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THE EFFECT OF MOBILITY ON THE ACADEMIC
PERFORMANCE OF GRADE SIX STUDENTS IN
AN URBAN SCHOOL

by

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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
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DECEMBER 1986

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ABSTRACT

THE EFFECT OF MOBILITY ON THE ACADEMIC PERFORMANCE OF GRADE SIX STUDENTS IN AN URBAN SCHOOL

Arnold Hugo Lindblad, Jr.
Old Dominion University, 1986
Director: Dr. Roger A. Johnson

The purpose of this study was to examine the impact of mobility on the standardized achievement test scores of grade six students in an urban school. The study sought to (1) identify the degree of mobility experienced by grade six students in the Chesapeake Public Schools; (2) identify the degree of mobility within the Chesapeake Public Schools; (3) determine the socio-economic, gender, and ethnic characteristics of the extra-city mobile, intra-city mobile, and non-mobile grade six students; (4) determine if there were differences in the standardized achievement test scores of extra-city mobile, intra-city mobile, and non-mobile grade six students; and (5) determine if there was a difference in the rate of retention between the extra-city mobile, intra-city mobile, and non-mobile student groups. The data collected were from the 1983-84 school year.

The study employed three approaches: (1) a descriptive analysis of the grade six students by (a) mobility status, (b) socio-economic level, (c) gender, and (d)

ethnic group; (2) a factorial analysis of variance with unweighted means analysis (The independent variables were: (a) three levels of mobility, (b) two levels of affluence, (c) two levels of gender, and (d) two levels of ethnicity.); (3) where appropriate, statistical means were tested using a Duncan's New Multiple Range Test.

The descriptive analysis revealed that the 1686 grade six students were (1) predominantly mobile (39.80% were extra-city mobile, and 14.00% intra-city mobile), (2) relatively affluent (only 28.53% required free or reduced price lunch); (3) slightly skewed with female students (52.08%); (4) predominantly white (66.37%).

An initial examination of the analysis of variance appears to show student mobility as a significant factor ($p < .05$) for reading, language arts, and the composite section, with the intra-city mobile students earning the lowest test scores. However, economic status, gender, and ethnicity impacted all four test sections and rates of retention with greater significance ($p < .001$). The scores earned by the disadvantaged students, the male students, and the black students were consistently the lower. This confounding of the variables make it difficult to support the initial thesis. While interaction effects compounded the depressing influence of mobility, it may have been the cumulative effect of all four variables.

DEDICATION

This paper is dedicated to Jeanne Louise Falconer,
Martha Ann Jones, Lisa Rene, and Andrea Darcy; Lindblads
all.

ACKNOWLEDGEMENT

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CHAPTER I

INTRODUCTION

The population of the United States is highly mobile with twenty percent of the total population changing residence each year and fifty percent moving every six years.¹ School-aged children make up one-third of this highly mobile group. The impact of mobility on all sectors of urban society may be beneficial or detrimental depending on the characteristics of the mobility groups and the reasons for the decision to move.

The impact of mobility is most profound on the economic sector. Segments of a community moving into, or out of, an area may cause a strain on the fiscal and commercial resources of that area. For example, as people move out of an area, the tax base is reduced, putting a greater burden on the local budgetary process and the budget itself. This increased demand on the public budget, in turn, causes a rise in the per capita cost of public goods and services, such as police and fire protection, waste and refuse collection, water and sewage, parks and recreation, health and welfare, libraries, and schools. Unless a balance between the demand for public goods and services and the local governments willingness and ability to provide those goods and

services is quickly reached, the results can be a burden on the urban environment. On the other hand, if the population of an area increases, the tax base expands, but so does the demand for public services. For example, as a lower socio-economic environment expands, the tax base also expands, but only marginally, while the demand for human services increases greatly. While a more affluent society would not require the amount of human services, it would demand an increase in cultural arts--museums, concert halls, and the like; each of these public services have a very high per-user cost to initiate and maintain. Thus, an expanding society, regardless of socio-economic level, makes demands for public goods and services which create a fiscal burden for the local government.

In addition to the increased demand for public goods and services, the influx of new citizenry means a demand for additional homes and shops; this demand enhances the construction industry. Commerce increases as the new residents demand both public and private goods and services. Local governing bodies are called upon to make greater use of limited funds and resources.

In Virginia, schools represent a large component of the local governmental budget. A large part of the school appropriation in Virginia is based on state funding, which is computed using average daily membership. If the local school population decreases because of families leaving the

area, the average daily membership decreases and so does the state allocation. At the same time, the exodus of people diminishes the local tax revenues, thus limiting the funds available from the local government. Schools are affected acutely by the tightening budget. Cuts to the school budget may cause a drastic reduction in available materials, a reduction in staff (an average of eighty-five percent of the local school budget in Virginia goes to pay salaries and benefits), or both.² If a student influx comes after the budget has been approved and funded by the local governing body, the already limited funds have to be spread even thinner. As the school division is forced to make limited funds go further, the effects on materials, programs, and personnel cause restrictions within the school's functioning.

The primary function of schools is to provide the students with skills needed to become contributing members of society. To meet the goals of the school system, each elementary grade level and each secondary course has objectives to be met. Grade level objectives are often sequential through the seven elementary grades. Students changing school divisions may find themselves facing tasks and objectives for which they are not adequately prepared, since differing divisions use differing materials, curricula, and sequencing. When this mobility takes place on a large scale, the school division is unlikely to provide a

clear instructional program that will meet the divergent needs of the incoming students. In attempting to meet these divergent needs, the school division may be forced to make adjustments to existing programs which may impair the overall performance of all the students in that division.

In addition to the influx of students, the demographic characteristics of the students and the school division may interact to depress standardized achievement test scores. For example, students from affluent school divisions generally score higher than students from less affluent school divisions.³ In addition, school divisions with a large minority population tend to score lower than divisions with a smaller minority population. Jensen concluded that this difference in test scores could be attributed directly to the ethnicity of the student population.⁴ Other demographic variables, such as age or gender, may also influence standardized achievement test scores.

Most school divisions use standardized achievement test scores as one means of determining the success of their instructional program. The scores of that same test also can be used to examine the impact of mobile students on the total instructional program. This can be done by comparing the scores earned by the various segments of the student population. The impact of the mobile student can be felt throughout the school division in a similar manner

as the impact of the mobile family can be felt throughout the public and private sectors.

Limitations

This study was limited to the degree of mobility experienced by grade six students in an urban school, and the impact of that mobility on standardized achievement test scores. It did not appear to determine the reasons for the mobility.

Significance of Study

This study can be helpful in explaining the impact of the various degrees of mobility experienced by grade six students in an urban school on academic achievement. Comparisons of the standardized achievement test scores were made between those students who experienced (1) no mobility, (2) mobility within a single school division, or (3) mobility among more than one school division.

Student mobility has been shown to exacerbate emotional disorders, learning disabilities, and poor school performance.⁵ On the other hand, it has been linked to improved school performance and greater social interaction.⁶ Because the impact of mobility has not shown consistent results, there are policy implications for the educator. The results of the analysis of the findings in this study may call for programs of assimilation for the mobile student, and remedial programs at earlier grade

levels may be indicated. In addition, agencies outside the school may need to make adjustments to existing protocol to accommodate the mobile families.

Definition of Terms

For the purposes of this study, the following definitions were used:

Extra-city mobile students: Those students who had any part of their elementary educational experience outside the Chesapeake Public Schools.

Intra-city mobile students: Those students who had all of their elementary educational experiences within the Chesapeake Public Schools, but had attended schools from two or more attendance tracts.

Non-mobile students: Those students who remained within a single attendance tract within the Chesapeake Public Schools for their entire elementary educational experience.

Attendance tract: The normal progression of schools attended by a student provided the student does not change residences. This does not preclude changing schools; under normal conditions students attended one school for grades kindergarten through four, and changed schools for grades five and six.

Statement of Problem

The purpose of this study was to determine whether mobility has an adverse effect on the academic performance

and rates of retention of students, and whether possible adverse effects can be attributed to the student's social class, gender, and/or ethnic group. Specifically, the following research questions were addressed:

1. Do extra-city mobile grade six students receive significantly lower standardized achievement test scores than their intra-city mobile and non-mobile counterparts?

2. Are extra-city mobile grade six students more likely to be retained than their intra-city mobile and non-mobile counterparts?

3. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade six students by socio-economic levels? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same socio-economic levels differ in achievement?)

4. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade six students by gender? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same gender differ in achievement?)

5. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade six students by ethnicity? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same ethnic group differ in achievement?)

Summary

The population of the United States is highly mobile. This mobility impacts on many segments of the community. The supply of goods and services from both the public and private sectors is dependent on the characteristics of the community. As those characteristics change with the influx of new citizens, the demand for specific goods and services must also change. The schools feel this change acutely. Most divisions must set curricula, programs, and financing before the students begin school. Changes in the characteristics of the student population must be managed with existing resources. Changes in the characteristics of the student population must also be the cause for changes within existing programs. The purpose of this study is to determine whether mobility has an adverse effect on the academic performance and rates of retention of urban grade six students, and to determine whether possible adverse effects can be attributed to the student's social class, gender, and/or ethnic group.

This chapter introduced the purposes of this research. The mobility groups were identified and the significance of the research, with appropriate policy implications, were described. The problem statement included the parameters of mobility to be used and the demographic characteristics to be compared between and within the mobility groups.

The remainder of this dissertation is presented in four parts. Chapter two, Review of the Literature, presents an examination of existing studies related to mobility and mobility's impact on students. This review of the literature includes the extent of and reasons for mobility as well as the possible effects of mobility on the academic and emotional faculties of the student. Chapter three describes the research design and methodology, a description of the setting and subjects, the protocol used, the variables examined, and the hypothesis tested. Chapter four, Results and Discussion, presents the analysis of the data and the statistical significance of the results. Chapter five presents a summary of the findings and specific recommendations for the schools and other urban agencies.

FOOTNOTES

¹Eric G. Moore, Residential Mobility in the City (Washington, D.C.: Association of American Geographers, 1972).

²Roe L. Johns, and Edgar L. Norphet, The Economics of Financing of Education (Englewood Cliffs: Prentice-Hall, Inc., 1975), p. 305.

³Robert E. Switzer, and others, "The Effect of Family Moves on Children," Mental Health 45 (October, 1961):528-36.

⁴Arthur Jensen, "How Can We Boost IQ and It's Effect on Achievement?" Harvard Educational Review 39 (Winter, 1969):325.

⁵Robert E. Switzer, and others, "The Effect of Family Moves on Children," Mental Health 45 (October, 1961):528-36.

⁶N. M. Downie, "A Comparison Between Children Who Have Moved from School to School With Those Who Have Been In Continuous Residence on Various Factors of Adjustment," The Journal of Educational Psychology 44 (1953):50-53.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the concept of "mobility" provides a plethora of books and articles. However, when the topic is delimited to its impact on education, especially its impact on elementary-aged children, the availability of materials is greatly reduced. The following review of the literature examined two main areas of concern: (1) the extent of and reasons for mobility, and (2) the possible effect of mobility on students.

The Extent and Reasons for Mobility

Each year twenty percent of the American population changes residence and fifty percent change residence every six years.¹ Within large cities, up to seventy percent of the total population moves yearly.² School-aged children make up one-third of this highly mobile group.³ While most of the moves are attributed to a small, highly mobile segment of society (such as the migrant worker or military personnel), only twenty-three percent of these moves are forced by evictions, economic loss, or the destruction of a dwelling.⁴ The remaining moves are made by choice.

