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THE EFFECTS OF PUBLIC SCHOOL TRANSPORTATION UPON THE OVERALL SCHOOL ADJUSTMENT OF URBAN ELEMENTARY SCHOOL STUDENTS

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1970

THE EFFECTS OF PUBLIC SCHOOL TRANSPORTATION UPON THE OVERALL SCHOOL ADJUSTMENT OF URBAN ELEMENTARY SCHOOL STUDENTS

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DISSERTATION COMMITTEE

This work is dedicated to my Grandparents:

four persons who shared the pioneering spirit.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

Background and Need for the Study

Education in the United States has been based on the premise that an educated citizenry is necessary in a democratic society. The purpose of education, to provide an education for all, also promotes equality of opportunity. Ragan[1] has characterized the American elementary school as an institution which exists to provide every child with the opportunity to succeed.

If the public schools are to provide an education for all, and thus, equality of opportunity, there must first exist an equality of educational opportunity. The establishment

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[1]William B. Ragan, Modern Elementary Curriculum (3rd ed.; New York: Holt, Rinehart and Winston, 1966), p. 6.

of schools is not enough, children must be present in school. Public school transportation has enabled students to attend school, thereby, helping to equalize the opportunity for education.

According to Reeder,[1] the first law which provided for transportation of public school students at public expense was enacted by the Legislature of Massachusetts in 1869. Johns pointed out that this law was important because it established public school transportation as a legal part of the community tax program.[2] It is evident that public school transportation has become a legitimate part of the public responsibility as all but three or four states now provide some form of financial assistance to districts for the transportation of students.[3]

A review of the history of public school transportation revealed that many forces contributed to its increased use. Noble[4] observed that some of these forces were the

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[1]Ward G. Reeder, The Administration of Pupil Transportation (Columbus, Ohio: The Educators' Press, 1939), p. 4.

[2]Roe L. Johns, State and Local Administration of School Transportation, cited by M. C. S. Noble, Pupil Transportation in the United States (Scranton: International Textbook Company, 1940), p. 2.

[3]Roe L. Johns and Edgar L. Morphet, The Economics and Financing of Education (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969), p. 363.

[4]Noble, Pupil Transportation, p. 25.

invention of the automobile, improvement of roads, statutory provisions for public school transportation, growth of school centralization, and the growing demand for better educational opportunity. The position of the courts, in their support of the legality of states and local school boards to spend public funds for public school transportation, has provided the legal impetus for the increased use of public school transportation.

Statistics related to public school transportation reveale its growth. The data in a table prepared by the U.S. Office of Education[1] indicated that from 1929 to 1968 the number of students transported at public expense increased from almost 2 million to more than 16 million; also, the number of students transported at public expense increased from 7.4 per cent to 40.4 per cent of the total school enrollment.

School organization plans which enlarge the area of the neighborhood school district have been proposed. Plans, such as the educational park, open enrollment, and the Princeton plan include transporting students over a large geographic area and require the increased use of transportation.[2]

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[1]U.S., Department of Health, Education, and Welfare, Office of Education, 1969 Digest of Educational Statistics (Washington, D.C.: Government Printing Office, 1969), p. 34.

[2]Meyer Weinberg, compiler, Integrated Education (Beverly Hills, Calif.: The Glencoe Press, 1968), pp. 148-9.

In a 1958 study on the influence of transporting students, Dunlop, Harper, and Hunka[1] reported that little research related to this problem had been published. They observed that the policies of state departments, offices of education and local school boards would be affected by any increased insight into this area.

The need to study the effects of public school transportation was evidenced through its increased use; the proposed use of methods of school organization, such as the educational park, which would greatly increase the use of public school transportation; and the lack of research conducted on the effects of transporting students.

Definition of Terms

Student - A child of either sex who was enrolled in the fourth, fifth, or sixth grade of the co-operating school.

Transported Student - A student who rode a public school bus approximately one mile or more to school.

Non-Transported Student - A student who lived within one mile of the school and did not ride a public school bus.

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[1]G. M. Dunlop, R. J. C. Harper, and S. Hunka, "The Influence of Transporting Children to Centralized Schools upon Achievement and Attendance," Educational Administration and Supervision, XLIV (July, 1958), 192.

Transporting - The act of moving a student by public school bus from the area of his home to the school.

Urban Elementary School - A school in a city or town as opposed to a school in a rural area.

Overall School Adjustment - An estimate of the adjustment of a student to the school experience, based on composite achievement test score, teacher grades, attendance, participation in extraclass activities, and peer acceptance.

Extraclass Activity - Any activity, other than regular class instruction, sponsored by the school for students. Extraclass activites included: football, wrestling, choir, pep club, band, bowling, basketball, vollyball, softball, and gymnastics.

Statement of the Problem

Were there statistically significant interactions between and among the factors of sex, intelligence, transportation, and overall school adjustment of urban elementary school students? Were there statistically significant differences between various components of overall school adjustment of transported and non-transported urban elementary school students?

Hypotheses

In order to implement the investigation of this problem the following hypotheses were tested:

1. There is no statistically significant difference between the transported and non-transported groups on overall school adjustment.

2. There is no statistically significant difference between males and females on overall school adjustment.

3. There is no statistically significant difference between the students in high, medium, and low intelligence classifications on overall school adjustment.

4. There is no statistically significant interaction between the factors of transportation and sex (when considered jointly) on overall school adjustment.

5. There is no statistically significant interaction between the factors of transportation and intelligence (when considered jointly) on overall school adjustment.

6. There is no statistically significant interaction between the factors of sex and intelligence (when considered jointly) on overall school adjustment.

7. There is no statistically significant interaction among the factors of transportation, sex, and intelligence (when considered jointly) on overall school adjustment.

8. There is no statistically significant difference between the means of the composite achievement test scores of the transported and non-transported groups on the Iowa Test of Basic Skills.

9. There is no statistically significant difference between the means of the averages of teacher grades assigned to the members of the transported and non-transported groups.

10. There is no statistically significant difference between the means of daily attendance of the transported and non-transported groups.

11. There is no statistically significant difference between the means of student participation in extraclass activities, as indicated by the number of activities in which an individual participated, of the transported and non-transported groups.

12. There is no statistically significant difference between the means of peer group acceptance, as estimated by the number of times an individual was chosen on a sociometric instrument, of the transported and non-transported groups.

Purpose of the Study

The purpose of this study was to isolate the condition of being transported to school and to study the effect of this

condition upon the overall school adjustment of urban elementary school students. This study provided data which may be useful in decision making concerning the use of public school transportation in urban elementary schools.

Assumptions

1. That the composite achievement test score, teacher grades, attendance, participation in extraclass activities, and peer acceptance constitute a cluster of dependent variables which describe what may be termed overall school adjustment.

2. That the sociometric data obtained by the nominating technique adequately reflects peer acceptance.

3. That control of the variables which are significant for overall school adjustment was attained.

Delimitations

This study was limited to the consideration of the interaction between and among the factors of the design and to the analysis of the differences between the various components of the overall school adjustment of transported and non-transported elementary school students in a large urban elementary school.

Design of the Study

Selection of Subjects

The experimental method of research was used in this study. Johnson and Medinnus[1] suggested that in this type of research the experimental and control groups should be drawn from a large pool of subjects. The experimental group, transported students, and the control group, non-transported students, were selected from the fourth, fifth, and sixth grade classes of a large urban elementary school.

The nature of the statistical analysis to be applied in the study necessitated the classification of the subjects into transported and non-transported groups. A student was considered non-transported on the basis of information obtained from the enrollment card. A student was considered transported on the basis of information obtained from the enrollment card and a map of the school area. Because of their limited number almost all of the non-transported students were included in the study. The numbers of males and females in the fourth, fifth, and sixth grades in the non-transported group determined the number of fourth, fifth, and

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[1]Ronald C. Johnson and Gene R. Medinnus, Child Psychology (2nd ed.; New York: John Wiley & Sons, Inc., 1969), p. 27.

sixth grade males and females to be selected from the transported group. The transported subjects included in the study were randomly selected from those students who fulfilled the definition of transported students. The statistical design of the study and the application of the selection criteria resulted in a sample size of 240. One hundred twenty transported subjects and 120 non-transported subjects, with equal proportions of males and females from the fourth, fifth, and sixth grades, were studied.

The selected subjects in the transported and non-transported groups were placed into high, medium, and low classifications of intelligence as measured by the California Test of Mental Maturity. These classifications were made separately for transported males, non-transported males, transported females, and non-transported females. The limits of the classifications for each group were set in the following manner: (1) the individual subjects with the twenty highest intelligence scores were designated as the high classification; (2) the individual subjects with the next twenty highest intelligence scores were designated as the medium classification; and (3) the remaining twenty individual subjects were designated as the low classification. This classification procedure was accomplished for the sixty

transported males, sixty transported females, sixty non-transported females, and sixty non-transported males.

Selection of Dependent Variables

The indicators of overall school adjustment which were chosen as dependent variables were: composite achievement test score, teacher grades, attendance, participation in extraclass activities, and acceptance by peers. These components were selected to represent student behavior.

The composite achievement test score was selected as a dependent variable because of its comprehensive nature. Thorndike and Hagen[1] considered the achievement battery as a unified whole in which the parts fit together to cover the entire range of objectives that were important and feasible to appraise.

Teacher grades was selected as a dependent variable in order to indicate a cognitive component of overall school adjustment. Kingsley and Garry concluded that, "The sum total of all the grades a child receives constitutes a

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[1]Robert Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (2nd ed.; New York: John Wiley & Sons, 1961), p. 304.

composite measure of aptitude, achievement, motivation, deportment, study habits, initiative, et al."[1]

The inclusion of attendance as a dependent variable was sustained in that it was considered to be an extremely good objective indicator of attitudes, interests, and motivations. In a study on absenteeism, Greene concluded that absense was related to many variables, each of which was" . . . symptomatic of an unfavorable adjustment between the learner and the educational and social environment in which he is operating."[2] Attendance was included on the grounds that any estimate of overall school adjustment should reflect all realms of human behavior.

To further strengthen and broaden this estimate of overall school adjustment, the concept of peer acceptance was included as a dependent variable. Johnson and Medinnus[3] contended that acceptance or rejection by an individual's peers plays an important part in his adjustment to the school situation.

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[1]Howard L. Kingsley and Ralph Garry, The Nature and Conditions of Learning (2nd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957), p. 284.

[2]James E. Greene, Sr., "Factors Associated with Absenteeism Among Students in two Metropolitan High Schools," Journal of Experimental Education, XXXI (Summer, 1963), 394.

[3]Johnson and Medinnus, Child Development, p. 466.

In an elementary school which offers a full program of extraclass activities for its students, the extent to which a student participates in these activities is one indicator of overall school adjustment. Stroud[1] observed that participation in extraclass activity was an important part of the school experience.

Statistics

Statistical analysis of the raw data collected on the subjects was accomplished through the use of the Analysis of Variance. Ferguson[2] noted that this technique will analyze the interaction between and within the factors of the design. The factors in the study were sex, intelligence, transportation, and overall school adjustment. An illustration of the design of the study is presented in Appendix A. Data on the factors in this study were analyzed by computer. Programs for the Analysis of Variance by computer were available at the Merrick Computer Center, Norman, Oklahoma, and were utilized in the completion of the study.

