 88   | 85      | 85             |
|         | 98      | 56       | 83   | 29      | 26             |
| 92      | 88      | 88       | 85   | 85      | 85             |
|         | 110     | 56       | 70   | 35      | 25             |
| 93      | 95      | 88       | 85   | 80      | 80             |
|         | 99      | 61       | 59   | 26      | 19             |
| 94      | 95      | 88       | 90   | 85      | 80             |
|         | 115     | 71       | 83   | 31      | 28             |
| 95      | 95      | 95       | 95   | 95      | 90             |
|         | 129     | 86       | 115  | 44      | 43             |
| 96      | 95      | 90       | 90   | 90      | 88             |
|         | 126     | 71       | 98   | 38      | 42             |

## APPENDIX B - continued

| Student | Subject |          |      |         |                |
|---------|---------|----------|------|---------|----------------|
|         | English | Language | Math | Science | Social Studies |
| 97      | 85      | 88       | 90   | 85      | 80             |
|         | 104     | 60       | 80   | 33      | 27             |
| 98      | 90      | 88       | 85   | 85      | 80             |
|         | 105     | 77       | 69   | 33      | 39             |
| 99      | 90      | 90       | 88   | 85      | 88             |
|         | 109     | 80       | 97   | 40      | 37             |
| 100     | 95      | 90       | 90   | 85      | 80             |
|         | 108     | 72       | 103  | 30      | 26             |
| 101     | 95      | 95       | 90   | 90      | 90             |
|         | 123     | 59       | 103  | 31      | 30             |
| 102     | 85      | 90       | 85   | 80      | 80             |
|         | 96      | 69       | 92   | 33      | 35             |
| 103     | 95      | 95       | 95   | 90      | 90             |
|         | 122     | 80       | 94   | 35      | 35             |
| 104     | 88      | 90       | 95   | 85      | 88             |
|         | 96      | 71       | 98   | 36      | 34             |
| 105     | 88      | 88       | 90   | 88      | 80             |
|         | 109     | 49       | --   | 33      | 18             |
| 106     | 95      | 88       | 85   | 80      | 88             |
|         | 110     | 46       | 83   | 33      | 26             |
| 107     | 88      | 88       | 80   | 85      | 85             |
|         | 109     | 70       | 65   | 36      | 29             |
| 108     | 85      | 88       | 90   | 80      | 85             |
|         | 96      | 75       | 84   | 30      | 23             |
| 109     | 85      | 88       | 90   | 85      | 78             |
|         | 103     | 80       | 86   | 33      | 37             |
| 110     | 90      | 90       | 85   | 80      | 85             |
|         | 116     | 63       | 80   | 35      | 29             |

APPENDIX C

INDIVIDUAL DATA FOR TEACHER RANKING OF THE  
ELEVEN NON-COGNITIVE CORRELATES

| Teacher | Correlates |   |   |   |    |   |   |   |    |    |    |
|---------|------------|---|---|---|----|---|---|---|----|----|----|
|         | 1          | 2 | 3 | 4 | 5  | 6 | 7 | 8 | 9  | 10 | 11 |
| 1*      | 3          | 6 | 5 | 1 | 10 | 4 | 8 | 2 | 11 | 7  | 9  |
| 2*      | 1          | 3 | 2 | 4 | 7  | 6 | 8 | 5 | 11 | 10 | 9  |
| 3*      | 1          | 9 | 2 | 3 | 7  | 5 | 8 | 4 | 10 | 6  | 11 |
| 4*      | 1          | 7 | 6 | 3 | 8  | 5 | 4 | 2 | 10 | 11 | 9  |

1\* - McNally

2\* - Coleman

3\* - Wilson

4\* - Fitzwater