The influx of people into or out of an area may have

come about for a number of reasons. Rossi found moving to be a function of the following five variables: (1) the size of the family, (2) the age of the head of household, (3) the length of time the family had lived in the current dwelling, (4) the number of rooms in the current dwelling, and (5) the family attitude toward the amount of space in the current dwelling.⁵

In a similar study, Moore found nine motivating factors which appeared to influence the decision to seek a new residence. The first five were negative reactions to the current dwelling or neighborhood: (1) limited space in the current dwelling, (2) housing costs, (3) the general condition of the current dwelling or neighborhood, (4) accessibility to goods and services. Positive attractions to the move to a new residence, as concluded by Moore, are as follows: (1) aspirations of increased social prestige, (2) aspirations of increased consumption of goods and services, (3) aspirations of greater family orientations, (4) aspirations for an improved community.⁶ Most of these moves resulted from a change in family life-style, a change in the family income, or a change in career.⁷

In addition to the changes in family life-style, income, and family career, educational issues often affect family moves, or may be the reasons for a family move. In her study of student transfers, Hunter examined both the rationale of the students and that of their parents. She found that students reported leaving one school for another

for the following reasons: (1) the family moved, (2) the present school had a bad reputation, (3) the student did not like the school, (4) the student did not like the student body, (5) the student was asked to leave the school. According to the parents of the students, the child left the old school for the following reasons: (1) the family moved, (2) the present school had a bad reputation, (3) the current school did not offer a desired course or program, (4) the student wanted a fresh start, (5) the current school had teachers that the parent did not like.

The reasons given by the students for selecting the new school did not concur with their reasons for leaving the old one: (1) they wanted to be near their friends, (2) their parents wanted the new school, (3) the new school offered a desired course or program, (4) the student wanted a fresh start, (5) the new school had a superior academic average. The responses of the parents for selecting the new school more closely concurred with their reasons for leaving the old one: (1) they wanted their child to be near friends, (2) the new school had a superior reputation, (3) the new school had a higher academic average, (4) the new school offered a particular course or program, (5) the new school offered athletics and sports not found in the old school.⁸

Regardless of the reasons for the student mobility, this transiency may influence results of standardized achievement tests. Mayer, former chairperson of a New York

local school board, noted that one of the major problems confronting the urban school is student transiency. He asserted that a direct relationship exists between the performance of the student on standardized achievement tests and the number of schools attended by the student. He made this statement based on personal observations, however, rather than on statistical data.⁹ An examination of student mobility and standardized achievement test scores may lend credence to Mayer's assertions.

The Possible Effect of Mobility
on Students: Achievement

Students who transfer between schools often find themselves subjected to a number of conditions and situations which can affect their learning processes and their abilities to score well on standardized achievements tests. For example, it may take several weeks for the student's records to be requested, received, and examined by the receiving school. This delay may result in a temporary misplacement of the student.¹⁰ Also, variations in curricula and materials may force the new student to unlearn some items while learning a new process for the same task or process.¹¹ In addition, when there is a turnover of students, the curriculum may have been planned for students who are no longer in attendance.¹² Furthermore, students who changed schools several times during their first few years of formal learning may exhibit characteristics of learning disabilities.¹³

Inbar and Adler studied students who were subjected to moves during their early years. They studied Moroccan and Rumanian immigrants in order to investigate mobility as it may be affected by the child's age. Using brothers, one of whom had settled in France and the other in Israel, the researchers found that the younger brothers, regardless of where they settled, were generally more affected by the change in environment than were their older siblings. The impact was most acute for children between the ages of six and eleven. The investigators felt that the older children were more able to articulate their fears and concerns, and thus find outlets for relief. At the same time, the children below the age of six were not affected by the learning-unlearning process. In later studies using data on children from the United States and then Canada, Inbar and Adler found this "vulnerable age phenomenon" to be operative.¹⁴

Older students attending a junior or community college also tend to be highly mobile, with many transferring from the junior college to four year institutions. Studies involving college students in Illinois,¹⁵ Central Florida,¹⁶ Southern Florida,¹⁷ Purdue,¹⁸ and Virginia found that after an initial period of adjustment, the transfer student and the non-transfer student had similar grade point averages and graduation rates. Nolan presented results from seventeen studies involving thirteen states that showed similar results--i.e., no significant difference

in the performance of transfer and non-transfer college students.¹⁹ Thus, it appears that college students do not have the adjustment problems experienced by younger students.

Studies using elementary-aged children fail to show the same consistency of results as those of higher education. Bollenbacker, using elementary children in the Cincinnati Public Schools, noted that mobility did not affect adversely the standardized achievement reading test scores. Although the non-mobile students scored slightly higher than their more mobile counterparts, she concluded that this difference was because the mobile students were "less capable" than the non-mobile students.²⁰ Later studies lend credence to Bollenbacker's findings. Stiles, in his study of grade school students in Rhode Island, found that the mobile student scored only higher than the non-mobile counterpart.²¹ Fitch also found no significant difference in the scores earned by mobile and non-mobile students in New Mexican schools.²² Lastly, Black and Barger, in their study of grade six students from seven schools in Columbus, Ohio, found no significant difference in the reading achievement of mobile and non-mobile students. They did note, however, that the problem of mobility and reading achievement frequently occurred in elementary schools with a high percentage of lower socio-economic students.²³

In contradiction to the findings of Bollenbacker,

Stiles, Fitch, and Black and Barger, several other research studies found that mobile students scored significantly less well on standardized achievement tests than did their non-mobile counterparts. Ocherman-Garza, in her presentation to the annual meeting of the American Educational Research Association, noted that migrant students (an example of extreme mobility) scored significantly lower than non-migrant students from the migrants' home state.²⁴

Likewise, Levine found that more mobile students failed to score as well as their non-mobile counterparts. He noted two reasons for this disparity: (1) the poor family structure in lower income schools, (2) poor student adaptation to the new schools.²⁵ Kealy found similar results in his study of students attending Catholic schools in Manhattan and the Bronx boroughs of New York City--i.e., the more mobile students scored significantly less well than the non-mobile students.²⁶

A third group of investigators (Cramer, Evans, Snipes, Morris, and Snyder) all found that mobile students somehow earned higher scores than their less mobile counterparts. Cramer noted that children of active duty Air Force personnel in the Mad River School District of Dayton, Ohio, scored slightly higher in reading achievement than their non-mobile counterparts.²⁷ Likewise, Evans reported that the mobile children of Air Force personnel outscored their non-mobile counterparts in reading, social studies, mathematics, and science.²⁸ However, neither

Cramer nor Evans offered any reasons for this difference in scores.

Snipes, Morris, and Snyder offered various reasons why the mobile students scored higher than their non-mobile counterparts. Snipes indicates that the presence of reading and mathematics specialists on the teaching staff of the schools with the high rates of student turnover may have accounted for the more mobile students doing better.²⁹ Morris attributes the more mobile students success to the family value system and family motivation.³⁰ Snyder attributes the superior scores of the highly mobile students to more positive parental attitudes.³¹

A review of the existing literature fails to provide a clear insight as to the impact of mobility on the standardized achievement test scores of grade school children. Studies by Bollenbacker, Inbar and Adler, Stiles, Fitch, and Black and Bargar found no significant difference in the scores earned by mobile and non-mobile students. Other studies, like those of Levine and Kealy, noted that non-mobile students earned scores higher than their more mobile counterparts. Studies of school children of military personnel by Cramer and Evans found that these children outscored their non-mobile counterparts. Similar findings were reported by Snipes from studies of a geographic cross-section of Georgia, by Morris in studies of middle and upper class schools in California, and by Snyder from studies

of suburban Washington, D.C. students. Thus, the results of studies on the effect of mobility on the standardized achievement test scores are conflicting and inconclusive.

The Possible Effect of Mobility
on Students: Emotions

Mobility may affect a child's emotions as well as the intellect. Although Downie found no significant difference between intelligence of mobile and non-mobile grade five, six, seven, and eight students, he noted that more mobile students outscored their non-mobile counterparts in social acceptance.³² Mobility may have assisted transient students to interact with a wider range of fellow students and teachers; this interaction may have enhanced the self-esteem of the mobile students making it easier for them to integrate into the new school environment. On the other hand, Switzer postulated that emotional disorders are positively related to mobility;³³ highly mobile children are more likely to be aggressive, regressive,³⁴ suffer a loss of curiosity, be apathetic,³⁵ suffer an impairment to their social development, family life, and/or emotional adjustments.³⁶ Youngman, in his study of British students, noted that reactions to transfer may depend on the ability level of the student. Mobile students of high ability became academic (attended to their studies without problems), disenchanted (lost all interest in school), or capable (succeeded based purely on effort, usually with a poor self-image). Low ability mobile students became

contented (created a good self-image and positive attitude), disinterested (did not care), or worried (suffered from anxiety and a poor self-image).³⁷ This negative effect of mobility on childhood emotional disorders is reaffirmed by Smardo who reported that the effect of mobility may include feelings of loss, a lessening of parental attention, a feeling of helplessness, fear of abandonment, loneliness, irritability, and anger.³⁸ In contrast to Smardo, Barrett found that moving was not a significant factor in childhood emotional disorders.³⁹

As with academic performance, a review of the existing research fails to provide a clear understanding of the impact of mobility on the emotionality and intellect of the student. Switzer showed that mobility paralleled incidences of emotional disorders in children. Barrett found the opposite to be true; mobility was not a significant factor in childhood emotional disorders. A summary of the findings of the impact of mobility on the emotions of children is offered by Kopp, who concluded that the main aim of the mobile student was security.⁴⁰

Childhood emotional disorders also may be exacerbated by retention--i.e., when a student fails to reach a predetermined level of performance and is required to repeat a given grade level. Godfrey, in her study of student failure, found that students who were retained often experienced self-doubts, diminished levels of confidence, enhanced feelings of inadequacy, developed a

poor attitude, and did poorly on academic achievement assessments.⁴¹ As with other aspects of childhood emotional disorders, studies on retention are not consistent. Finlayson, for example, tested 1200 primary children and found that retention did not negatively influence the child's self-concepts.⁴²

In addition to mobility, other factors (like socioeconomic status, gender, and/or ethnicity) may impact on student achievement. Jensen concluded that the ethnicity of the student population had a direct impact on achievement test scores; a school division with a large minority population may score lower than a school division with a smaller minority population.⁴³ Jencks postulated that the degree of affluence held by the students of the school division may be the primary factor in student achievement.⁴⁴ Gender offers less definitive results than ethnicity and social class. Gates popularized the belief that girls' reading ability exceeds that of boys.⁴⁵ In a later study, however, Finley and Thompson found that even though girls may exceed boys at the onset of learning to read, by age ten, the difference was negligible.⁴⁶

Summary

Despite efforts by teachers and administrators to increase the division-wide standardized achievement test scores of their students, the scores have risen only marginally. Myer suggests that student mobility may be a

primary factor in the lack of desired increase in test scores. Studies by Inbar and Adler, Bollenbacker, and others postulate that mobility is deleterious to student achievement. They cite low socio-economic levels of the family, social deprivation, diminished abilities, and low family expectations and motivations as contributing factors.

Levine and Kealy found the opposite to be true--the more mobile student scored significantly higher than their less mobile counterparts. Finding similar results, Snipes decided that the presence of specialists within the school helped the mobile student to earn superior scores. The value system of the family and motivation by the parents may be contributing to mobile students earning higher test scores.

There also is conflicting evidence as to the possible effect of mobility on the student's emotions and intellect. Switzer found that mobility exacerbated childhood emotional disorders. Barrett found mobility had no impact on the emotional status of the student. The negative impact of failure on childhood emotionality was affirmed by Finlayson, while Godfrey discounted any negative impact of retention on the self-concepts of children.