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[1]James B. Stroud, Psychology in Education (2nd ed.; New York: Longmans, Green and Co., 1956), p. 36.

[2]George A. Ferguson, Statistical Analysis in Psychology and Education (2nd ed.; St. Louis: McGraw-Hill Book Co., 1966), pp. 275-6.

In addition to the Analysis of Variance, the mean score obtained by the transported group on each component of overall school adjustment was compared to the mean score obtained on each component by the non-transported group. This comparison was accomplished through the use of the t test. The level of significance for rejection of the null hypotheses was .05 for both the t test and the Analysis of Variance.

In order to complete the t tests required by the hypotheses of this study, arithmetic means of the various components of overall school adjustment were determined. The means of the achievement test scores for each group were established on the basis of the composite score of each subject on the Iowa Test of Basic Skills. The attendance means for each group were computed on the basis of the number of days the subject attended school during the first three reporting periods of the current school year. The number of extraclass activities in which a subject participated during the school year was the basis for the determination of the means of participation for the transported and non-transported groups. The means of peer acceptance scores for the two groups were determined on the basis of the number of times a subject was named in response to the sociometric question. Computation of the means of teacher grades for each group required the

conversion of the letter grades to numerical equivalents on the basis of A-4, B-3, C-2, D-1, and F-0; the determination of the average grade received by each student in the subject areas of language, reading, social studies, mathematics, and science for the first three reporting periods of the current school year; and the determination of the means of the average grades of each group.

Instruments

The subject's intelligence test score on the California Test of Mental Maturity was used to determine the appropriate intelligence level, high, medium, or low. The California Test of Mental Maturity was administered during the 1969-70 school year. Buros[1] indicated in The Sixth Mental Measurements Yearbook that the normative data for fourth, fifth, and sixth grade students, the reliability, and the validity had been established for this test.

The subject's composite achievement test score on the Iowa Test of Basic Skills was used as a measure of school achievement. This test was administered during the 1969-70

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[1]Oscar K. Buros, ed., The Sixth Mental Measurements Yearbook (Highland Park, N.J.: The Gryphon Press, 1965), pp. 691-7.

school year. Buros[1] indicated in The Sixth Mental Measurements Yearbook that normative data for fourth, fifth, and sixth grade students, reliability, and validity had been established for this test.

Sociometric data were obtained through the use of the nominating technique. Thorndike and Hagan[2] suggested the use of this technique because of its simplicity and effectiveness in obtaining appraisals by peers. The following request was made of all the fourth, fifth, and sixth grade students: "Please list the first and last names of the three members of your class you would most like to have sit next to you."

Information on extraclass activities was obtained through the use of a checksheet. This sheet contained the names of all the subjects selected for study. Each sponsor of an extraclass activity was given the list and instructed to indicate by a check mark those subjects who participated in the activity.

Procedure of the Study

Step one in the study was a review of the research and literature relevant to the study. The review included sections

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[1] Ibid., p. 48.

[2] Thorndike and Hagan, Measurement and Evaluation, pp. 378-9.

on the historical development of public school transportation, the law related to public school transportation, the research on the effects of public school transportation on students, and the literature pertinent to the selected components of overall school adjustment.

Step two consisted of the selection of the subjects. The application of the selection criteria resulted in a sample size of 240, 120 transported students and 120 non-transported students.

Step three consisted of the collection of the data needed for the study. Data were collected from school records, teachers, and students. The school records, which included the student's enrollment card, attendance record, and test scores, provided data on sex, intelligence, achievement, attendance, and transportation classification. The teachers provided information on grades and participation in extraclass activities. The students provided information needed to determine the peer acceptance score. Appendix B presented the data obtained from the sources.

Step four of the study was to analyze the difference between the transported and non-transported groups on the components of overall school adjustment. The interactions between and among the factors of the design were also analyzed.

Generalizations made concerning the overall school adjustment of the subjects were based upon the significance of these differences and interactions.

Organization of the Report of the Study

The report of the study was divided into four chapters. Chapter one contained a description of the study. A review of the literature pertinent to the study was presented in chapter two. Chapter three contained the presentation and analysis of the data collected in the study. Chapter four contained the summary, conclusions, and recommendations of the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

The research and literature on public school transportation was primarily concerned with the historical development of public school transportation, law related to public school transportation, and the effects of public school transportation upon students. This chapter consisted of a presentation of information contained in the literature, research, and law. The first section was a review of the historical development of public school transportation drawn from the literature. Section two, an examination of the law related to public school transportation, included a summary of the legal basis for public school transportation and a review of the position of the courts. Section three contained a review of research related to the effects of public school transportation upon students. Section four was a review of the literature related to the components selected to represent overall school adjustment as defined for purposes of this study.

Historical Development of Public School Transportation

Much of the literature related to public school transportation was concerned with its historical development. The remainder of this section recorded the opinions of authorities on the historical development of public school transportation.

The development of public school transportation has moved through several distinct periods. Noble[1] reported that an era of private methods of transportation preceeded the period in which transportation was accepted as a public rather than a private responsibility. He noted that in 1869 the Legislature of Massachusetts passed an act which authorized local communities to raise money for the transportation of students to schools. This could be regarded as the beginning of the era of public rather than a private responsibility. Latta[2] concluded that a primary reason for the provision of transportation at public expense was to help equalize the opportunity for quality educational experiences for urban and rural children.

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[1]M. C. S. Noble, Jr., Pupil Transportation in the United States (Scranton, Pa.: International Textbook Company, 1940), pp. 1-2.

[2]Everette M. Latta, "Its Been Going on for a Century," American School Board Journal, CLVII (November, 1969), 30.

The period from 1869 to 1900 was, according to Vickers,[1] an experimental one in which public school transportation and school consolidation were being tested. Reeder[2] observed that school consolidation was the parent to public school transportation. He pointed out that both consolidation and public school transportation experienced about the same kind and rate of growth; first, moving slowly westward across the United States, then, experiencing a phenomenal amount of growth after 1900.

Pupil Transportation,[3] the 1953 Yearbook of the Department of Rural Education, in a review of the development of public school transportation in the United States, reported that the motor bus accounted for the tremendous increase in the quantity of public school transportation between the years of 1910 and 1920. The following causative factors were cited by the authors as reasons for the increased use of public school transportation: (1) the mechanization of farm

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[1]John L. Vickers, "Getting Them There And Back," Education Digest, XX (October, 1954), 27.

[2]Ward G. Reeder, The Administration of Pupil Transportation (Columbus, Ohio: The Educator's Press, 1939), p. 12.

[3]Department of Rural Education, Pupil Transportation, (Washington, D.C.: National Education Association, 1953), pp. 5-12.

processes, which resulted in larger farms and smaller farm populations; (2) the modernization of roads; (3) the consolidation of school attendance centers; (4) the quest for improvement of the educational opportunity of all children; and (5) the recognition of the safety factor in the provision of public school transportation services.

Reeder[1] noted the following chief factors in the growth of public school transportation since 1900: (1) the increase in school consolidation; (2) the enlargement of school districts; (3) the automobile; (4) the enactment of state laws which provided aid for transportation; (5) the use of federal funds for construction of consolidated schools; and (6) the widespread rural-urban migration.

Morphet, Johns, and Reller reported that the decline in farm population did not result in a reduction in the need for public school transportation. They stated that " . . . the increase in the suburban and rural nonfarm population has caused a much greater increase in the need for pupil

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[1]Reeder, Administration of Pupil Transportation, pp.7-8

transportation than the reduction caused by the decline in the farm population."[1]

In 1969, Johns and Morphet[2] reported that in addition to transportation in rural and suburban areas, some city districts provided transportation in urban areas. They also concluded that the causes which increased public school transportation in the past one-third century were still operative. These authors cited two of the major causes of increased public school transportation; the rural-urban population shift and school consolidation. These factors were also noted in figures presented by Ragan: the urban community contained 51% of the population in 1920, and 85% by 1960;[3] and the consolidation of rural schools and the elimination of small inefficient schools in urban systems resulted in the decline in the number of elementary schools from 169,905 to 85,000 between 1944 and 1964.[4] In a recent transportation study,

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[1]Edgar L. Morphet, Roe L. Johns, and Theodore R. Reller, Educational Organization and Administration Concepts, Practices, and Issues (2nd ed.; Englewood Cliffs: Prentice-Hall, Inc., 1967), p. 481.

[2]Johns and Morphet, Economics of Education, p. 563.

[3]Ragan, Modern School Curriculum, p. 85.

[4]Ibid., pp. 492-3.

Holden[1] concluded that the rapid continuation of school consolidation would greatly increase the expansion and complexity of the public school transportation system.

The growth of public school transportation during the period, 1929-1968, is clearly shown in a table[2] prepared by the U.S. Office of Education. The data in this table revealed that the number of students transported to school at public expense grew from 1,902,826 in 1929 to an estimated 16,550,000 in 1968. The expenditure of public funds for public school transportation increased from $54,823,000 in 1929 to $910,250,000 in 1968. These figures illustrated the point that public school transportation became a major item of expenditure and concern during the past forty years. This growth in public school transportation was also noted by Featherstone, who indicated, "Last year [1968-69] more than 2 out of every 3 public school children, 17,250,000, took the bus to school."[3]

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[1]Neil D. Holden, "The School Transportation Problem" (unpublished D.B.A. dissertation, Indiana University, 1968), Dissertation Abstracts, XXIX (No. 1-2, 1968), p. 35.

[2]U.S., Department of Health, Education, and Welfare, 1969 Digest of Educational Statistics, p. 34.

[3]Glenn Featherstone, "School Transportation The Things a Board Should Know," American School Board Journal, CLVII (November, 1969), 16.

The authorities cited in this chapter agreed that future trends in public school transportation would be the product of continued school consolidation, population growth and the rural-urban population shift. They also agreed that these factors would continue to increase public school transportation needs. Current and future plans of school organization, such as educational parks,[1] where several schools are located on one campus, were also predicted to make even greater demands on public school transportation systems.

The Law Related to Public School Transportation

In a review of the legal framework for public education, Reutter and Hamilton[2] explained that The Constitution of the United States serves as the basis for all statutes passed by Congress or state legislatures, ordinances of local government units, and rules and regulations of boards of education. As the Constitution does not specifically mention education, education became a state function under the Tenth

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[1]S. P. Marland, Jr., "The Educational Park Concept in Pittsburgh," Phi Delta Kappan, XLVIII (March, 1967), 328-32.

[2]E. Edmund Reutter, Jr. and Robert R. Hamilton, The Law of Public Education (Mineola, N.Y.: The Foundation Press, Inc., 1970), p. 2.

Amendment, which provides:

> The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively . . .

Alexander, Corn, and McCann[1] reported that state constitutions of every state made provisions for public education. These constitutions varied with respect to the provisions of funds for public education. Some contained specific provisions, while others contained only a simple mandate that the legislature provide funds for public education.