From existing research, a clear and concise answer as to the impact of mobility on elementary school aged children can not be found. Studies of the effect of mobility on elementary aged children by Inbar and Alder,

Bollenbacker, Levine, Kealy, Cramer, Evans, and others were found to be inconclusive, inconsistent, and conflicting in that some studies showed a positive impact, some showed a negative impact, and still others showed no impact at all. In addition, the studies by Jencks, Thompson and Jensen were limited to a single demographic variable: economic status, gender, and/or ethnicity. These studies did not examine possible interaction effects of mobility with socio-economic status, gender, and/or ethnicity. In addition, no study has examined differentiated degrees of mobility. The failure to address these issues leaves a gap of knowledge that requires addressing; namely, does a relationship exist between the mobility of students and their standardized achievement test scores? Does mobility interact with socio-economic levels, gender, and/or ethnicity to exacerbate any existing impact?

In order to appropriately address this gap of knowledge, urban sixth grade students were examined with respect to their degree of mobility, economic status, gender, and ethnic group. Chapter three presents the selection of subjects, the methodology, and the hypotheses to be tested.

FOOTNOTES

¹Eric G. Moore, Residential Mobility in the City (Washington, D.C.: Association of American Geographers, 1972).

²Mark LaGory, and John Pipkin, Urban Social Space (Belmont: Wadsworth Publishing Company, 1981):155.

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CHAPTER III

METHODOLOGY AND PROCEDURES

Setting

Tidewater, Virginia, in 1983, was the thirty-fourth largest urban standard metropolitan statistical area in the United States; it consisted of eleven sub-divisions; Gloucester County, James City County, Williamsburg, York County, Newport News, Hampton, Norfolk, Virginia Beach, Suffolk, Portsmouth, and Chesapeake.¹ It had an area of 1,583 square miles, and a population of 1,179,400 that included minority concentrations of blacks, Hispanics, Southeast Asians, and Native Americans.² Collectively, the cities and counties of Tidewater shared many of the characteristics of the urban environment, including mobility, inner-city blight, urban renewal, crime, and "white flight."

Tidewater is one of the fastest growing areas in Virginia, with over one billion dollars in new construction in 1983 alone. Included in this new construction was 8,717 new single family dwellings and 6,831 apartment units.³ With an expanding economic environment and new dwellings, there was an increased demand for goods and services from the various political interest groups. One

of the services that was impacted is the public school system. The influx of new students has a profound effect, for the city government that has to provide the necessary funding, for the central administration that has to allocate and reallocate scarce resources, and for the local school that has to assimilate the new student into existing school programs,

Chesapeake, Virginia, founded in 1963 by the merger of the City of South Norfolk and Norfolk County, is located in the southeast corner of the Commonwealth. The 353 square miles of the City of Chesapeake make it the second largest city in the Commonwealth and the thirteenth largest in the United States. The 1983 population was 121,800 (up 6.8% from 1982).⁴ According to the 1980 United States Census, the population of the City of Chesapeake was 92.2% urban and 7.8% rural; only .43% of the total population lived on working farms. In addition, the population was 70.96% white (81,237 people), 27.56% black (31,557 people), .98% Asian (1,124 people), .28% Native American (316 people), and .22% of Hispanic heritage (252 people).

A major contributor to the influx of new citizens to the Tidewater area is the military. Within a fifty-mile radius of Norfolk, Virginia, there were 98,452 active duty sailors and marines; these service-persons bring with them 282,495 dependents. The goods and services generated by and for the military at 470 work stations in Tidewater totaled \$4.28 billion; salaries added an additional

\$3.40 billion, for a total economic impact of \$7.68 billion in 1983 alone.⁵ This fiscal impact included ship construction, conversion, and repair in private yards; military construction, maintenance, and repair; utilities (electricity, water, sewerage, fuel, telephone); local purchase contracts; and transportation (freight and passenger).⁶

This fiscal largess is not shared equally among the cities and counties of Tidewater. For example, the City of Chesapeake has only one military installation within its boundaries; the Northwest Naval Security. This naval facility is posted by only 328 sailors and marines.⁷ The limited impact of the military in Chesapeake is further felt in that only three percent of the households in that city had a service-person as the head of household.⁸

A review of the federal cards (an annual accounting procedure used to determine those students whose parents were active duty personnel, whose parents worked on federal property or on federal projects, whose families lived on federally owned or federally subsidized property, or a combination of the above) returned by grade six students in 1983, showed that only 9.6% had met one of the criteria for federal impact funds; there was a 100% return. The military, therefore, is having a limited impact on the increasing population of Chesapeake. The new residents were moving into the city for other reasons.

The City of Chesapeake is comprised of six boroughs.

The borough of South Norfolk, an independent city from 1921 until the merger with Norfolk County to form the City of Chesapeake in 1963, was peopled by a majority of middle and lower income families. An examination of the demographic data showed that the 317 grade six students of the South Norfolk Borough were predominantly non-mobile (52.68%), relatively disadvantaged (59.57% required free or reduced price lunch), and black (54.57%). There was an almost equal gender ratio (157 males, and 160 females).

The "Great Bridge Borough" is the antithesis of the South Norfolk Borough. Containing the civic center complex for the City of Chesapeake, the "Great Bridge Borough" is in fact two separate boroughs: Pleasant Grove and Butts Station. The Butts Station Borough has no schools containing grade six students. The grade six students from both boroughs are served by the lone grade six school in the Pleasant Grove Borough: Great Bridge Intermediate. The "Great Bridge Borough" is considerably more affluent (only 10.42% required free or reduced priced lunch) and had fewer black students (only 7.32%). The Great Bridge Intermediate grade six students were, however, more mobile, only 49.30% were non-mobile. There was also a slightly higher ratio of female students (54.37%).

Equally as old and established as the South Norfolk Borough was the Washington Borough. Encompassing the predominantly white neighborhoods of Norfolk Highlands and Indian River, and the predominantly black neighborhoods

intermediate schools in the Washington Borough (Sparrow Road and Crestwood) were almost equally non-mobile (41.91%) and extra-city mobile (41.11%). They were more affluent than the students of South Norfolk with only 27.59% requiring free or reduced priced lunches). The students were predominately white (63.66%) and nearly equal male (50.66%) and female (49.34%).

The Western Branch Borough is served by three schools with grade six students: Western Branch Intermediate, E. W. Chittum Elementary, Southwestern Elementary. A majority of the 280 grade six students in the Western Branch Borough were extra-city mobile (53.93%). They were relatively affluent (only 14.64% required free or reduced price lunch), predominantly white (74.29%), and had a slightly higher female ratio (55.71%).

Deep Creek, the sixth and final borough, is located between the relatively affluent Western Branch and "Great Bridge" boroughs; the Deep Creek Borough lies next to the City of Suffolk, and shares much of Suffolk's agrarian nature. The 357 grade six students were served by three schools: Deep Creek Intermediate, Camelot Elementary, Treacle Elementary. Predominantly mobile (40.62% were extra-city mobile, and 12.61% were intra-city mobile), the grade six students of the Deep Creek Borough were relatively affluent (only 30.54% required free or reduced priced lunch), and predominantly white (57.42%). There was a slightly greater ratio of female students (51.54%).

In total, the 1686 grade six students were predominantly mobile (39.80% were extra-city mobile, and 14.00% were intra-city mobile). With the expansion of housing in Great Bridge, Western Branch, and Deep Creek, the high degree of extra-city mobility is understood. With the majority of new housing being single family dwellings, the relative affluence of the grade six population is also easy to accept (28.53% require free or reduced priced lunch). The grade six student population was predominantly white (66.37%) and had a slightly higher ratio of female students (52.08%). Thus, Chesapeake's grade six student population generally fall into two groups. One group is relatively mobile and affluent; the other group is relatively non-mobile and less affluent.

Grade six students were selected for this study because they are at the upper limit of the "vulnerable age phenomenon" and at the end of their elementary educational experience. Permission to collect the data from existing records was granted by the central administration of the Chesapeake Public Schools. A waiver was granted with respect to the use of human subjects.

Data Collection Procedures

The major data source was the cumulative records of each grade six student enrolled in the Chesapeake Public schools. Information on age, date of birth, gender, ethnicity, the number of times the child had been retained,

the home school, and the child's name were entered onto data control cards. The school records for free and reduced priced lunch were examined, and those grade six students who received assistance were noted on the appropriate data control cards. The raw scores for total reading, total mathematics, language arts, and the composite score were copied from the master report form for the SRA Assessment Survey. After the data had been collected, the information on each data control card was encoded for data processing. After the raw data had been encoded, the students' names were removed from the data control cards to protect the identity of the individual students. Once the encoded data had been entered onto the DEC-10 computer at Old Dominion University, the data control cards were destroyed.

Variables

Variables analyzed in this study of mobility among grade six students in Chesapeake were (1) mobility, (2) age, (3) gender, (4) ethnicity, (5) retention, (6) economic status, and (7) instrumentation. A detailed description of these variables follows.

Mobility. The students were catagorized according to the type of mobility they had been subjected to during their elementary educational experience. The first group, the non-mobiles, consisted of students who had remained within a single attendance tract in the Chesapeake Public

Schools--i.e., the normal progression of schools a student would have attended had he not experienced a change of residence or school attendance zones. The second group, the intra-city mobiles, contained those students who had remained within the Chesapeake Public Schools, but had changed attendance tracts. The third group, the extra-city mobiles, had some part of their elementary educational experience outside the Chesapeake Public Schools.

Age. Age was the chronological age of the student at the time of testing. Age was used as a method of verifying the identity of the student; students with the same name could be differentiated by their date of birth and age.

Gender. Two sub-groups were used: "male" and "female."

Ethnicity. Only two ethnic groups were used: "white" and "black." While there were Asian, Native American, and Hispanic students in the sixth grade, the majority were listed as "white" on their cumulative folders. For the sake of consistency, those who were listed as other than "white" were reclassified as "white." Only nine students were so reclassified.

Retention. Retention resulted when a student was required to repeat any given grade level as a result of poor academic performance. The rates of retention are reported in percentages.

Economic Status. Those students who received a free

or reduced price lunch were classified as "disadvantaged."
All other students were classified as "advantaged."

Instrumentation. Each spring grade six students in the Chesapeake Public Schools are given a standardized achievement test, the SRA Assessment Survey (Form 1/F, 1978 edition). The reading section of the SRA Assessment Survey consisted of two major sections and seven sub-sections:

Reading Vocabulary:
 Literal Meanings
 Nonliteral Meanings
Reading Comprehension
 Grasping Details
 Summarizing
 Perceiving Relationships
 Drawing Conclusions
 Understanding the Author

The mathematics section of the SRA Assessment Survey consisted of three sections and twelve sub-sections:

Math Concepts:
 Whole Numbers
 Fractions, Decimals
 Geometry, Measurement
 Prealgebra
Math Computations:
 Whole Numbers
 Fractions, Mixed Numbers
Math Problem Solving:
 Whole Numbers
 Fractions, Decimals
 Multi-step Problems
 Rate, Proportion, Percentage
 Geometry, Statistics, Probability

The language arts section of the SRA Assessment Survey consisted of three sections and seven sub-sections:

Language Mechanics:
 Capitalization
 Punctuation

Language Arts-Usage:
 Verbs
 Pronouns, Modifiers
 Clarity of Expression
 Sentence Structure
 Sentence Transformations
 Language Spelling

The composite score was obtained through a weighted compilation of the reading, mathematics, and language arts sections of the SRA Assessment Survey.

This research utilized the reporting form for each student which contained the raw scores for each test section, and the composite score for the entire test. It was these raw scores that were used for this study.

Research Questions

1. Do extra-city mobile grade six students receive significantly lower standardized achievement test scores than their intra-city mobile and non-mobile counterparts?
2. Are extra-city mobile grade six students more likely to be retained than their intra-city mobile and non-mobile counterparts?
3. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade six students by socio-economic levels? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same socio-economic levels differ in achievement?)
4. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade

six students by gender? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same gender differ in achievement?)

5. Are there differences in the performance of extra-city mobile, intra-city mobile, and non-mobile grade six students by ethnicity? (Do extra-city mobile, intra-city mobile, and non-mobile grade six students of the same ethnic group differ in achievement?)

Hypotheses

This project tested the following null hypotheses:

1. There is no significant difference between the scores obtained by extra-city mobile, intra-city mobile, and non-mobile grade six students on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey.

2. There is no significant difference in the rate of retention of extra-city mobile, intra-city mobile, and non-mobile grade six students.

3. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by socio-economic levels.

4. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by gender.

5. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and

non-mobile grade six students by ethnicity.

Design and Statistical Treatment

The data were analyzed using a factorial analysis of variance with an unweighted means analysis. Raw scores were subjected to an analysis of variance to estimate main and interaction effects.

The independent variables were three levels of mobility (extra-city mobile, intra-city mobile, and non-mobile); two levels of affluence (advantaged and disadvantaged); two levels of gender (male and female); and two levels of ethnicity (white and black). Raw scores for the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey were the dependent variables. The predetermined levels of significance was $p < .05$.

Where appropriate, statistical means were tested using a Duncan's New Multiple Range Test to determine which means were different.

Ideally, an analysis of variance requires equal subject groups. When unequal groups are used, there is a loss of power--i.e., the test is less likely to report a difference when one exists. However, the large size of the subject pool alleviates this problem.

FOOTNOTES

¹Virginian-Pilot. December 11, 1984, D1.

²"Statistical Digest 84," Tidewater Virginia, VII (July, 1984):20; and U.S. Department of Commerce, 1980 Census of Population and Housing (Washington, D.C.: Government Printing Office, 1980):76.

³Ibid., p. 87.

⁴Hampton Roads Chamber of Commerce, Chesapeake Chapter, "Newcomers Information," Chesapeake, 1985, p. 1 (Mimeographed).

⁵"Statistical Digest 84," p. 20.

⁶Hampton Roads Chamber of Commerce, Chesapeake Chapter, "Personal Work Locations," Chesapeake, 1985, p. 1 (Mimeographed).

⁷"Statistical Digest 84," p. 20.

⁸"1982 Metro Area Cities: A Special Profile," Virginian-Pilot, p. 6.

CHAPTER IV

RESULTS AND DISCUSSION

The findings, the hypotheses being tested, and the meanings of the research findings are discussed in this chapter. The raw scores for the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey (Form 1/F, 1078 edition) were examined to test four hypotheses. The first hypothesis was to determine if there was a significant difference in the achievement scores earned by the extra-city mobile, intra-city mobile, and non-mobile grade six students. The second hypothesis compared rates of retention with mobility and did not involve test scores. The third, fourth, and fifth hypotheses were concerned with possible interaction effects of mobility with socio-economic status, gender, and/or ethnicity.

Reading

The means and standard deviations for reading scores of the SRA Assessment Survey are shown in Table 1. The intra-city mobile students scored somewhat lower on the total reading than did the non-mobile and extra-city mobile students; the non-mobile and extra-city mobile students scored approximately the same. Advantaged students scored somewhat higher than disadvantaged students, and females

scored somewhat higher than their male counterparts. The reading scores of white students exceeded those of black students by a wide margin.

TABLE 1

MEANS AND STANDARD DEVIATIONS
FOR READING SCORES

Factors	Levels	N	\bar{X}	SD
Mobility				
	Non-Mobile	779	53.24	2.02
	Intra-City Mobile	237	49.81	3.43
	Extra-City Mobile	670	53.77	2.24
Economic Status				
	Advantaged	1,206	56.93	1.80
	Disadvantaged	480	43.13	1.70
Gender				
	Male	808	51.58	2.00
	Female	878	54.24	1.89
Ethnicity				
	White	1,126	57.14	1.70
	Black	560	44.58	2.05
Total				
		1,686	52.97	1.38

These reading scores were subjected to an analysis of variance to determine if the observed differences in means were significant and to examine possible interaction effects. The analysis of variance results are summarized in Table 2. There was a main effect for mobility ($F=3.84$, $df=2$, $p < .05$) indicating that one or more of the mobility

TABLE 2

ANALYSIS OF VARIANCE FOR READING SCORES

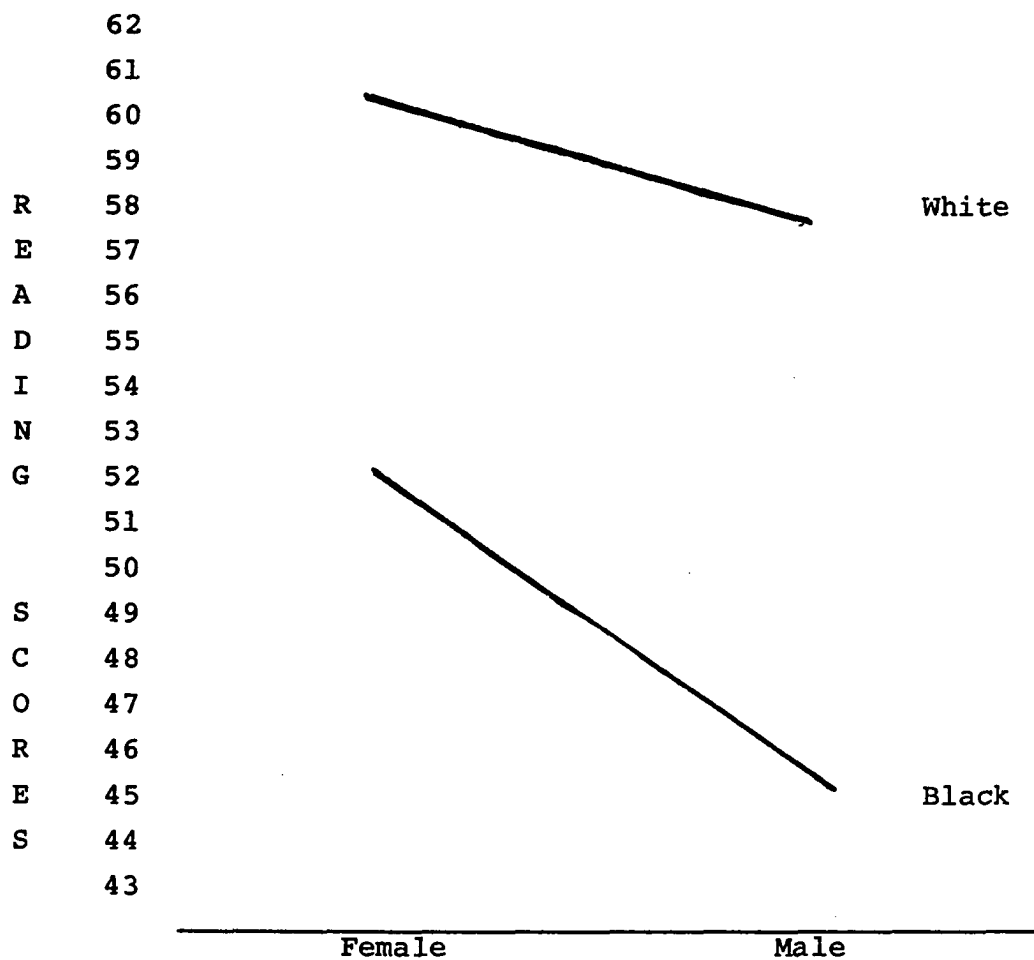
Source	df	MS	F
Main Effect			
Mobility (M)	2	1,257.89	3.84*
Economic Status (ES)	1	26,531.33	96.80***
Gender (G)	1	22,707.38	82.85***
Ethnicity (E)	1	3,693.38	13.48***
Two-Way Interaction			
M x ES	2	202.61	0.74
M x G	2	350.26	1.28
M x E	2	106.25	0.39
G x ES	1	606.57	0.14
G x E	1	1,218.86	4.45*
E x ES	1	1,004.52	3.67
Three-Way Interaction			
M x ES x G	2	893.04	3.26*
M x ES x E	2	133.86	0.49
M x G x E	2	26.03	0.10
G x ES x E	1	22.15	0.81
Four-Way Interaction			
M x ES x G x E	2	584.04	0.12
* Significant at $p < .05$			
*** Significant at $p < .001$			

groups differed from each other. A Duncan's Multiple Test indicated that the non-mobile and extra-city mobile groups were not significantly different from each other. Subjects in the intra-city mobile group scored significantly lower than subjects in the other two mobility groups. (See Table 1.)

In addition, a main effect for economic status ($F=96.80$, $df=1$, $p < .001$) occurred. An examination of means indicated that the advantaged students scored significantly higher than the disadvantaged students. Furthermore, a main effect for gender ($F=82.85$, $df=1$, $p < .001$) occurred. An examination of means indicated that female students scored significantly higher than male students. Lastly, a main effect for ethnicity ($F=13.47$, $df=1$, $p < .001$) occurred. An examination of means indicated that white students scored significantly higher than their black counterparts. (The means for economic status, gender, and ethnicity are found in Table 1.)

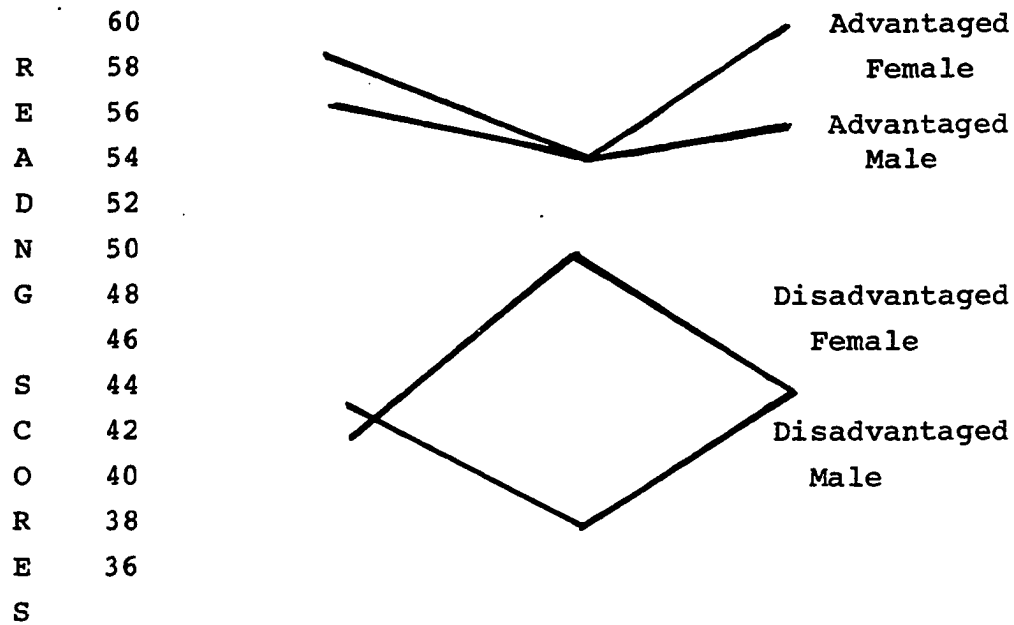
Only one significant two-way interaction, gender by ethnicity ($F=4.45$, $df=1$, $p < .001$) occurred. This interaction is depicted in Figure 1. Figure 1 indicates that there was a significant difference between the scores of white females and black females; there was an even greater difference between white males and black males.