Placed within this framework of the law, the authority of school boards to provide transportation of students to school at public expense has been held to be statutory in origin.[2] Reutter and Hamilton[3] further explained that there was no obligation on the part of a school board to provide for transportation of students to school at public expense in the absence of a statute to that effect. Gauerke[4] observed,

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[1]Kern Alexander, Ray Corns, and Walter McCann, Public School Law (St. Paul: West Publishing Co., 1969), pp. 2-3.

[2]Lee O. Garber, The Yearbook of School Law 1965 (Danville, Ill.: The Interstate Printers & Publishers, Inc., 1965), pp. 163-4.

[3]Reutter and Hamilton, Law of Public Education, p. 224.

[4]Warren E. Gauerke, School Law (New York: The Center for Applied Research, Inc., 1965), p. 60.

however, that statutes uniformly permitted the transportation of pupils to and from school.

Garber referred to the legal doctrine of "expressio unius est exclusio alterius" as applicable to public school transportation statutes. He defined this doctrine to mean:

> . . . where a statute enumerates the things upon which it is to operate, or forbids certain things, it is to be construed as excluding from its effect all those things not expressly mentioned, unless the legislature has plainly indicated a contrary purpose or intention.[1]

Noble,[2] as well as Vickers,[3] reported that each of the states (forty-eight) had passed some form of public school transportation law by 1919. Just as these first public school transportation statutes varied from state to state, present public school transportation statutes also vary from state to state.

Johns and Morphet[4] observed these variations in methods of financing pupil transportation: about one-half of the states had separate transportation funds; a few had two or

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[1]Lee O. Garber, The Yearbook of School Law 1966 (Danville, Ill.: The Interstate Printers & Publishers, Inc., 1966), pp. 210-11.

[2]Noble, Pupil Transportation, p. 41.

[3]Vickers, "Getting Them There," p. 27.

[4]Johns and Morphet, Economics of Education, p. 363.

three transportation funds to be used for different transportation needs; and several states provided a flat amount per pupil. They summarized the present situation in these words:

> . . . there are some unsatisfactory features and inequities in most plans for state support of transportation . . . Many of the present provisions are little more than makeshift devices for giving some assistance for financing the cost of transportation.[1]

Hamilton and Reutter[2] observed that state public school transportation laws varied in that some were permissive in mature, some mandatory, and some were a combination, specific in some areas and permissive in others. They indicated that these laws usually provided for state aid for public school transportation for students who lived beyond a specified distance from school. It was noted that in most states, local boards provided for transportation for lesser distances at local expense.

States not only differed with regard to transportation statutes and methods for financing transportation, but

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[1]Ibid., p. 364.

[2]Robert R. Hamilton and E. Edmund Reutter, Jr., Legal Aspects of School Board Operation (New York: Columbia University, 1958), p. 90.

also differed in the determination of who would be considered transported for financial aid purposes. The states generally had set distances ranging upward from one mile as a minimum figure.[1] It was interesting to note that Connecticut had set various minimum distance in accordance with the grade of the student.[2]

Safety practices with regard to public school transportation also varied from state to state. Key and Abercrombie[3] noted a need for greater conformity among the states on these practices so that motorists would not be confused as they traveled from state to state, and thereby, endanger the lives of school children. These authors also concluded that most state departments of education had come to see the school bus as an integral part of the schools' responsibility, not as an auxiliary service.

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[1]Noble, Pupil Transportation, p. 122.

[2]"Connecticut Sets One Mile Bus Limit," Nations Schools, LXXII (March, 1967), 172.

[3]Norman Key and Stanley Abercrombie, Study of School Bus Safety, p. 27, cited by William A. Horn, "Its Safer on the Bus," American Education, IV (October, 1968), 2-6.

A summary of the topics covered in the Oklahoma public school transportation statutes[1] was provided here as an example of the kinds of statutes which were currently in force with regard to public school transportation:

1. Definition of districts which may provide public school transportation.

2. Definition of students who are eligible to receive public school transportation.

3. Consideration of the determination of routes and areas of public school transportation.

4. Requirements of public school transportation vehicles sold and operated in the state.

5. Conditions under which a public school transportation vehicle may be operated in the state.

6. Conditions for purchase, sale, and rental of public school transportation equipment.

The rules and regulations of the Oklahoma State Board of Education have the force of law in matters related to the

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[1]Oklahoma State Board of Education, The School Finance, Transportation and Activity Fund Laws Including the State Board of Education Regulations for Administration and Handbook on Budgeting and Business Management, Bulletin Number 145-0, (Oklahoma City: Department of Education, 1967), pp. 23-7.

operation of a system of public school transportation.[1] A summary of the information covered in the rules and regulations of the Oklahoma Department of Education[2] revealed a close parallel between these rules and regulations and the statutes. These rules and regulations included:

1. Description of legally transported public school students both inside and outside the school district.

2. Public school transportation routes and areas, legal speed of school busses, and school bus driver certificates.

3. Information given to calculate density figure, correction figure, and adjustments in public school transportation allocations.

4. Designation of what shall be considered public school transportation equipment.

5. Description of districts eligible to provide public school transportation.

6. Provision for the use of tax exempt motor fuels in public school transportation equipment.

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[1] Ibid., p. 24.

[2] Ibid., pp. 28-39.

7. Provision of public school transportation for auxiliary activities.

8. Accounting procedures for purchase of public school transportation equipment.

9. Rules which govern the establishment and use of the "Special Transportation Revolving Fund."

10. Speed limits and marking requirements for public school transportation vehicles.

Taken as a whole, the state statutes and state education agency rules and regulations formed a usable body of knowledge. This body of knowledge served as a basic guide and reference point for the individuals responsible for the smooth and efficient operation of the public school transportation system in a given state.

Critchfield,[1] in a 1960 dissertation, made the following recommendations on the legislation which affects public school transportation in the United States: (1) public school transportation laws should deal with general aspects of transportation, giving authority to proper officials to

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[1]John G. Critchfield, "Legislation Affecting Pupil Transportation in the United States," (unpublished Ph.D. dissertation, University of Pittsburg, 1960), Dissertation Abstracts, XXII (No. 1-2, 1961), p. 134.

deal with local exigencies; (2) the state should have complete authority over bus routes; (3) all students who live along a heavily traveled highway should be transported regardless of distance from school; (4) periodic safety inspection of busses should be mandatory; (5) all busses should be equipped with a first-aid kit and a two-way radio; (6) the training of bus drivers before service should be mandatory; (7) uniformity of traffic laws with regard to busses should be achieved between all states; and (8) liability insurance should be purchased for all instances of public school transportation.

In an article on the legislative aspect of public school transportation, Punke concluded that legislative preparedness was often not enough. He stated that " . . . those responsible [for public school transportation] must exercise discretion in the best interest of the children, their families, and the community to meet this challenge [transportation] efficiently and expediently."[1]

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[1]Harold H. Punke, "Deciding Whether Pupils Ride or Walk," School Executive, LXXV (March, 1956), 87-90.

Court Decisions

Most of the law related to public schools came from the statutes enacted by state legislatures. Reutter and Hamilton[1] noted that the power of state legislatures over public schools was plenary. However, these statutes were subject to review by the courts in terms of the restrictions and interpretations imposed by the constitution of the state and The United State Constitution. The ruling of the courts was not static, however, as courts of last resort can reverse their own decision and establish a new rule of law.[2]

Hamilton and Reutter[3] expressed the prevalent judicial attitude placed upon public school transportation statutes to be one of strict interpretation. The authors explained that a board of education could not consider provision of public school transportation to be an implied power in the absense of authorizing legislation. The courts reasoned that the responsibility was basically that of the parents or perhaps that the exercise of walking was beneficial to children.

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[1]Reutter and Hamilton, Law of Public Education, pp.6-7.

[2]Alexander, Corns, and McCann, Public School Law, p. 4.

[3]Hamilton and Reutter, School Board Operations, p. 90.

Garber and Edwards[1] presented several basic principles which involved the provision of public school transportation at public expense. These principles came about as a result of decisions rendered in cases tried in courts in the United States. These principles included: (1) the statutes which authorized local boards to provide public school transportation were consitutional;[2] (2) the authority of local boards to expend public funds to provide transportation was statutory in origin;[3] (3) the discretion of appropriate officials would not be interfered with by the courts in the establishment of public school transportation vehicle routes, unless the official abused his discretion;[4] and (4) the courts would not require that conveyances be sent to the home of each child or provide public school transportation for children living in isolated or inaccessible places.[5] (It should be noted

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[1]Lee O. Garber and Newton Edwards, The Law Governing Pupils (Danville, Ill.: The Interstate Printers and Publishers, inc., 1962), pp. 5-6.

[2]Pasadena City High School District v. Upjohn, 206 Cal. 775, 276 P. 341 (1929).

[3]State ex rel. Beard v. Jackson, 168 Ind. 384, 81 N.E. 62 (1907).

[4]Bowen v. Meyer, 255 S.W. 2d 490 (Ky. Ct. App. 1953).

[5]State v. Miller 193 Ind. 492, 141 N.E. 60 (1923).

that a more recent court decision resulted in an order to a board to transport students living in an isolated area).[1]

Garber, in an annual review of school law, presented the more important of recent court decisions related to public school transportation. A case, which involved the transportation of a student to an out-of-state district, was reported in his 1964 Review of School Law.[2] This case resulted in the court requirement that the in-state district provide the transportation for a high school student to an out-of-state district. This was due to the great distance the student would have had to travel to attend the school in his own in-state district.[3]

The Yearbook of School Law 1965[4] presented a case which pointed out the courts' strict interpretation of public school transportation statutes. In an interpretation of an Alabama statutory provision, the court held that a provision

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[1]Manjares v. Newton, 64 Cal. 2d 365, 49 Cal. Rptr. 805, 411 P. 2d 901 (1966).

[2]Lee O. Garber, 1964 Review of School Law (Danville, Ill.: The Interstate Printers & Publishers, Inc., 1964), p. 179.

[3]Hines v. Independent School District, 380 P. 2d 943 (Okla. 1963).

[4]Lee O. Garber, 1965 Yearbook of School Law, (Danville, Ill.: The Interstate Printers & Publishers, Inc., 1965), p. 164.

which provided public school transportation for pupils enrolled in consolidated schools did not confer the duty upon the board to provide public school transportation to students enrolled in other types of schools.[1]

Many public school transportation cases resulted from the action of parents to compel school boards to provide transportation for their children. The Yearbook of School Law 1966[2] presented several such cases in which the strict interpretation of public school transportation statutes by the courts was again noted. One case involved the transportation of a child who lived within three miles of school. State statutes provided for public school transportation beyong three miles. The court ruled that a school district lacked authority to provide free transportation for this child. However, where state statutes were permissive and boards were given some discretion in the provision of public school transportation, Garber pointed out that boards could provide transportation[3] or discontinue it[4] as they saw fit.

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[1]Conecuh County Board of Education v. Campbell, 162 So. 2d 233 (Ala. 1964).

[2]Garber, 1966 Yearbook of School Law, p. 211.

[3]Brown v. Allen, 256 N.Y.S. 2d 106 (1965).

[4]Landerman v. Churchill Area School District, 200 A. 2d 867 (Pa. 1965).

Garber and Reutter in a discussion of the question of hazard, which was frequently raised in conjuction with public school transported cases, stated:

> Some parents claim that danger along the route to school is as important as distance from home to school in establishing transportation policies. In some states courts have shown a disposition to consider hazard as a factor even in the absence of legislative authority.[1]

However, they also noted that when the state statutes were specific as to distance, the courts generally adhered to that measure. This strict interpretation without regard to safety was noted in a recent case in which the court ruled, " . . . it is the responsibility of the parents and not the district to see that their child safely reaches school."[2]

Hamilton and Mort raised a pertinent question concerned with the strict construction of transportation statutes by the courts. They stated:

> There seems to be no valid explanation for the strict interpretation placed upon transportation statutes. It is difficult to understand why the judicial trend toward

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[1]Lee O. Garber and E. Edmund Reutter, Jr., The Yearbook of School Law 1967 (Danville, Ill.: The Interstate Printers & Publishers, Inc., 1967), p. 242.

[2]Studley v. Allen, 261 N.Y.S. 2d 138 (N.Y. Ct. App. 1966).

> liberalization of what properly falls within the purview of education has not been carried over into transportation.[1]

Reutter and Hamilton[2] concurred with other authorities as to the general points of the law related to school transportation. These included: (1) a strict interpretation of transportation statutes by the courts;[3] (2) the opinion of the courts that the basic responsibility of getting children to school was with the parent; (3) school funds may be used for transportation if express legislative authority was given, unless this involved a church-state relationship; and (4) in the absence of expressed statutes, courts held overwhelmingly, that funds could not be used for public school transportation.[4]

In terms of these general positions of the court, Reutter and Hamilton reviewed the position of the courts on

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[1]Robert R. Hamilton and Paul R. Mort, The Law and Public Education (2nd ed.; Brooklyn: The Foundation Press, Inc., 1959), p. 228.

[2]Reutter and Hamilton, Law of Public Education, pp. 223-4.

[3]Schmidt v. Blair, 203 Iowa 1016, 213 N.W. 593 (1927).

[4]Ex Parte Perry County Board of Education, 278 Ala. 646, 180 So. 2d 246 (1965).

the use of public school transportation for extracurricular activities and the courts' interpretation of distance and safety as factors in public school transportation statutes. These decisions included the following cases: (1) the Supreme Court of Utah ruled that students could be transported at public expense if the presence of the student was required in an after school activity;[1] (2) a Connecticut statute which authorized transportation, not in terms of distance, but in terms of what was "reasonable and desirable," was expanded by the courts to include the consideration of safety;[2] (3) the Supreme Court of California held that a school board must provide transportation for pupils living in a rather inaccessible part of the district;[3] (4) a New York court held that where a statute specifies a distance beyond which a child must be transported, that measure must be retained and hazard would not be considered;[4] and (5) the

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[1]Beard v. Board of Education of North Summit School District, 81 Utah 51, 16 P. 2d 900 (1932).

[2]Town of Waterford v. Connecticut State Board of Education, 148 Conn, 238, 169 A. 2d 891 (1961).

[3]Manjares v. Newton, 64 Cal. 2d 365, 49 Cal. Rptr. 805, 411 P. 2d 901 (1966).

[4]Studley v. Allen, 24 A. 2d 678, 261 N.Y.S. 2d 138 (1965).

Supreme Court of Mississippi ruled that the determination of distance started at the door of the child's house, not at the end of his driveway.[1]

In 1967 Stapley[2] completed a study of the nature of court decisions concerned with public school transportation. In this study Stapley reviewed areas in which courts had not been uniform in their decision, areas of unanimous or near unanimous decisions, and trends which were in evidence from recent court decisions.

Stapley reported that courts had not been uniform in decisions which concerned: (1) what constituted legal authority of a school district to provide transportation at public expense for pupils who attended school in the school district, attended school in another district, attended non-public schools, and attended extracurricular activities; (2) the authority of officials and/or agencies other than school districts in public school transportation matters; (3) the

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[1]Madison County Board of Education v. Grantham, 250 Miss, 767, 168 So. 2d 515 (1964).

[2]Keith E. Stapley, "Analysis of Court of Record Cases Regarding Pupil Transportation in the United States" (unpublished Ed.D. dissertation, Indiana University, 1967), Dissertation Abstracts, XXVIII, (No. 4-6, 1968), p. 2149.

question as to whether or not state rules and regulations which concern public school transportation were part of the school bus driver's contract; and (4) the necessity to advertise for bids for public school transportation contracts.

Stapley found that the courts had been unanimous or near unanimous in these decision areas: (1) state legislatures had the authority to enact legilation which authorized the transportation of public school students at public expense; (2) courts would not interfere with the discretion of school boards unless the board's actions were arbitrary, capricious, or fraudelent; and (3) if board had the power to provide public school transportation, they also had the power to purchase school busses, hire drivers, contract with automotive companies, and contract with commercial carriers to furnish pupil transportation.

Among the trends noted by Stapley were the following: (1) later courts had tended to rule that the school district must (not may) provde transportation for public school students if failure to do so would deny the child the right to attend school; it was noted that earlier courts had not held this view; (2) increased attention was being paid to the importance of hazards in the determination of a school board's duty to provide transportation; and (3) the expenditure of

public funds to transport students across district lines was held to be not only within the authority of the local school board but part of its duty as well.

Research Related to the Effects of Public School Transportation upon Students

The following section included a review of the research studies which were directly related to the effects of public school transportation upon students. These studies indicated areas of concern which authorities had explored with regard to the effects of public school transportation upon students.

Blanchard,[1] in a study of sociometric patterns related to transported and non-transported secondary school students, reached these conclusions: (1) there were just as many cliques formed among transported as non-transported students; (2) there was no statistically significant differences between the transported and non-transported students in number of isolates; (3) there was no statistically significant difference between transported and non-transported students

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[1]Everard Blanchard, "A Social Acceptance Study of Transported and Non-Transported Pupils in a Rural Secondary School," Journal of Experimental Education, (June, 1947), 291-303.

on honor credits; and (4) there was a negligible effect of transportation on number of cliques, isolates, cross-sex friendship choices, reciprocal mutual friendship choices, and scholastic attainment.

In a study related to the effect of transportation upon participation in school activities, Morgan and Kurtzman[1] concluded that there was a consistent but weak negative relationship between participation in school activities and the distance from home to school.

Straley[2] studied the academic achievement and social adjustment of transported and non-transported high school seniors. He studied the correlation between the number of miles transported and achievement and social adjustment test scores, and the relationship between the length of the school day and test scores. Straley concluded that: (1) in unmatched groups of transported and non-transported students

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[1]Don L. Morgan and Joseph B. Kurtzman, "The Relationship of the Distance from Home to School upon Participation in Iowa Secondary Schools," School Activities XL (July, 1969), 12-14.

[2]Harry G. Straley, "A Comparative Study of the Academic Achievement and Social Adjustment of Transported and Non-Transported High School Seniors" (unpublished Ed.D. dissertation, University of Virginia, 1956), Dissertation Abstracts, SVII (No. 5-8, 1957), p. 1495.

there was a statistically significant difference in academic achievement in favor of the non-transported group; (2) when transported and non-transported groups were matched on sex and intelligence, there was no statistically significant difference in academic achievement; (3) there was a statistically significant difference in academic achievement between transported and non-transported males in favor of the non-transported group; (4) there was no statistically significant difference between the transported and non-transported groups on social adjustment; (5) there was no statistically significant correlation between academic achievement and length of school day; and (6) the non-transported group participated in more extracurricular activities than the transported group.

A study was conducted by Dunlop, Harper, and Hunka[1] on the influence of public school transportation upon second, fourth, and sixth grade students. The academic achievement and attendance of transported and non-transported students were statistically compared. This study revealed the

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[1]G. M. Dunlop, R. J. C. Harper, and S. Hunka, "The Influence of Transporting Children to Centralized Schools upon Achievement and Attendance," Educational Administration and Supervision, XLIV (July, 1958), 191-8.

following: (1) there was no statistically significant difference in intelligence between transported and non-transported students at any of the grade levels studied; (2) the differences in attendance became statistically significant to the advantage of the non-transported group at the grade six level; and (3) there was no statistically significant difference between the achievement test scores of the transported and non-transported students at the fourth or sixth grade level; however the difference was statistically significant at the second grade level in favor of the non-transported students. This study was conducted in a rural to urban transportation situation, and the authors attributed much of the significane of their findings to this aspect of the study.

In a comparison of attendance records of transported and non-transported students, Hausser[1] found that transported students had a higher per cent in average daily attendance than non-transported students. These findings held true regardless of the sex of the students studied. A study by DeBenning[2] was also concerned with attendance patterns of transported and non-transported students. This author

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[1]E. W. Hausser, "Effect of Pupil Transportation on Pupil Health," cited by Noble, Pupil Transportation, p. 424-5.

[2]Merell DeBenning, "Comparative Attendance of Transported and Non-Transported Children in Selected Schools of Oklahoma, unpublished M.A. thesis, University of Oklahoma, 1939.

concluded that the transported students had established, during the period of study, a definite trend toward a higher percentage of attendance than the non-transported students. Both of these studies involved rural students.

Current research on how public school transportation affects students was concerned with the results of public school transportation when it was used as a means to improve educational conditions for low socioeconomic groups, especially Negro students. So many variables, other than transportation, enter into this type of research that it was impossible to draw out what the effects of transportation, per se were upon the students. Ausubel and Robinson[1] pointed out a number of these intervening variables. Two of the major variables suggested were socioeconomic level and cultural patterns.

This review of research related to the effects of public school transportation upon students revealed that (1) there was a general lack of research in this area; (2) the research was primarily concerned with differences between

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[1]David P. Ausubel and Floyd G. Robinson, School Learning (New York: Holt, Rinehart and Winston, Inc., 1969), pp. 432-9.

urban and rural students; and (3) most of the research was conducted prior to 1958.

Literature Related to the Selected Components of Overall School Adjustment

Five components of overall school adjustment were selected for use in this study. These components were: (1) composite achievement test score; (2) teacher grades or marks; (3) school attendance; (4) participation in extra-class activities; and (5) peer acceptance.

Several authors noted the importance of overall school adjustment. Ullman[1] indicated that there was a definite relationship between teacher attitude, peer acceptance, and test scores, and the individual's adjustment to the school situation. Stroud[2] noted the relationship of intelligence, academic achievement, experience background, motivation, and participation in extracurricular activities to school adjustment. Flemming[3] pointed out that academic

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[1]C. A. Ullman, "Teacher, Peers and Tests as Predictors of Maladjustment," Journal of Educational Psychology, XLVIII (May, 1957), 257-67.

[2]Stroud, Psychology in Education, p. 371.

[3]Cecile W. Flemming, Pupil Adjustment in the Modern School (New York: Teachers College, Columbia University, 1931), p. 4.

achievement was not the only indicator of student adjustment. She also included emotional, social, and physical aspects of student behavior as indicators of adjustment.