The only significant three-way interaction, mobility by gender by socio-economic status ($F=3.26$, $df=2$, $p < .001$) is depicted in Figure 2. As portrayed in Figure 2, all



	Means		
	White	Black	Total
Female	60.04	52.32	54.24
Male	57.78	45.05	51.58
Total	57.14	44.58	52.97

Fig. 1. Reading Scores: Gender by Ethnicity



	Non-Mobile	Intra-City	Extra-City		
	Means				
	Advan- taged Males	Disadvan- taged Males	Advan- taged Females	Disadvan- taged Females	TOTAL
Non-Mobile	56.03	43.11	58.19	41.58	53.24
Intra-city	53.95	37.89	53.94	49.23	49.81
Extra-city	55.02	43.71	59.72	43.73	53.77
Total	55.36	42.37	58.35	43.86	53.77

Fig. 2. Reading Scores: Mobility by Economic Status by Gender

four subgroups of the non-mobile students (advantaged males, advantaged females, disadvantaged males, and disadvantaged females) scored approximately the same as their extra-city

mobile counterparts. Three of the four subgroups of intra-city mobile students (advantaged males, advantaged females, and disadvantaged males) scored lower than their non-mobile and extra-city mobile counterparts. Disadvantaged female intra-city mobile students were the exception to the pattern; they earned a mean higher than their non-mobile and extra-city mobile counterparts.

Mathematics

The means and standard deviation for the total mathematics scores of the SRA Assessment Survey are shown in Table 3. The intra-city mobile group scored somewhat lower in total mathematics than did the non-mobile and extra-city mobile groups; the non mobile and extra-city mobile groups scored approximately the same. Advantaged students scored higher than disadvantaged students, and females scored higher than their male counterparts. Lastly, the total mathematics scores of white students exceeded those of black students by a wide margin.

These mathematics scores were subjected to an analysis of variance to determine if the observed differences in means were significant and to examine for possible interaction effects. The analysis of variance results are summarized in Table 4. There was a main effect for economic status ($F=48.68$, $df=1$, $p < .001$). An examination of means (Table 3) indicates that the more advantaged students scored significantly higher than disadvantaged students.

TABLE 3

MEANS AND STANDARD DEVIATIONS
FOR MATHEMATICS SCORES

Factors	Levels	N	\bar{X}	SD
Mobility				
	Non-Mobile	779	56.86	2.10
	Intra-City Mobile	237	54.86	3.67
	Extra-City Mobile	670	57.54	2.31
Economic Status				
	Advantaged	1,206	59.92	1.76
	Disadvantaged	480	48.87	2.37
Gender				
	Male	808	54.46	1.98
	Female	878	58.91	2.05
Ethnicity				
	White	1,126	60.48	1.84
	Black	560	49.32	2.22
Total		1,686	56.79	1.43

There was also a main effect for gender ($F=32.22$, $df=1$, $p < .001$) with female students scoring significantly higher than their male counterparts. There was a main effect for ethnicity ($F=73.47$, $df=1$, $p < .001$) with white students scoring significantly higher than their black counterparts. There were no significant interaction effects.

TABLE 4

ANALYSIS OF VARIANCE FOR MATHEMATICS SCORES

Source	df	MS	F
Main Effect			
Mobility (M)	2	909.82	2.75
Economic Status (ES)	1	14,137.11	48.68***
Gender (G)	1	9,357.72	32.22***
Ethnicity (E)	1	21,337.65	73.47***
Two-Way Interaction			
M x ES	2	130.43	0.45
M x G	2	265.68	0.91
M x E	2	329.48	1.13
ES x G	1	238.38	0.82
ES x E	1	183.99	0.63
G x E	1	144.64	0.50
Three-Way Interaction			
M x ES x G	2	201.01	0.69
M x ES x E	2	52.09	0.18
M x G x E	2	225.57	0.78
ES x G x E	1	347.21	1.20
Four-Way Interaction			
M x ES x G x E	2	414.38	1.43
*** Significant at $p < .001$			

Language Arts

The means and standard deviations for the language arts section of the SRA Assessment Survey are shown in Table 5. The intra-city mobile group scored somewhat lower on the language arts section than did the non-mobile and extra-city mobile groups; the non-mobile and extra-city mobile groups scored approximately the same. Advantaged students scored higher than disadvantaged students, and females scored somewhat higher than their male counterparts. The language arts scores of white students exceeded those of black students by a wide margin.

These language arts scores were subjected to an analysis of variance to determine if the observed differences in means were significant and to examine possible interaction effects. The analysis of variance results are summarized in Table 6. There was a main effect for mobility ($F=3.88$, $df=2$, $p < .05$) indicating that one or more of the mobility groups differed from each other. A Duncan's New Multiple Range Test indicated that the non-mobile and extra-city mobile groups were not significantly different from each other. Subjects in the intra-city mobile group scored significantly lower than subjects in the other two mobility groups ($p < .05$). The means are displayed in Table 5.

There was a main effect for economic status ($F=59.95$, $df=1$, $p < .001$). An examination of the means indicates that the advantaged students scored significantly

TABLE 5

MEANS AND STANDARD DEVIATIONS
FOR LANGUAGE ARTS SCORES

Factors	Levels	N	\bar{X}	SD
Mobility				
	Non-Mobile	779	61.58	2.28
	Intra-City Mobile	237	58.75	3.00
	Extra-City Mobile	670	62.49	2.50
Economic Status				
	Advantaged	1,206	64.55	1.88
	Disadvantaged	480	54.00	2.73
Gender				
	Male	808	57.44	2.12
	Female	878	65.32	2.26
Ethnicity				
	White	1,126	64.54	1.99
	Black	560	55.51	2.42
Total		1,686	61.54	1.55

higher than the disadvantaged students (see Table 5). There was also a main effect for gender ($F=102.58$, $df=1$, $p < .001$); female students scored significantly higher than the male students. There was a main effect for ethnicity ($F=44.21$, $df=1$, $p < .001$) with white students scoring significantly higher than their black counterparts.

TABLE 6

ANALYSIS OF VARIANCE FOR LANGUAGE ARTS SCORES

Source	df	MS	F
Main Effect			
Mobility (M)	2	1,195.83	3.88*
Economic Status (ES)	1	15,819.12	59.95***
Gender (G)	1	27,068.30	102.58***
Ethnicity (E)	1	11,666.31	44.21***
Two-Way Interaction			
M x ES	2	571.69	2.17
M x G	2	328.66	1.25
M x E	2	344.73	1.31
ES x G	1	106.62	0.40
ES x E	1	375.87	1.42
G x E	1	352.97	1.34
Three-Way Interaction			
M x ES x G	2	618.48	2.34
M x ES x E	2	111.81	0.42
M x G x E	2	40.72	0.15
ES x G x E	1	23.66	0.09
Four-Way Interaction			
M x ES x G x E	2	249.33	0.95
Significant at $p < .05$			
*** Significant at $p < .001$			

Composite

The means and standard deviation for the composite section of the SRA Assessment Survey are shown in Table 7. The intra-city mobile group scored somewhat lower on the composite section than did the non-mobile and extra-city mobile groups; the non-mobile and extra-city mobile groups scored approximately the same. Advantaged students scored higher than disadvantaged students, and females scored somewhat higher than their male counterparts. The composite scores of white students exceeded those of black students by a wide margin.

These composite scores were subjected to an analysis of variance to determine if the observed differences in means were significant and to examine possible interaction effects. The analysis of variance results are summarized in Table 8. There was a main effect for mobility ($F=4.22$, $df=2$, $p < .05$) indicating that one or more of the mobility groups differed from each other. A Duncan's New Multiple Range Test indicated that the non-mobile and extra-city mobile groups were not significantly different from each other; subjects in the intra-city mobile group scored significantly lower than subjects in the other two mobility groups ($p < .05$). (The means are displayed in Table 7.)

There was a main effect for economic status ($F=52.84$, $df=1$, $p < .001$); the advantaged students scored significantly higher than the disadvantaged students.

TABLE 7

MEANS AND STANDARD DEVIATIONS
FOR COMPOSITE SCORES

Factors	Levels	N	\bar{X}	SD
Mobility				
	Non-Mobile	779	56.97	2.14
	Intra-City Mobile	237	54.17	3.60
	Extra-City Mobile	670	57.85	2.38
Economic Status				
	Advantaged	1,206	60.26	1.81
	Disadvantaged	480	48.55	2.32
Gender				
	Male	808	54.23	2.04
	Female	878	59.41	2.08
Ethnicity				
	White	1,126	60.53	1.88
	Black	560	49.67	2.23
Total		1,686	56.92	1.46

There was also a main effect for gender ($F=77.49$, $df=1$, $p < .001$) with female students scoring significantly higher than their male counterparts. There was a main effect for ethnicity ($F=78.19$, $df=1$, $p < .001$); white students scored significantly higher than their black counterparts.

Retention

The means and standard deviations for the rates of retention are shown in Table 9. Intra-city mobile students

TABLE 8

ANALYSIS OF VARIANCE FOR COMPOSITE SCORES

Source	df	MS	F
Main Effect			
Mobility (M)	2	1,166.87	4.22*
Economic Status (ES)	1	12,257.33	52.84***
Gender (G)	1	17,975.36	77.49***
Ethnicity (E)	1	18,137.07	78.19***
Two-Way Interaction			
M x ES	2	333.54	1.44
M x G	1	292.71	1.27
M x E	2	167.57	0.72
ES x G	1	267.17	1.15
ES x E	1	592.56	2.56
G x E	1	474.12	2.04
Three-Way Interaction			
M x ES x G	2	432.60	1.87
M x ES x E	2	84.38	0.36
M x G x E	2	131.62	0.57
ES x G x E	1	147.02	0.63
Four-Way Interaction			
M x ES x G x E	2	340.97	1.47
* Significant at $p < .05$			
*** Significant at $p < .001$			

were retained with greater frequency than were their non-mobile and extra-city mobile counterparts. The rates of retention for the non-mobile and extra-city mobile groups were approximately the same.

TABLE 9

MEANS AND STANDARD DEVIATIONS
FOR RATES OF RETENTION

Factors	Levels	N	\bar{X}	SD
Mobility				
	Non-Mobile	779	.24	.487
	Intra-City Mobile	237	.32	.817
	Extra-City Mobile	670	.25	.516
Economic Status				
	Advantaged	1,206	.20	.450
	Disadvantaged	480	.40	.622
Gender				
	Male	808	.31	.578
	Female	878	.21	.441
Ethnicity				
	White	1,126	.21	.454
	Black	560	.36	.605
Total				
		1,686	.26	.407

Note: The means are the number of students per one hundred who have been retained over their entire elementary educational experience; thus, twenty four out of one hundred non-mobile students had been retained over this period.

The rates of retention were subjected to an analysis of variance to determine if the observed differences in the rates of retention were significant and to examine possible interaction effects. The analysis of variance results are summarized in Table 10. As can be seen from Table 10, there was no significant main effect for mobility. There was however, a main effect for economic status ($F=59.26$, $df=1$, $p < .001$); the advantaged students had significantly lower rates of retention than their disadvantaged counterparts (see Table 9). In addition, there was also a main effect for gender ($F=15.65$, $df=1$, $p < .001$); male students had a significantly higher rate of retention than female students. There was a main effect for ethnicity ($F=34.32$, $df=1$, $p < .001$) with black students experiencing a higher rate of retention than their white counterparts.