Remmers, Gage, and Rummel,[1] in a description of achievement measures, explained that achievement tests assessed what the student had learned in situations where learning and teaching were intended to go on. They also indicated that achievement tests were excellent bases for the prediction of future educational success. Ahmann and Glock[2] stressed the importance of achievement as measured by standardized tests. They also noted that achievement tests were good indicators of school adjustment. Anastasi[3] declared that the principle objective of achievement tests was to appraise the effects of instruction upon the student. She noted that a major portion of the use of achievement tests occurred in elementary schools. Horrocks[4] indicated that achievement

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[1]H. H. Remmers, N. L. Gage, and J. Francis Rummel, A Practical Introduction to Measurement and Evaluation (2nd ed.; New York: Harper and Row, Publishers, 1965), p. 21.

[2]J. S. Ahmann and M. D. Glock, Evaluation of Pupil Growth (Boston: Allyn and Bacon, 1963), pp. 351-2.

[3]Anne Anastasi, Psychological Testing (3rd ed.; New York: The Macmillan Company, 1968), p. 454.

[4]John E. Horrocks, Assessment of Behavior (Columbus, Ohio: Charles E. Merrill Books, Inc., 1964), pp. 459-87.

tests were direct measures of a combination of memory, recognition, transfer, and skill performance. He also noted that achievement tests measured, not only the level of a person's learning, but his ability to apply what he has learned as well.

The literature related to achievement tests indicated that they provided a broad estimate of the academic development of a student. The composite achievement test score was, therefore, included as an indicator of overall school adjustment.

Thorndike discussed the importance of grades or marks. He indicated that the marks received by a student reflected the adjustment of that student to the school situation. He stated, "A mark summarizes the evidence available on a student . . ."[1] Ahmann and Glock[2] classified the determination and communication of student growth as major concerns of educators. They further explained that marks attempted to combine all factors possible to arrive at an assessment of

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[1]Robert L. Thorndike, "Marks and Marking Systems," Encyclopedia of Educational Research, 4th ed., 759.

[2]Ahmann and Glock, Pupil Growth, pp. 351-2.

student growth. Murray[1] indicated the importance of reporting academic achievement in realistic terms. He also suggested that academic marks described student adjustment. An entire issue of the National Elementary Principal[2] was devoted to the importance of marks. The authors who contributed to this issue pointed out that marks described the school adjustment of students. They also suggested numerous ways to improve both marking practices and the reporting of marks. Remmers, Gage, and Rummel[3] discussed the importance of marks. They indicated that marks were "indexes of evaluation" and that they were closely related to school adjustment.

Various authorities discussed the relationship of grades to school adjustment. They indicated that grades reflected the student's adjustment to the school situation. Teacher grades was, therefore, included as an indicator of overall school adjustment.

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[1]Thomas R. Murray, Judging Student Progress (New York: Longmans, Green and Company, 1954), pp. 283-4.

[2]Department of Elementary School Principals, National Education Association, National Elementary Principal, XXXI (June, 1952), 1-48.

[3]Remmers, Gage, and Rummel, Measurement and Evaluation, p. 286.

Gibson,[1] in a discussion of attendance, made these observations. He noted that attendance could be seen as a form of social behavior. This author further observed that attendance at school was an overt act which indicated interest and desire on the part of the student. Gibson also implied that permanent non-attendance (to dropout), was often caused by a lack of social acceptance and was an indication of a lack of adjustment to the school situation. Remmers, Gage, and Rummel[2] indicated that attitudes may be inferred from nonverbal, overt behavior, such as attendance. Sorenson[3] discussed the importance of school attendance. He noted a relationship between attendance and academic achievement.

These writings indicated the importance which several authors placed upon attendance. Attendance was, therefore, included as an indicator of overall school adjustment.

The quantity of participation in extraclass activities by a student was selected as an indicator of that

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[1]R. Oliver Gibson, "Attendance," Encyclopedia of Educational Research, 4th ed., 90-7.

[2]Remmers, Gage, and Rummel, Measurement and Evaluation, p. 312.

[3]Herbert Soreson, Psychology in Education (4th ed.; New York: McGraw-Hill Book Company, 1964), pp. 119-20.

student's adjustment to school. Yarrow,[1] in a discussion of attitudes and values, noted that one core characteristic of an attitude (school adjustment) was involvement in the object (participation in school activities). Stroud[2] noted that participation in extracurricular activities was an extremely important area of educational experience. He observed that participation in the extraclass activities of a school was characteristic of many students. In a study of participation in extraclass activities, Smith[3] stressed these points: (1) the importance of informal learning which takes place between students in groups; (2) the necessity of being more than just a member of a group; (3) the importance of an individual's participation in order to gain full value from an experience. Smith also noted that the importance of extraclass activities could be observed in the large numbers of these activities which were offered by schools across the United States.

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[1]Marian R. Yarrow, "The Measurement of Children's Attitudes and Values," in Handbook of Research Methods in Child Development, Paul H. Mussen, ed. (New York: John Wiley & Sons, Inc., 1960), p. 647.

[2]Stroud, Psychology in Education, pp. 36-9.

[3]Henry P. Smith, "A Study of the Selective Character of American Secondary Education: Participation in School Activities as Conditioned by Socio-Economic Status and Other Factors," Journal of Educational Psychology, XXXVI (1945), 229-46.

These authors suggested that an individual's school career should involve more than just sitting in class. Participation in extraclass activities was considered to be important. Participation in extraclass activities was, therefore, included as an indicator of overall school adjustment.

The final component of overall school adjustment, peer acceptance, was considered to be an important indicator of social adjustment. Johnson and Medinnus stated that "Although adjustment to peers is only one facet of a child's personality, his relationship with others serves well as a measure of his general adjustment."[1] They also indicated that the data furnished by a sociometric measure illustrated the manner in which a child was accepted by his peers. Northway[2] noted that sociometry attempted to consider the individual in the group; it was not an attempt to consider the individual as an entity. Gronlund[3] noted that sociometric tests provided information which was useful to classroom teachers as

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[1]Johnson and Medinnus, Child Psychology, p. 541.

[2]Mary L. Northway, A Primer on Sociometry (Toronto: University of Toronto Press, 1952), p. 1.

[3]N. E. Gronlund, Sociometry in the Classroom (New York: Harper & Row, Publishers, Inc., 1959), Chapter 1.

it was easier to understand a student's behavior if a person had some knowledge of the student's status with his peers.

Guivovard and Rychlak,[1] in a study of individual personality characteristics associated with peer acceptance, noted the relationship between an individual's peer acceptance and his achievement in the learning of school subjects. These authors also pointed out the importance of the fear of ostracism. Murray[2] observed that a student had a practical need to be accepted as well as a social need for acceptance. Horrocks[3] explained that sociometry was an approach to the measurement of interpersonal relationships. He also supported the use of sociometric tests by the teacher in the classroom. Remmers, Gage, and Rummel stated, "It may be assumed that the pupils who are frequently chosen by other pupils for close association show a high degree of social acceptability by their fellow pupils."[4]

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[1]D. E. Guivovard and J. F. Rychlak, "Personality Correlates of Sociometric Popularity in Elementary School Children," Personnel and Guidance Journal, XL (January, 1962), 438-42.

[2]Thomas R. Murray, Judging Student Progress, p. 200.

[3]Horrocks, Assessment of Behavior, p. 697.

[4]Remmers, Gage, and Rummel, Measurement and Evaluation, p. 348.

The literature related to peer acceptance strongly suggested that peer acceptance was an important aspect of school adjustment. Peer acceptance was, therefore, included as an indicator of overall school adjustment.

This review of research related to the selected components of overall school adjustment revealed that (1) each of the five components was recognized by educators as important to a student's overall school adjustment; (2) the components had been studied in differing degrees of detail; (3) the adjustment of an individual to a school situation was usually observable; and (4) the selected components of school adjustment worked together to affect overall school adjustment.

CHAPTER III

PRESENTATION AND ANALYSIS OF THE DATA

This chapter consisted of a presentation of the procedures used in fulfilling the design of the study. This information was presented under three major headings: (1) the population and sample, (2) the collection of data, and (3) the presentation and analysis of data.

The Population and Sample

The population used in this study was the fourth, fifth, and sixth grade students of a large urban elementary school. The total enrollment of this school exceeded 1,100 students.

Two hundred forty students were selected for study from the 604 fourth, fifth, and sixth grade students in the co-operating school. The following steps were taken in order to determine the students who were included in the study:

1. All fourth, fifth, and sixth grade students were listed from the enrollment cards. The lists were divided on the basis of grade and sex.

2. The students names were then placed into tentative transported and non-transported groups on the basis of enrollment card information and a map of the school area. At this point, there were 406 tentative transported students and 198 tentative non-transported students available for study.

3. The tentative non-transported group was reduced by discarding the names of those students who lived in a six square block area of obviously different socioeconomic level housing. The names of those tentative non-transported students who were not enrolled in the co-operating school for the full school year were also removed from the list. The number of tentative non-transported students available for study was reduced to 131.

4. The tentative transported group was reduced by those students who did not fit the definition of transported. A transported student was described as one who rode a school bus approximately one mile to school. The names of the tentative transported students who were not enrolled for the full school year were also removed from the list. This action resulted in 269 tentative transported students available for study.

5. The statistical design of the study made it necessary for there to be a minimum of 120 non-transported and

120 transported students, 60 males and 60 females in each group. Each student who remained in the non-transported group was assigned an identification number. Sixty males and sixty females were then selected through the use of a table of random numbers to be included in the non-transported group.

6. Each student who remained in the transported group was assigned an identification number. One hundred twenty transported students were then selected for study through the use of a table of random numbers. Sixty males and sixty females were selected. Care was taken during this selection to insure that the sex and grade level of the transported subjects were in the same proportions as those in the non-transported group.

These steps resulted in a sample size of 240 fourth, fifth, and sixth grade subjects. The transported group consisted of sixty males and sixty females. The non-transported group consisted of sixty males and sixty females.

The Collection of Data

The data on the selected subjects were collected from three primary sources. These sources were the school records of the selected subjects, the teachers of the selected subjects, and the students in the classes from which the subjects

were selected. These raw data were recorded on master tally sheets.

School records used to collect data included the test scores, which were available in the office of the co-operating school, the attendance register, and the enrollment card. Data used to determine transported and non-transported status, grade, and sex were collected from the enrollment card. Intelligence test scores and composite achievement test scores were obtained from student test records in the office of the co-operating school. Attendance data were collected from the attendance register. The data obtained from school records were entered on the master tally sheet.

The teachers of the selected subjects provided two types of data. First, they provided the grades or marks for each selected subject. This information was secured by providing each teacher with a list of the selected subjects in his or her classroom. The teacher was asked to enter, in the space provided, the subject's average letter grades for the first three reporting periods of the school year in reading, language, mathematics, social studies, and science. The grades were then converted to numerical equivalents and entered on the master tally sheet.

Second, the teachers provided data on participation in extraclass activities. Various teachers on the faculty of the co-operating school served as the sponsors of the extraclass activities of that school. In order to ascertain the number of extraclass activities in which a subject participated, each sponsor was provided with a list of students who were selected as subjects of the study. The sponsors were asked to indicate the subjects who participated in the extraclass activity which they sponsored. This information was then entered on the master tally sheets.

The students in the fourth, fifth, and sixth grades of the co-operating school were the third source of data for the study. Information on the peer acceptance of the subjects was obtained from these students. This information was collected in each classroom by the researcher. Each class was asked to respond in writing to the following sociometric request: "Please write the first and last names of the three members of your class that you would most like to have sit next to you." The number of times a subject was named in response to this request was then totaled and entered on the master tally sheets.

The entries on the master tally sheets were tabulated and entered on the final data sheets. The final data sheets

were used to obtain the information needed for the statistical analyses which were performed. Appendix B presented a copy of the final data sheets.

The Presentation and Analysis of the Data

The purpose of this section was to present the analyses of the data collected on the 240 students who were selected for study. Statistical comparisons of the transported and non-transported groups were made through the application of the Analysis of Variance and the t test to the raw scores of the subjects. It was felt that conversion of the raw scores to standard or z scores was not necessary due to the insensitivity of the Analysis of Variance.[1] The acceptance and rejection of the hypotheses of the study were based upon the results of these statistical analyses.

The Analysis of Variance

The Analysis of Variance was the statistical treatment used to make comparisons necessary to accept or reject hypotheses one through seven. This was done through the use

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[1]"The Norton Study of the Effects of Non-Normality and Heterogeneity of Variance," cited by E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education (Boston: Houghton Mifflin Company, 1956), p. 81.

of a computer at the Merrick Computer Center, Norman, Oklahoma. The computer was programed for the Analysis of Variance for Factorial Design.

The Analysis of Variance is a statistical technique used for various purposes, one of which is the detection of interaction between and among the factors of the design of a study.[1] The factors of this study were transportation, sex, intelligence, and overall school adjustment. Appendix C presented the cell means calculated by computer for the Analysis of Variance.

The requirements of hypotheses three, five, six, and seven made it necessary to divide the transported males and females and the non-transported males and females into high, medium, and low classifications of intelligence on the basis of California Test of Mental Maturity scores. This was accomplished through the arbitrary designation of the twenty highest male transported scores as the high classification, the next twenty highest male transported scores as the medium classification, and the twenty lowest male transported scores as the low classification. This same procedure was followed for the transported females, non-transported males, and

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[1]Ferguson, Statistical Analysis, pp. 305-7.

non-transported females. This resulted in the classification of the 240 subjects as either high, medium, or low in intelligence. The intelligence test score range for each of these groups was presented in Table 1.

TABLE 1

RANGES OF HIGH, MEDIUM, AND LOW INTELLIGENCE CLASSIFICATIONS

Int. Class.	Transported Males	Transported Females	Int. Class.	Non-Transported Males	Non-Transported Females
High	122-133	118-132	High	109-132	115-130
Medium	107-120	108-118	Medium	101-108	103-114
Low	79-107	78-108	Low	71-100	80-101

The Analysis of Variance by computer presented the source of variation, degrees of freedom, sum of squares, and mean squares. The F ratio was computed by dividing the error term (the pooled Transportation X Sex X Intelligence X Overall School Adjustment interaction and the within replicates mean squares) into the mean squares of the other sources of varaition.[1] The probability level was determined by using Ferguson's Table D.[2]

[1]Ferguson, Statistical Analysis, pp. 310-11.

[2]Ibid., pp. 408-11.

Hypotheses one through seven were concerned with the main effects and interactions of the factors: Transportation, Sex, Intelligence, and Overall School Adjustment. The source of variation, degrees of freedom, sum of squares, mean squares, F ratio, and probability level related to hypotheses one through seven were presented in Table 2.

Hypothesis One stated: "There is no statistically significant difference between the transported and non-transported groups on overall school adjustment." As shown in Table 2, the calculated value of F for this hypothesis was <1. This value was not significant at the .05 level. Therefore, Hypothesis One was accepted.

Hypothesis Two stated: "There is no statistically significant difference between males and females on overall school adjustment. The data in Table 2 indicated that the calculated value of F for this hypothesis was 3.71. This value was not significant at the .05 level. Hypothesis Two, therefore, was accepted.

Hypothesis Three stated: "There is no statistically significant difference between the students in high, medium, and low intelligence classifications on overall school adjustment." As shown in Table 2, the F value for this hypothesis was calculated to be 110.17. This value was significant

TABLE 2

ANALYSIS OF VARIANCE OF THE FACTORS IN THE STUDY

Hypothesis Number	Source of Variation**	Degrees of Freedom	Sum of Squares	Mean Squares	F	P
1	Transportation	1	21.33	21.33	<1	-
2	Sex	1	125.45	125.45	3.71	n.s.
3	IQ	2	8040.38	4020.17	110.17	.001
4	Transportation X Sex	1	.55	.55	<1	-
5	Transportation X IQ	2	35.01	17.51	<1	-
6	Sex X IQ	2	345.55	174.28	4.78	.01
7	Transportation X Sex X IQ	2	152.39	76.19	2.09	n.s.
	Error Term*	1148	41885.38	36.49		

*(T X S X IQ X OSA)1234 interaction and within cells pooled for greater precision.

**Only those sources of variation which were related to the hypotheses of the study were reported.

at less than the .001 level. Hypothesis Three was, therefore, rejected.

Hypothesis Four stated: There is no statistically significant interaction between the factors of transportation and sex (when considered jointly) on overall school adjustment." The data in Table 2 indicated that the F value for this hypothesis was <1. This value was not significant at the .05 level. Therefore, Hypothesis Four was accepted.

Hypothesis Five stated: "There is no statistically significant interaction between the factors of transportation and intelligence (when considered jointly) on overall school adjustment." As shown by the data in Table 2, the F ratio for this hypothesis was calculated to be <1. This value was not significant at the .05 level. Therefore, Hypothesis Five was accepted.

Hypothesis Six stated: "There is no statistically significant interaction between the factors of sex and intelligence (when considered jointly) on overall school adjustment." The data in Table 2 indicated that the F value for this hypothesis was 4.78. This value was significant at less than the .01 level. Hypothesis Six was, therefore, rejected.

In order to determine the location of the statistically significant interaction in Hypothesis Six, the Mann-Whitney U Test[1] was applied to the scores of the subjects in the study. The test was conducted between the males and females in each intelligence classification of the transported group. This test was also conducted between the males and females in each intelligence classification of the non-transported group. The values of U were computed according to the procedure suggested by Siegel.[2] The only statistically significant interaction located by the Mann-Whitney U Test occurred between the males and females in the low intelligence classification of the non-transported group. The U value obtained in this test was 95.5. This value was significant at the .05 level. The significance of the obtained U suggested that the interaction between sex and intelligence noted in the Analysis of Variance for Hypothesis Six occurred between the males and females in the low intelligence classification of the non-transported group. This interaction was in favor of the males.

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[1]Sidney Siegel, Nonparametric Statistics for the Behaviorial Sciences (New York: McGraw-Hill Book Company, 1956), pp. 116-26.

[2]Ibid., p. 126.

Hypothesis Seven stated: "There is no statistically significant interaction among the factors of transportation, sex, and intelligence (when considered jointly) on overall school adjustment." The data presented in Table 2 indicated that the F value for this hypothesis was 2.09. This value was not significant at the .05 level. Therefore, Hypothesis Seven was accepted.

The t Tests

The t tests applied in this study were performed in order to compare the transported group and the non-transported group on the components of overall school adjustment. The t tests enabled the researcher to make these comparisons individually for each component of overall school adjustment. Appendix D presented the mean and range of the transported and non-transported group on the composite achievement test score, grade point average, daily attendance, participation in extra-class activities, and peer acceptance. Hypotheses eight through twelve were tested by calculating the t ratio for the significance of the difference between the means of the two groups.

The t ratio for the two groups on each component of overall school adjustment was computed by the formula

suggested by Ferguson.[1] The formula was:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S^2}{N_1} + \frac{S^2}{N_2}}} \qquad S^2 = \frac{\sum^{n_1} X^2 - \frac{(\sum^{n_1} X)^2}{N^1}}{N_1} + \frac{\sum^{n_1} X^2 - \frac{(\sum^{n_1} X)^2}{N_2 - 2}}{}$$

Table B, presented by Ferguson,[2] was used to interpret the t values in this study.

Calculation of t for Composite Achievement Test Scores

Hypotheses Eight stated: "There is no statistically significant difference between the means of the composite achievement test scores of the transported and non-transported groups on the Iowa Test of Basic Skills." This hypothesis was tested by calculating the t ratio for the significance of the difference between the means of the transported and non-transported group's composite scores on the Iowa Test of Basic Skills. The first step in calculating the t ratio was to determine the unbiased variance estimate, S^2. The value of $S^2 = 25.18$ was obtained. When the values for $\bar{X}_1$, $\bar{X}_2$, and S^2 were inserted in the formula for t, the ratio was calculated to be .494.

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[1] Ferguson, Statistical Analysis, pp. 167-8.

[2] Ibid., p. 406.

$$t = \frac{5.71 - 5.39}{\sqrt{\frac{25.18}{120} + \frac{25.18}{120}}} = \frac{.32}{\sqrt{.4196}} = \frac{.32}{.647} = .494$$

The obtained t value of .494 was not significant at the .05 level. Herefore, Hypothesis Eight was accepted.

Calculation of t for Grade Point Averages

Hypothesis Nine stated: "There is no statistically significant difference between the means of the averages of teacher grades assigned to the members of the transported and non-transported groups." This hypothesis was tested by calculating the t ratio for the significance of the difference between the means of the transported and non-transported groups on grade point average. The unbiased variance estimate for the two groups on grade point average was $S^2 = 7.437$. The t ratio for the two groups on grade point average was calculated to be -.311.

$$t = \frac{2.736 - 2.845}{\sqrt{\frac{7.437}{120} + \frac{7.437}{120}}} = \frac{-.109}{\sqrt{.1236}} = \frac{-.109}{.350} = -.311$$

The obtained t value of -.311 was not significant at the .05 level. Therefore, Hypothesis Nine was accepted.

Calculation of t for Attendance

Hypothesis Ten stated: "There is no statistically significant difference between the means of daily attendance of the transported and non-transported groups." This hypothesis was tested by calculating the t ratio for the significance of the difference between the means of the transported and non-transported groups on daily attendance. The unbiased variance estimate for the two groups on daily attendance was calculated to be 21351.18. The t ratio for the two groups on attendance was -.058.

$$t = \frac{144.725 - 145.825}{\sqrt{\frac{21351.18}{120} + \frac{21351.18}{120}}} = \frac{-1.100}{\sqrt{355.852}} = \frac{-1.100}{18.860} = -.058$$

The obtained t value of -.058 was not significant at the .05 level. Therefore, Hypothesis Ten was accepted.

Calculation of t for Participation in Extraclass Activities

Hypothesis Eleven stated: "There is no statistically significant difference between the means of student participation in extraclass activities, as indicated by the number of activities in which an individual participates, of the transported and non-transported groups." This hypothesis was tested by calculating the t ratio for the significance of the difference between the means of the transported and

non-transported groups on participation in extraclass activities. The unbiased variance estimate for the two groups on participation in extraclass activities was .796. The t ratio for the two groups on participation in extraclass activities was calculated to be -2.17.

$$t = \frac{.758 - 1.008}{\sqrt{\frac{.796}{120} + \frac{.796}{120}}} = \frac{-.250}{\sqrt{.0132}} = \frac{-.250}{.0132} = -2.17$$

The obtained value of t = -2.17 was significant at the .05 level. Therefore, Hypothesis Eleven was rejected.