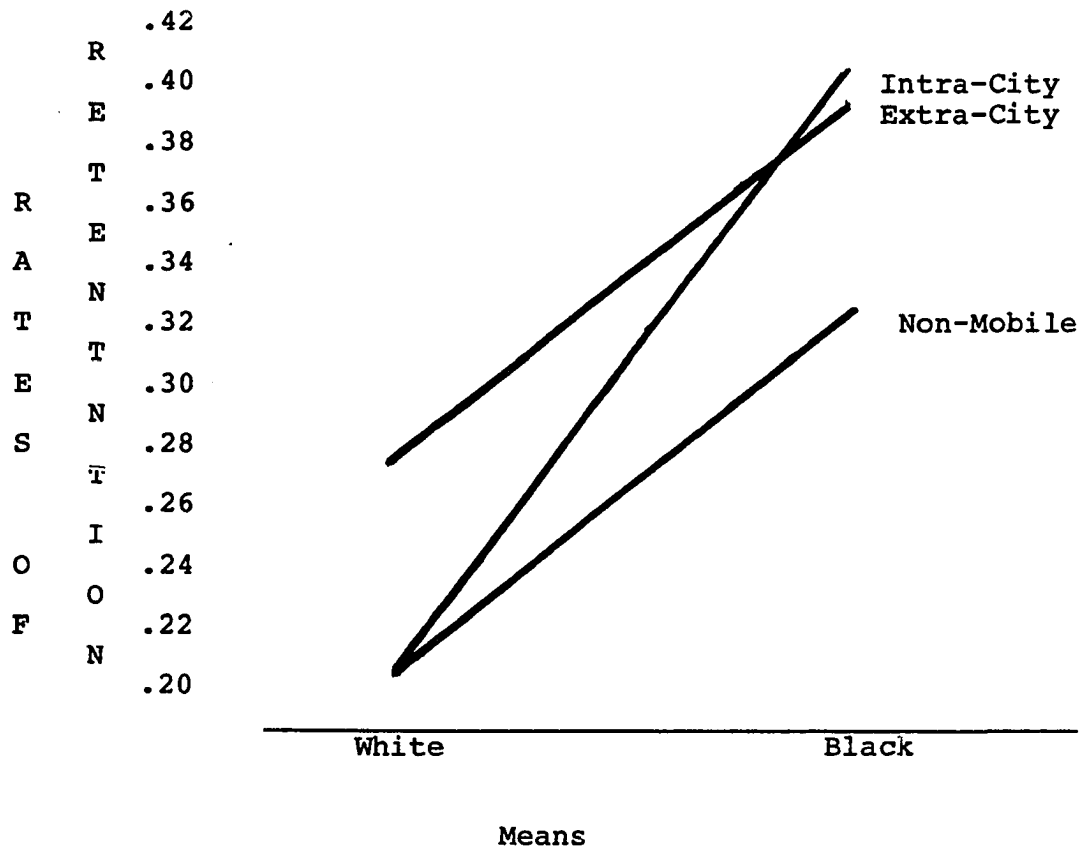
There was a significant two-way interaction effect of mobility by ethnicity ($F=40.54$, $df=2$, $p < .001$) which is depicted in Figure 3. As portrayed in Figure 3, there was a significant difference in the rate of retention between white and black students as a function of mobility. Regardless of the mobility group, black students had a higher rate of retention than their white counterparts. White intra-city mobile students experienced a higher rate of retention than their non-mobile and extra-city mobile counterparts; non-mobile and extra-city mobile students experienced identical rates of retention. For black students, the non-mobile students experienced the lowest

rate of retention; however, this rate of retention still exceeded all three white mobility groups. Extra-city mobile and intra-city mobile black students experienced similar rates of retention.

TABLE 10

ANALYSIS OF VARIANCE FOR
RATES OF RETENTION

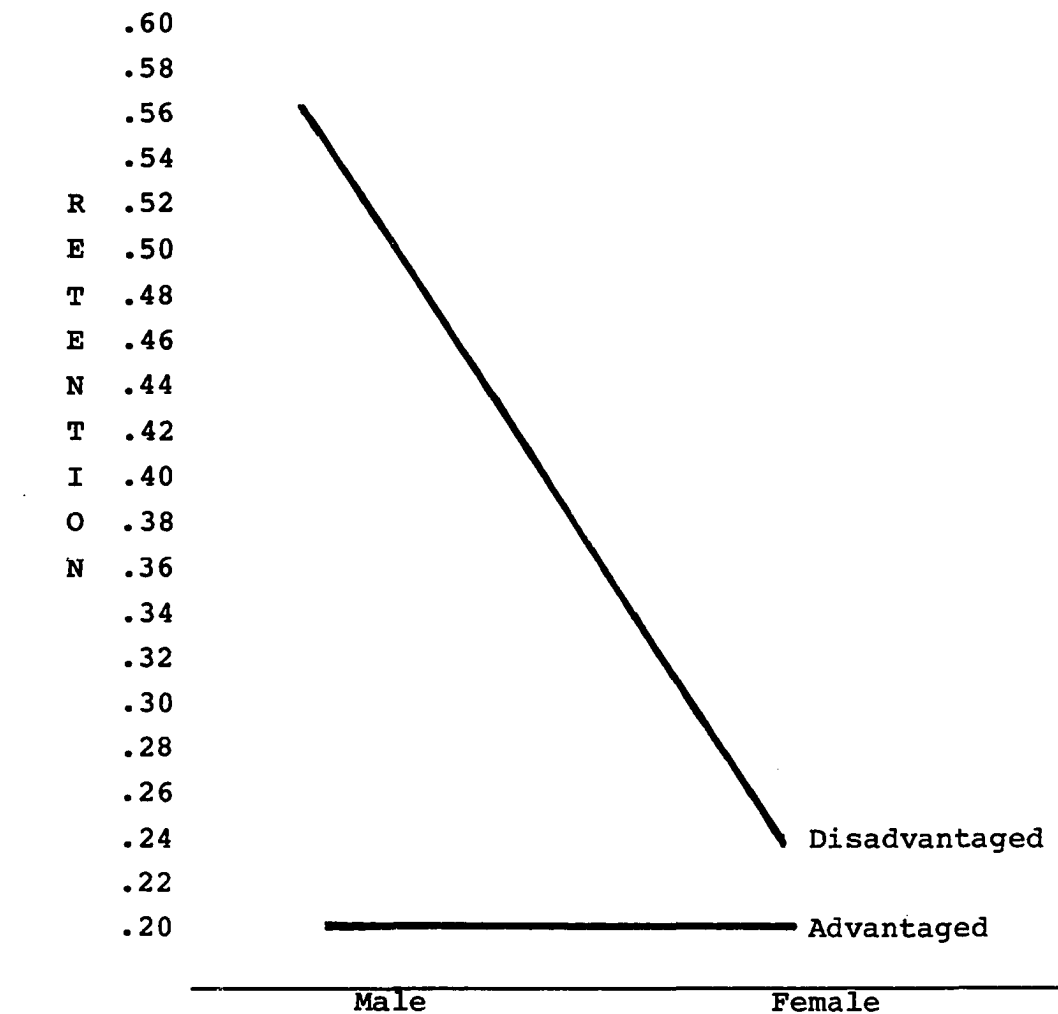
Source	df	MS	F
Main Effect			
Mobility (M)	2	.58	2.38
Economic Status (ES)	1	14.40	59.26***
Gender (G)	1	3.80	15.65***
Ethnicity (E)	1	8.34	34.32***
Two-Way Interaction			
M x ES	2	.20	.82
M x G	1	.36	1.47
M x E	2	9.85	40.54***
G x ES	1	9.60	39.51***
G x E	1	8.19	33.70***
E x ES	1	5.96	24.54***
Three-Way Interaction			
M x ES x G	2	41.45	170.56***
M x ES x E	2	51.50	211.93***
M x G x E	2	10.57	43.49***
G x ES x G	1	9.90	40.73***
Four-Way Interaction			
M x ES x G x E	2	.80	3.28
*** Significant at $p < .001$			



	White	Black	Total
Non-Mobile	.20	.32	.24
Intra-city	.27	.39	.32
Extra-city	.20	.40	.25
Total	.21	.36	.26

Fig. 3. Rate of Retention: Mobility by Ethnicity

There was a significant two-way interaction of gender by economic status ($F=39.51$, $df=1$, $p < .001$), which is depicted in Figure 4. As portrayed in Figure 4, advantaged male and female students experienced the same rate of



	Means		
	Males	Female	Total
Advantaged	.20	.20	.20
Disadvantaged	.57	.24	.40
Total	.34	.21	.26

Note: This figure appears not to show interaction. This is because only the means for each sub-group are depicted. An extension of each line--the depiction of the entire range of scores--would display the existing interaction.

Fig. 4. Rate of Retention: Socio-Economic Status by Gender

retention. Disadvantaged females experienced a somewhat higher rate of retention than their advantaged counterparts, while disadvantaged males experienced a rate of retention that was significantly higher than the advantaged males, advantaged females, or disadvantaged females.

There was also a significant two-way interaction of gender by ethnicity ($F=33.70$, $df=1$, $p < .001$), which is depicted in Figure 5. As portrayed in Figure 5, black students of both genders experienced a higher rate of retention than their white counterparts, while black males experienced a significantly higher rate of retention than their white counterparts.

The final significant two-way interaction was economic status by ethnicity ($F=24.54$, $df=1$, $p < .001$), which is depicted in Figure 6. As portrayed in Figure 6, disadvantaged students had a significantly higher rate of retention than their advantaged counterparts regardless of ethnic group. Advantaged white students experienced the lowest rate of retention, while black disadvantaged students experienced the highest rate of retention.

A three-way interaction of mobility by economic status by gender ($F=170.56$, $df=2$, $p < .001$) is depicted in Figure 7. As portrayed in Figure 7, all four sub-groups of non-mobile students (advantaged males, advantaged females, disadvantaged males, and disadvantaged females) scored approximately the same as their extra-city mobile counterparts.