Calculation of t for Peer Acceptance Scores

Hypothesis Twelve stated: "There is no statistically significant difference between the means of peer group acceptance, as estimated by the number of times an individual is chosen on a sociometric instrument, of the transported and non-transported groups." The unbiased variance estimate for the two groups on peer acceptance scores was 7.53. The t ratio for the two groups on peer acceptance scores was -.071.

$$t = \frac{2.733 - 2.758}{\sqrt{\frac{7.53}{120} + \frac{7.53}{120}}} = \frac{-.025}{\sqrt{.24}} = \frac{-.025}{.352} = -.071$$

The obtained value of t = -.071 was not significant at the .05 level. Therefore, Hypothesis Twelve was accepted.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effect of public school transportation upon the overall school adjustment of urban elementary school students. Overall school adjustment was defined, for the purposes of this study, as an estimate of a student's adjustment to the school experience, based on composite achievement test score, teacher grades, attendance, extraclass activities, and peer acceptance.

The need for this study was based on several reasons. First, there was little research concerning the effects of public school transportation on students. Second, there was a steady increase in the use of public school transportation since its beginning. The forecast was for even greater use of public school transportation.

The problem of this study was to determine if there were statistically significant differences and interactions between and among the factors of sex, intelligence, and

transportation, and the overall school adjustment of urban elementary school students. The second part of the problem of this study was to determine if there were statistically significant differences between the means of the transported and non-transported groups on the individual components of overall school adjustment.

Twelve hypotheses were developed to implement the investigation of the problem. These hypotheses were:

1. There is no statistically significant difference between the transported and non-transported groups on overall school adjustment.

2. There is no statistically significant difference between males and females on overall school adjustment.

3. There is no statistically significant difference between the students in high, medium, and low intelligence classifications on overall school adjustment.

4. There is no statistically significant interaction between the factors of transportation and sex (when considered jointly) on overall school adjustment.

5. There is no statistically significant interaction between the factors of transportation and intelligence (when considered jointly) on overall school adjustment.

6. There is no statistically significant interaction between the factors of sex and intelligence (when considered jointly) on overall school adjustment.

7. There is no statistically significant interaction among the factors of transportation, sex, and intelligence (when considered jointly) on overall school adjustment.

8. There is no statistically significant difference between the means of the composite achievement test scores of the transported and non-transported groups on the Iowa Test of Basic Skills.

9. There is no statistically significant difference between the means of the averages of teacher grades assigned to the members of the transported and non-transported groups.

10. There is no statistically significant difference between the means of daily attendance of the transported and non-transported groups.

11. There is no statistically significant difference between the means of student participation in extraclass activities, as indicated by the number of activities in which an individual participated, of the transported and non-transported groups.

12. There is no statistically significant difference between the means of peer group acceptance, as estimated by

the number of times an individual was chosen on a sociometric instrument, of the transported and non-transported groups.

Procedure

The experimental method of research was used in this study. Two hundred forty fourth, fifth, and sixth grade students were included in the sample for study. One hundred twenty transported students and 120 non-transported students were randomly selected. The transported and non-transported groups each contained sixty males and sixty females. The following data were collected on each member of the transported and non-transported groups: intelligence test score, composite achievement test score, grade point average, daily attendance, participation in extraclass activities, and peer acceptance score. The Analysis of Variance and t test were employed to test the hypotheses of the study.

Findings

The analyses of the data collected for the study resulted in the findings listed below:

1. There was no statistically significant difference between the transported and non-transported groups on overall school adjustment.

2. There was no statistically significant difference between males and females on overall school adjustment.

3. There was a statistically significant difference among the subjects in high, medium, and low intelligence classifications on overall school adjustment.

4. There was no statistically significant interaction between the factors of transportation and sex on overall school adjustment.

5. There was no statistically significant interaction between the factors of transportation and intelligence on overall school adjustment.

6. There was a statistically significant interaction between the factors of sex and intelligence on overall school adjustment. This interaction was among the males and females in the low intelligence classification of the non-transported group.

7. There was no statistically significant interaction among the factors of transportation, sex, and intelligence on overall school adjustment.

8. There was no statistically significant difference between the transported and non-transported groups on means of composite achievement test scores.

9. There was no statistically significant difference between the transported and non-transported groups on means of the averages of teacher grades.

10. There was no statistically significant difference between the transported and non-transported groups on means of daily attendance.

11. There was a statistically significant difference between the transported and non-transported groups on means of participation in extraclass activities.

12. There was no statistically significant difference between the transported and non-transported groups on means of peer acceptance scores.

Conclusions

1. The condition of being transported did not affect, to a statistically significant degree, the overall school adjustment of the subjects in this study.

2. The analyses of the data collected on the subjects in this study indicated that there was no statistically significant difference in the overall school adjustment of males and females.

3. Subjects in the three intelligence classifications, high, medium, and low, differed to a statistically

significant degree on overall school adjustment, without regard to transportation.

4. Whether a subject in this study was male or female, transported or non-transported did not effect to a statistically significant degree the overall school adjustment of that subject.

5. The subjects in this study who were in the same intelligence classification, whether transported or non-transported, did not differ to a statistically significant degree on overall school adjustment.

6. When the intelligence classification of the subjects in this study were the same, whether the subject was male or female, transported or non-transported, made no statistically significant difference on overall school adjustment.

7. Although a statistically significant interaction was detected by the Analysis of Variance between the factors of sex and intelligence on overall school adjustment, it may be concluded that this finding may not have reflected the relationship between these factors. Only one of six Mann-Whitney U tests conducted between the males and females in the various intelligence classifications of the transported and non-transported groups was significant at the .05 level.

In order to conclude that the detected interaction between sex and intelligence was of major importance, two or more of these tests would have needed to be significant at the .05 level.

8. The transported and non-transported subjects in this study did not differ to a statistically significant degree on composite achievement test scores, teacher grades, daily attendance, or peer acceptance; however there was a statistically significant difference in the degree of participation in extraclass activities in favor of the non-transported group.

Recommendations

The findings and conclusions of this study supported the following recommendations:

1. A longitudinal study of the effects of public school transportation upon the overall school adjustment of urban elementary school students should be conducted in order to detect cumulative effects which public school transportation may produce.

2. A research study should be conducted to determine the relationship of parental attitudes toward public school transportation to the effect of public school transportation

on the overall school adjustment of urban elementary school students.

3. It is recommended that a study be undertaken to determine the effect of public school transportation upon students of different racial groups who have been matched on selected intra-individual variables.

4. A school which considers extraclass activities to be an important part of its program should consider providing the transportation necessary for the transported students to participate in activities conducted before and after school.

5. A replication of this study whould be conducted using first, second, and third grade students as subjects.

6. A study should be conducted to determine the differiential effect of various distance and time conditions upon the overall school adjustment of urban elementary school students.

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APPENDIX A

ILLUSTRATION OF THE ANALYSIS OF VARIANCE DESIGN

	Transported					Non-Transported				
	Overall School Adjustment					Overall School Adjustment				
Male	1	2	3	4	5	1	2	3	4	5
* H										
M										
L										
Female H										
M										
L										

The factors of the study were transportation, sex, intelligence, and overall school adjustment.

Items 1-5 were considered jointly as one factor of the Analysis of Variance design. This factor was defined as overall school adjustment.

1 - Iowa Test of Basic Skills composite score
2 - Grade point average
3 - Attendance
4 - Participation in extraclass activities
5 - Peer acceptance

* High, Medium, and Low classifications of intelligence as measured by California Test of Mental Maturity

APPENDIX B

FINAL DATA SHEET: TRANSPORTED MALES

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C.Act.	Peer Accpt. Score
001	2	6.4	1.4	146	0	1
002	3	4.4	1.6	139	5	2
003	2	7.0	3.0	144	1	9
004	1	8.0	3.6	145	0	3
005	2	5.8	3.4	150	0	2
006	2	4.9	4.0	146	0	9
007	1	4.3	1.4	145	0	2
008	1	6.0	3.4	142	0	0
009	1	8.2	3.2	150	4	2
010	1	5.4	3.0	144	1	3
011	3	5.8	1.8	145	0	1
012	2	5.5	2.8	150	1	1
013	3	4.4	2.2	145	1	6
014	3	5.7	3.0	149	1	1
015	3	4.4	1.8	150	0	4
016	3	6.0	1.0	149	0	0
017	2	5.8	3.0	144	0	2
018	2	4.8	2.2	144	0	3
019	3	4.0	2.2	144	0	3
020	1	6.2	3.2	143	1	7
021	3	3.0	2.2	145	0	0
022	1	5.9	3.8	146	1	0
023	1	5.4	4.0	147	0	3
024	3	4.0	2.8	148	3	1
025	1	5.9	3.6	149	0	2
026	1	7.9	3.2	149	0	1
027	3	3.6	1.8	148	0	0
028	3	3.3	1.8	141	2	3
029	2	5.7	3.8	147	0	2
030	3	2.0	1.4	147	0	1
031	2	6.3	1.8	144	0	2
032	3	5.5	1.2	149	0	3
033	3	5.8	2.2	146	4	9
034	1	6.0	3.6	146	0	6
035	1	7.3	3.8	138	1	8
036	1	8.9	3.4	143	1	2

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C. Act.	Peer Accpt. Score
037	2	4.8	2.6	145	0	5
038	2	6.0	3.0	150	0	0
039	1	8.6	3.4	143	2	7
040	2	5.0	3.2	150	0	1
041	1	7.2	3.6	146	2	2
042	1	6.0	4.0	146	0	2
043	2	4.1	3.0	147	0	1
044	2	6.9	2.8	148	2	4
045	1	6.8	3.8	148	0	1
046	2	8.1	4.0	149	0	3
047	1	6.8	4.0	147	0	1
048	2	8.2	3.6	148	1	5
049	2	7.0	3.4	147	2	2
050	2	5.9	2.6	149	4	4
051	2	5.2	3.4	146	0	6
052	3	4.5	0.6	143	0	1
053	3	4.5	0.2	150	0	0
054	3	4.7	2.2	148	0	2
055	3	3.4	2.0	146	0	3
056	3	4.3	1.0	143	0	0
057	1	8.1	4.0	147	3	7
058	2	5.4	2.8	142	1	1
059	1	6.3	3.2	146	0	5
060	3	5.4	3.0	145	0	2