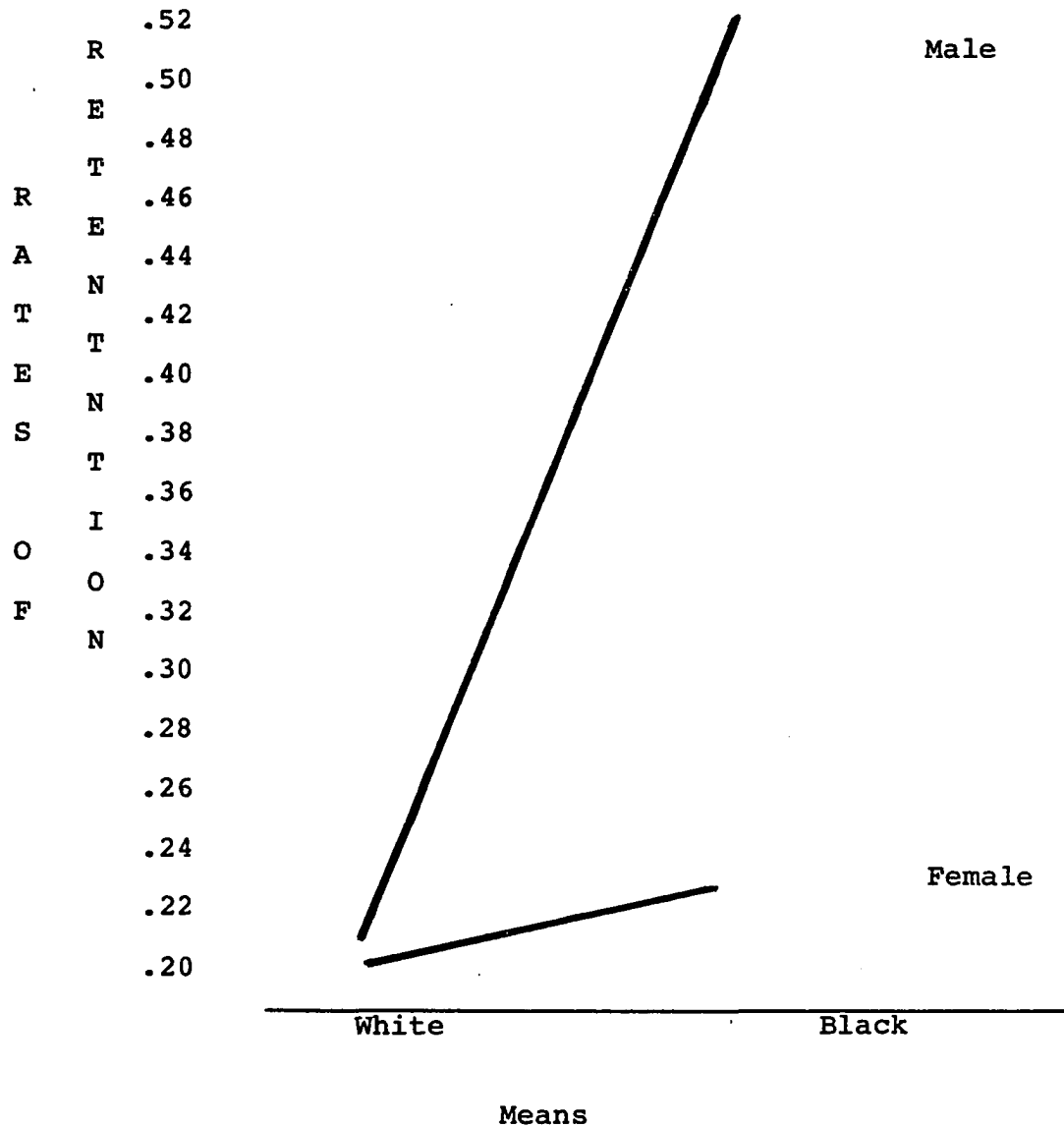
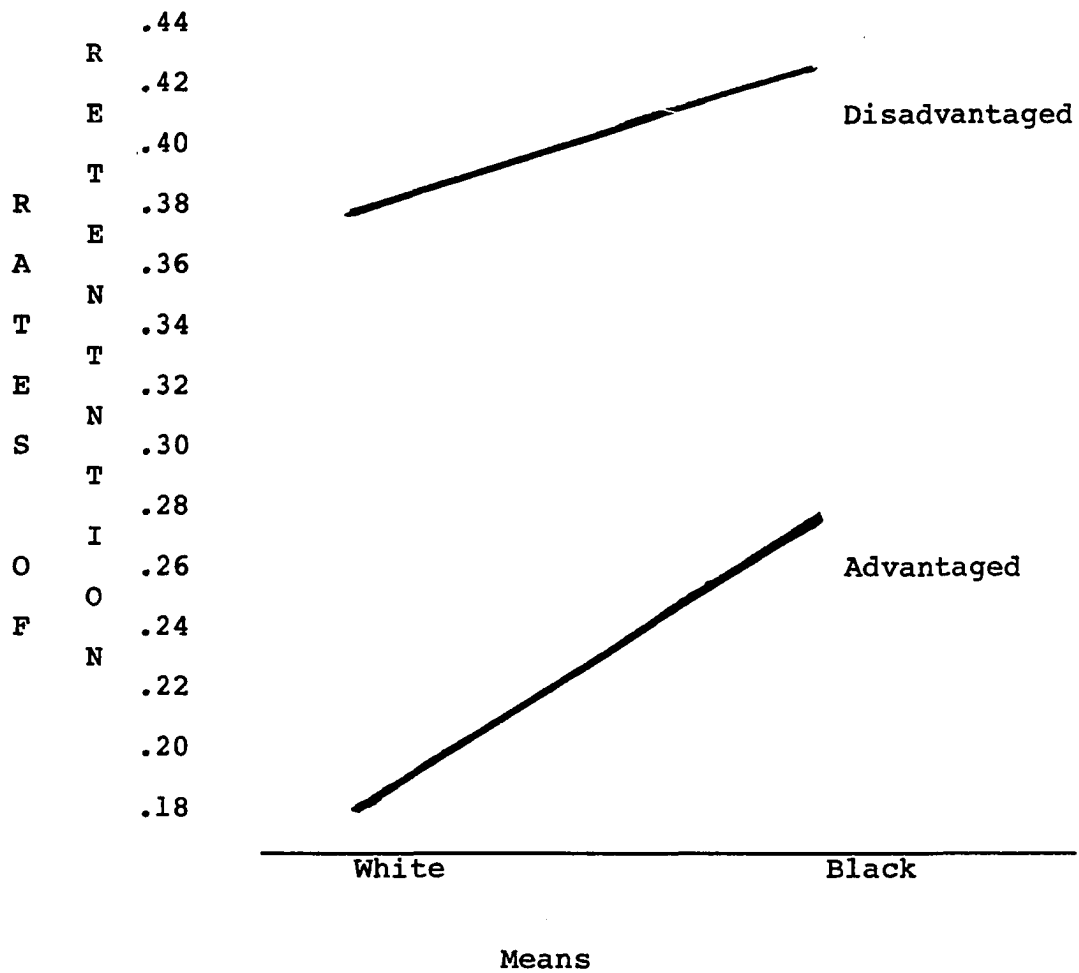


Fig. 5. Rate of Retention: Gender by Ethnicity



	White	Black	Total
Advantaged	.18	.28	.20
Disadvantaged	.38	.42	.40
Total	.21	.36	.26

Fig. 6. Rate of Retention: Economic Status by Ethnicity

Disadvantaged intra-city mobile females were the exception to this pattern.

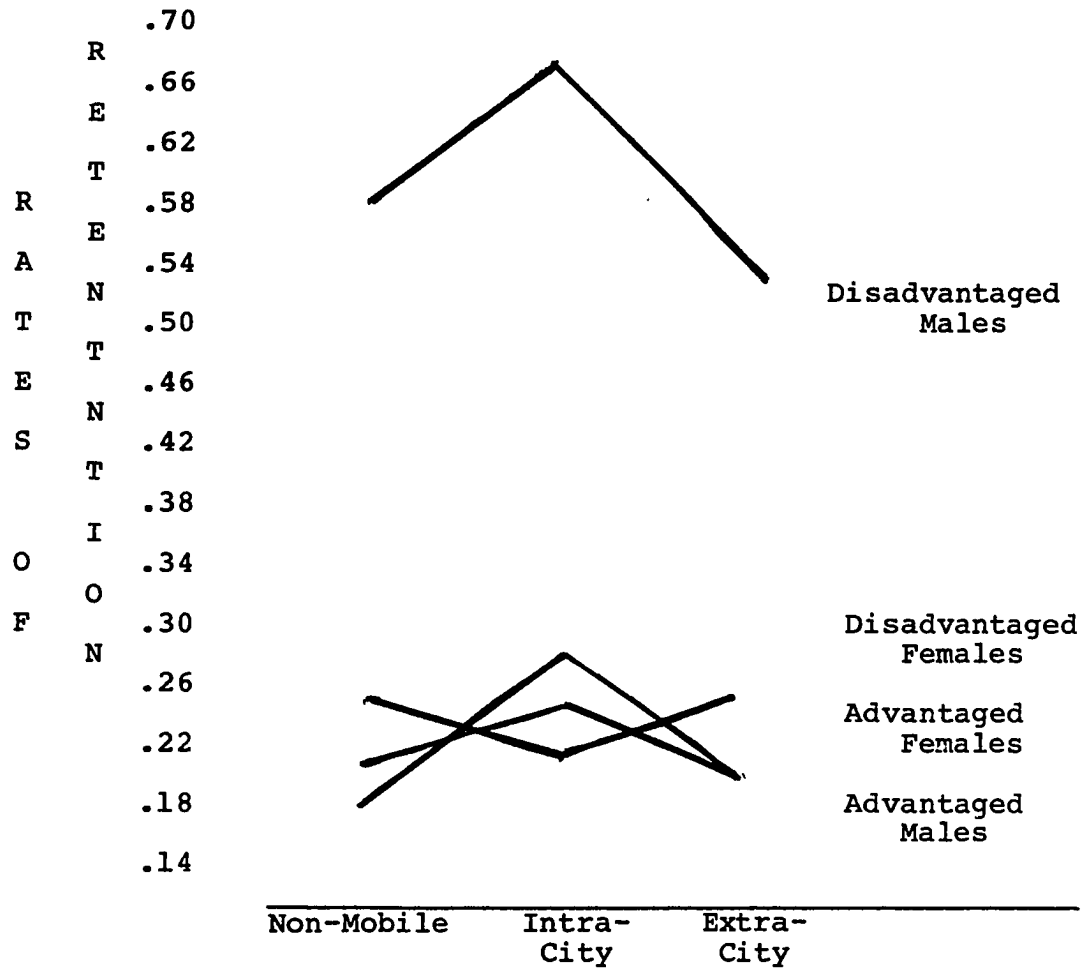
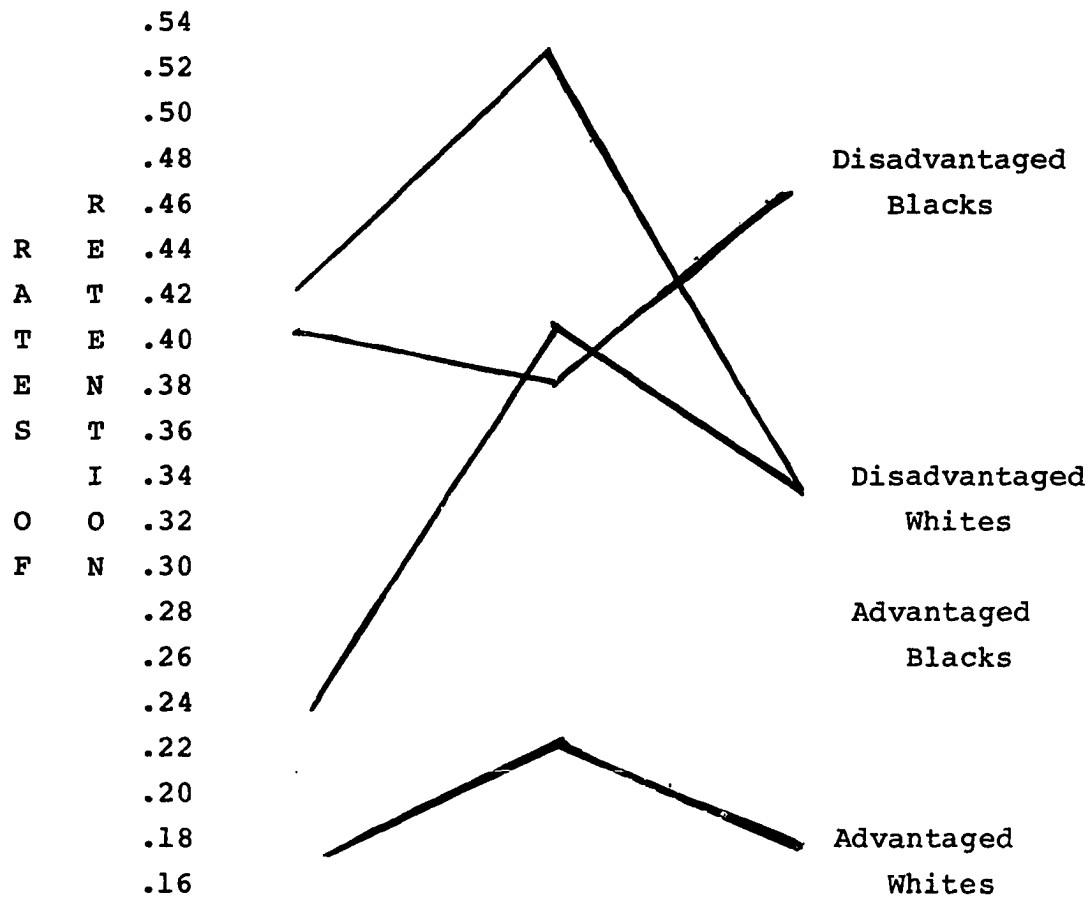