FINAL DATA SHEET: TRANSPORTED FEMALES

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C.Act.	Peer Accpt. Score
061	2	5.2	2.6	148	1	3
062	3	5.7	2.0	145	1	2
063	3	5.3	2.4	150	0	1
064	2	7.4	3.6	150	2	1
065	3	3.4	2.4	147	0	1
066	1	8.1	3.4	145	4	4
067	3	3.1	2.2	149	0	2
068	3	6.3	2.4	148	2	1
069	1	7.9	3.0	149	4	8
070	2	5.7	2.0	149	0	1
071	2	5.4	3.0	140	1	1
072	2	8.5	3.0	137	3	2
073	2	6.8	3.4	145	2	3
074	1	9.1	4.0	147	1	6
075	1	6.6	3.6	141	0	1
076	3	5.8	2.4	147	4	5
077	1	5.9	2.6	146	1	4
078	1	7.0	3.6	147	1	1
079	3	3.3	3.0	145	0	5
080	1	8.5	2.8	148	1	2
081	1	6.7	3.8	147	0	2
082	1	6.5	4.0	145	0	0
083	3	3.5	2.2	150	0	4
084	3	6.2	2.0	142	1	4
085	1	6.5	3.0	148	1	2
086	3	6.1	2.4	150	1	4
087	3	5.6	2.2	150	0	0
088	2	4.5	3.0	146	0	4
089	1	6.2	3.0	149	1	1
090	1	4.3	3.0	150	0	0
091	2	6.3	2.2	144	1	2
092	1	5.3	3.6	148	0	3
093	1	9.2	3.6	146	2	2
094	2	6.5	2.8	143	0	3
095	2	4.2	2.8	150	0	1
096	3	4.4	3.2	149	2	7

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C. Act.	Peer Accpt. Score
097	2	7.6	3.2	145	1	1
098	2	5.6	2.2	141	0	2
099	3	4.0	3.0	145	0	5
100	3	4.4	2.4	139	2	3
101	1	6.1	3.2	143	0	0
102	3	3.1	2.0	148	0	0
103	1	6.4	4.0	144	2	6
104	1	5.0	3.6	139	0	2
105	2	6.3	2.6	140	0	1
106	3	4.3	2.0	149	0	1
107	3	3.8	3.0	142	2	5
108	3	3.7	2.2	148	0	1
109	2	4.6	3.0	147	0	1
110	2	5.5	2.6	150	0	1
111	2	6.5	4.0	148	2	10
112	1	6.0	3.0	144	0	13
113	3	4.3	2.2	145	0	0
114	2	4.5	3.0	146	0	3
115	3	5.1	1.4	143	1	3
116	2	5.2	3.2	148	0	2
117	1	7.1	2.8	143	1	0
118	2	6.0	3.8	145	0	0
119	1	5.9	4.0	144	0	1
120	2	5.7	2.8	146	1	7

FINAL DATA SHEET: NON-TRANSPORTED MALES

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C.Act.	Peer Accpt. Score
121	3	1.7	3.4	147	0	1
122	2	6.3	3.6	128	2	2
123	2	3.6	1.8	148	1	6
124	3	3.0	2.6	148	0	7
125	3	4.3	2.0	150	0	0
126	3	5.5	3.0	148	1	1
127	1	4.7	3.0	144	1	3
128	1	8.2	2.0	146	1	0
129	1	5.2	1.4	137	2	0
130	3	5.0	2.0	146	1	1
131	1	7.0	3.8	149	0	0
132	3	6.7	3.0	144	2	5
133	2	4.9	2.2	148	0	2
134	3	5.2	1.6	150	4	3
135	2	4.2	1.6	146	0	1
136	1	7.7	2.8	144	3	7
137	1	6.7	2.8	145	0	6
138	2	4.3	3.0	147	0	1
139	3	4.9	1.8	149	0	9
140	1	6.1	3.8	144	0	2
141	1	6.5	3.6	149	0	0
142	1	4.6	2.4	149	1	1
143	3	4.0	2.0	150	0	3
144	1	8.1	3.0	150	2	2
145	1	6.4	3.0	148	4	10
146	2	5.4	3.0	144	1	5
147	2	6.6	4.0	149	3	0
148	1	5.9	3.8	143	1	13
149	2	4.8	2.4	146	1	0
150	1	5.6	3.2	150	0	1
151	2	5.0	2.0	144	0	1
152	2	3.8	2.2	149	0	1
153	3	2.8	3.2	142	0	2
154	2	6.0	3.6	146	0	6
155	3	3.5	3.0	144	0	0
156	1	5.8	3.2	144	0	2

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C. Act.	Peer Accpt. Score
157	1	6.8	2.8	148	1	1
158	3	4.3	2.4	150	1	1
159	2	4.6	2.0	149	1	0
160	3	4.2	3.0	150	1	3
161	3	5.3	3.0	145	4	9
162	3	3.0	1.0	147	0	0
163	3	3.2	2.0	150	3	5
164	2	5.1	1.8	149	4	6
165	2	4.0	3.0	147	1	1
166	2	5.5	216	146	0	0
167	1	6.4	3.0	145	0	3
168	3	3.0	1.8	150	0	1
169	2	4.6	2.4	149	0	2
170	3	5.6	3.0	148	4	1
171	2	7.7	3.2	136	1	3
172	1	6.5	4.0	149	0	1
173	2	3.8	2.0	150	0	0
174	1	8.9	3.4	144	0	6
175	3	6.3	3.2	147	0	2
176	3	5.4	2.2	150	1	1
177	2	6.4	2.0	144	1	1
178	2	6.6	3.2	145	3	8
179	1	6.0	3.6	144	0	9
180	1	6.5	3.8	150	1	7

FINAL DATA SHEET: NON-TRANSPORTED FEMALES

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C.Act.	Peer Accpt. Score
181	2	5.8	2.0	150	4	3
182	2	4.5	3.2	149	0	2
183	1	8.1	3.0	147	1	1
184	1	6.5	3.8	150	2	2
185	2	4.2	3.0	147	1	2
186	3	3.7	4.0	147	0	7
187	2	5.8	2.4	145	0	2
188	1	6.6	2.0	139	0	1
189	1	5.0	4.0	150	0	2
190	1	6.8	2.0	149	1	1
191	1	5.4	3.8	146	0	0
192	2	4.2	3.2	149	0	1
193	3	5.1	1.4	140	1	3
194	1	5.4	3.8	147	1	4
195	1	5.4	3.8	150	0	1
196	2	6.6	3.2	149	3	3
197	3	3.8	2.0	147	0	2
198	3	3.8	2.6	150	0	4
199	2	4.5	3.0	146	0	0
200	3	4.4	1.4	145	1	1
201	1	6.1	3.6	148	0	1
202	1	6.7	4.0	146	0	0
203	2	6.0	2.6	145	1	0
204	1	7.0	4.0	147	3	9
205	2	3.9	3.0	150	0	3
206	2	5.2	2.6	140	0	2
207	1	7.3	2.6	145	1	1
208	1	5.5	2.8	148	1	2
209	3	6.3	2.6	149	3	6
210	2	5.7	4.0	147	0	2
211	1	5.9	3.4	150	1	3
212	3	3.2	2.2	150	0	4
213	1	5.4	2.8	144	0	1
214	3	3.8	2.0	150	1	3
215	3	4.6	1.8	139	0	1
216	1	5.6	3.0	150	1	4

Id.	I.Q. Class.	Comp. Iowa Score	Grade Point Ave.	Days in Attend.	Part. in E.C.Act.	Peer Accept. Score
217	3	6.3	2.2	137	0	0
218	3	5.3	3.0	138	4	1
219	1	6.2	3.6	147	1	2
220	3	4.1	1.8	138	0	5
221	2	7.1	3.6	150	1	6
222	2	5.6	3.6	147	1	0
223	2	5.0	2.8	142	0	1
224	2	4.9	2.4	148	1	0
225	2	5.6	2.2	145	1	5
226	3	6.0	2.4	139	5	7
227	2	5.3	3.0	144	2	2
228	2	5.5	1.8	148	2	3
229	3	4.4	2.2	146	0	1
230	3	3.1	1.8	150	0	1
231	3	6.8	3.8	150	4	5
232	3	6.4	2.4	140	1	3
233	3	4.0	2.0	142	0	2
234	1	7.2	4.0	147	0	3
235	2	5.7	2.2	146	3	5
236	1	6.4	3.2	147	1	3
237	3	6.5	2.0	143	2	0
238	1	6.9	3.8	150	1	4
239	3	3.2	2.0	147	1	1
240	2	6.2	2.8	143	5	2

APPENDIX C

CELL MEANS FOR ANALYSIS OF VARIANCE

Trans. Class.[a]	Sex[b]	IQ Class.[c]	O.S.A. Components[d]	Means
1	1	1	1	6.759
1	1	1	2	3.459
1	1	1	3	145.500
1	1	1	4	0.800
1	1	1	5	3.200
1	1	2	1	5.939
1	1	2	2	2.989
1	1	2	3	146.799
1	1	2	4	0.600
1	1	2	5	3.150
1	1	3	1	4.434
1	1	3	2	1.800
1	1	3	3	146.000
1	1	3	4	0.800
1	1	3	5	2.000
1	2	1	1	6.479
1	2	1	2	3.120
1	2	1	3	146.099
1	2	1	4	0.850
1	2	1	5	3.700
1	2	2	1	5.159
1	2	2	2	2.579
1	2	2	3	145.500
1	2	2	4	0.950
1	2	2	5	2.800
1	2	3	1	4.345
1	2	3	2	2.459
1	2	3	3	147.750
1	2	3	4	1.100
1	2	3	5	2.750
2	1	1	1	6.749
2	1	1	2	3.379
2	1	1	3	145.649
2	1	1	4	0.950
2	1	1	5	2.900
2	1	2	1	5.900
2	1	2	2	2.939
2	1	2	3	145.399

Trans. Class.[a]	Sex[b]	IQ Class.[c]	O.S.A. Components[d]	Means
2	1	2	4	0.700
2	1	2	5	2.450
2	1	3	1	4.570
2	1	3	2	2.350
2	1	3	3	146.549
2	1	3	4	0.800
2	1	3	5	2.700
2	2	1	1	6.270
2	2	1	2	3.350
2	2	1	3	147.349
2	2	1	4	0.750
2	2	1	5	2.250
2	2	2	1	5.364
2	2	2	2	2.829
2	2	2	3	146.500
2	2	2	4	1.250
2	2	2	5	2.200
2	2	3	1	4.739
2	2	3	2	2.279
2	2	3	3	144.349
2	2	3	4	1.150
2	2	3	5	2.850

[a]Transportation Factor.
1 - Transported
2 - Non-Transported

[b]Sex Factor.
1 - Male
2 - Female

[c]Intelligence Factor.
1 - High Classification
2 - Medium Classification
3 - Low Classification

[d]Overall School Adjustment Factor.
1 - Iowa Test of Basic Skills
2 - Grade Point Average
3 - Attendance
4 - Extraclass Participation
5 - Peer Acceptance

APPENDIX D

DATA ON TOTAL TRANSPORTED GROUP

Components of Over. Sch. Adj.	Mean	Range
Iowa Test of Basic Skills	5.71	2.0 - 9.2
Grade Point Average	2.735	0.6 - 4.0
Days in Attendance	144.72	137 - 150
Participation Extraclass Act.	.758	0 - 5
Peer Acceptance	2.745	0 - 13

DATA ON TOTAL NON-TRANSPORTED GROUP

Components of Over. Sch. Adj.	Mean	Range
Iowa Test of Basic Skills	5.39	1.7 - 8.9
Grade Point Average	2.85	1.0 - 4.0
Days in Attendance	145.82	128 - 150
Participation Extraclass Act.	1.008	0 - 5
Peer Acceptance	2.755	0 - 13