Fig. 7. Rate of Retention: Mobility by Economic Status by Gender

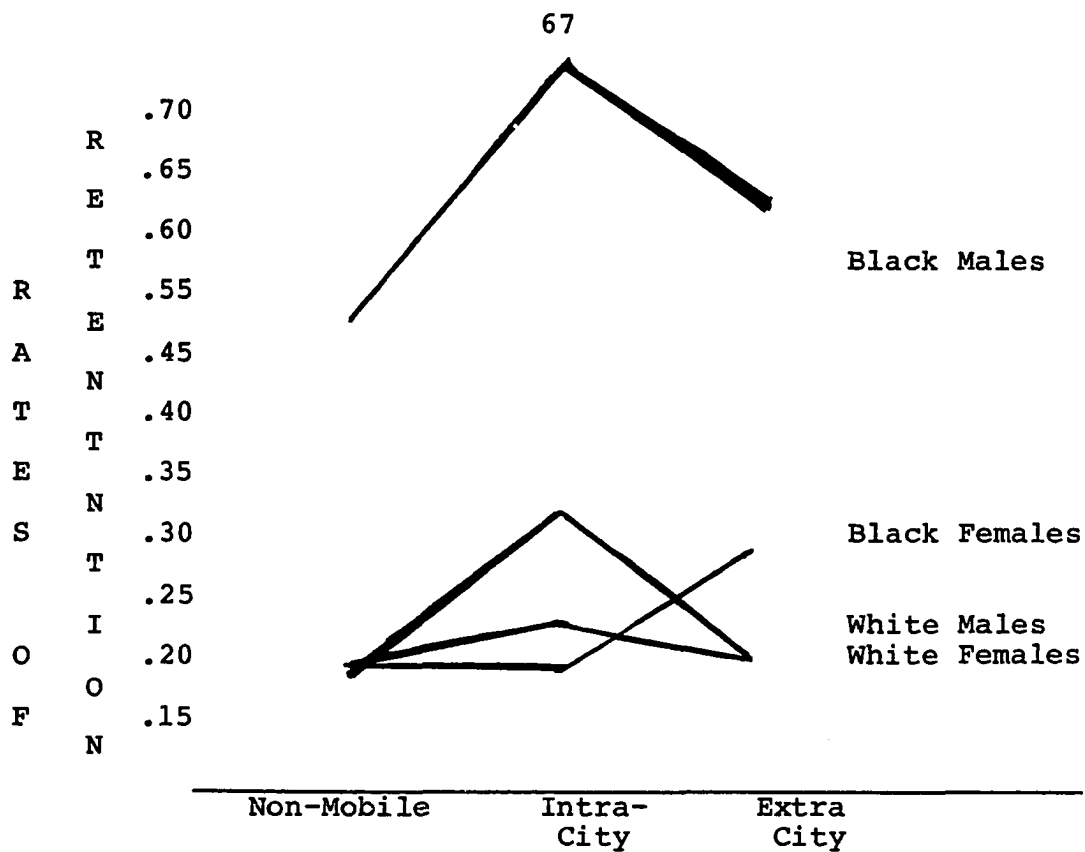
There was a three-way interaction effect of mobility by economic status by ethnicity ($F=211.93$, $df=2$, $p < .001$). As portrayed in Figure 8, non-mobile and extra-city mobile advantaged white students experienced identical rates of retention, while disadvantaged non-mobile white students experienced a significantly higher rate of retention than their extra-city mobile counterparts. Non-mobile advantaged blacks experienced a significantly lower rate of retention than their extra-city mobile counterparts, while non-mobile disadvantaged blacks experienced only a slightly lower rate of retention. For intra-city mobile students, three of the four sub-groups (advantaged whites, advantaged blacks, and disadvantaged whites) showed higher rates of retention than their non-mobile and extra-city mobile counterparts. Disadvantaged blacks were the exception.

Furthermore, there was a three-way interaction of mobility by gender by ethnicity ($F=43.49$, $df=2$, $p < .001$) which is depicted in Figure 9. As portrayed in Figure 9, non-mobile white males, non-mobile white females, and non-mobile black females experienced a significantly lower rate of retention than their non-mobile black male counterparts; extra-city mobile whites (male and female) experienced identical rates of retention, while extra-city mobile black females experienced a slightly higher rate of retention; extra-city mobile black males experienced a significantly higher rate of retention. Three of the four sub-groups of intra-city mobile students (black males, white



	Means				
	White		Black		
	Advan- taged	Disadvan- taged	Advan- taged	Disadvan- taged	TOTAL
Non-Mobile	.17	.42	.23	.24	.24
Intra-city	.22	.52	.40	.38	.32
Extra-city	.17	.32	.32	.46	.25
Total	.18	.38	.28	.42	.26

Fig. 8. Rate of Retention: Mobility by Economic Status by Ethnicity



	Means				
	Males		Females		Total
	White	Black	White	Black	
Non-Mobile	.19	.48	.20	.20	.24
Intra-city	.32	.68	.23	.20	.32
Extra-city	.20	.57	.20	.27	.25
Total	.21	.52	.20	.23	.26

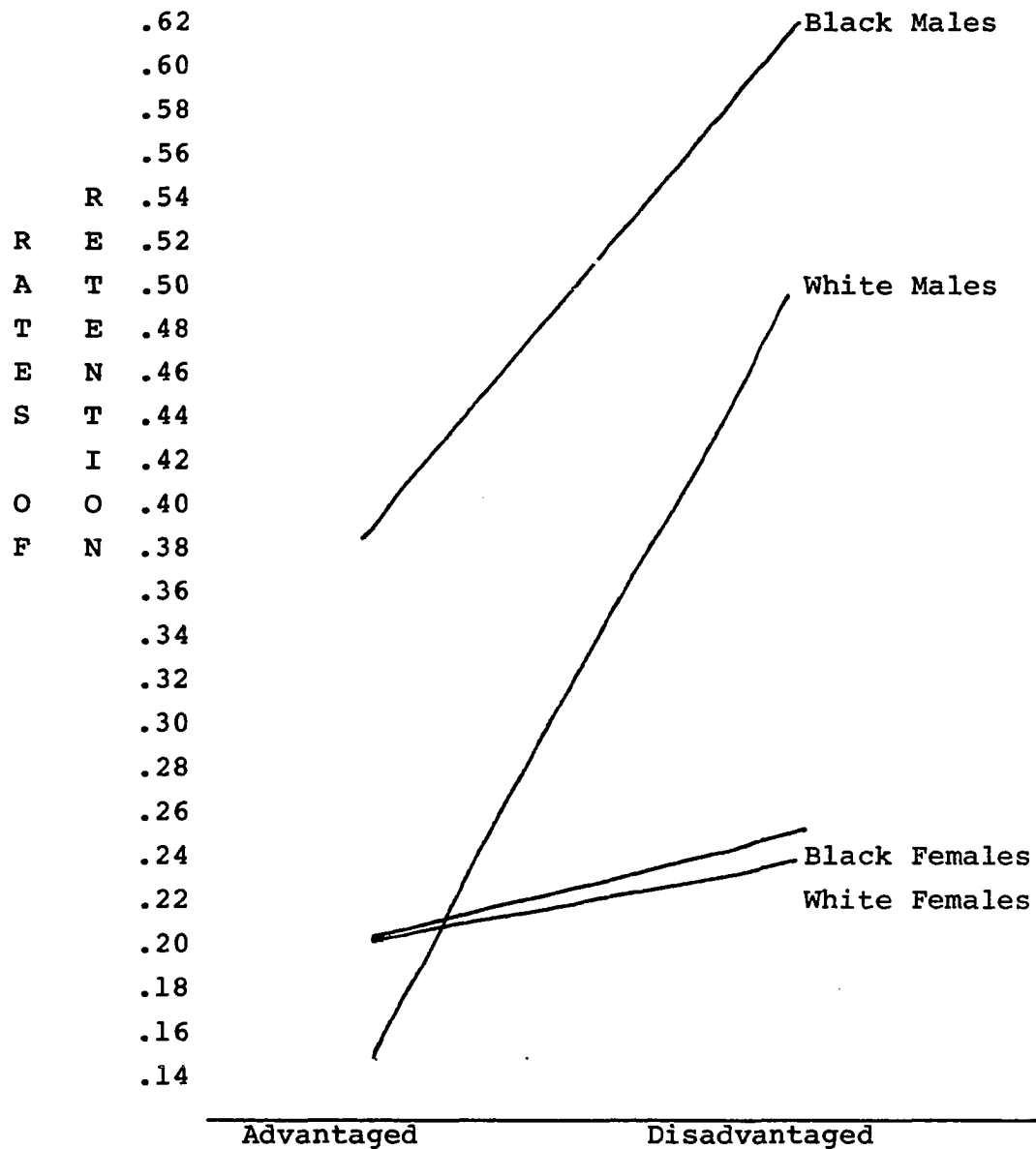
Fig. 9. Rate of Retention: Mobility by Gender by Ethnicity

males, and white females) experienced higher rates of retention than their non-mobile and extra-city mobile counterparts. Black females were the exception to the

pattern; the rate of retention for intra-city mobiles was the same as for the non-mobile student group.

The final significant three-way interaction effect was economic status by gender by ethnicity ($f=40.73$, $df=1$, $p < .001$). As portrayed in Figure 10, advantaged females, both black and white, experienced identical rates of retention; their disadvantaged counterparts scored slightly higher rates of retention. Disadvantaged males, both black and white, experienced significantly higher rates of retention than their advantaged counterparts. Disadvantaged black males experienced the highest rate of retention; advantaged white males experienced the lowest rate of retention.

In summary, mobility was not a significant factor in rates of retention. However, disadvantaged students were retained with greater frequency than advantaged students, males were retained more often than females, and blacks were retained with greater frequency than whites. The interaction effects showed males experienced a significantly higher rate of retention. White males, white females, and black females experienced similar rates of retention, while their black male counterparts experienced a significantly higher rate of retention. Advantaged whites and advantaged blacks experienced lower rates of retention than their disadvantaged counterparts. Disadvantaged males, regardless of mobility group experienced a significantly higher rate of retention than did their



	Means				Total
	White Males	White Females	Black Males	Black Females	
Advantaged	.15	.20	.38	.20	.20
Disadvantaged	.50	.23	.62	.24	.40
Total	.21	.20	.48	.23	.26

Fig. 10. Rate of Retention: Economic Status by Gender by Ethnicity

disadvantaged female, disadvantaged male, and advantaged male counterparts. Advantaged whites, regardless of mobility group, experienced the lowest rate of retention. Black males, regardless of mobility group, experienced the highest rate of retention. Finally, disadvantaged black males were retained with the greatest frequency.

Hypotheses

1. There is no significant difference between the scores obtained by extra-city mobile, intra-city mobile, and non-mobile grade six students on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey.

The data indicate that this null hypothesis is partially supported. There was a main effect for mobility on the reading, language arts, and composite sections of the SRA Assessment Survey; there was no main effect for mathematics.

2. There is no significant difference in the rate of retention of extra-city mobile, intra-city mobile, and non-mobile grade six students.

This hypothesis is confirmed. The main effect for mobility by rates of retention was not significant.

3. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by economic status.

The data indicate that this null hypothesis is accepted. While there was a main effect for socio-economic status on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey, there was no significant two-way interaction effect for mobility by economic status.

4. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by gender.

The data indicate that this null hypothesis is accepted. While there was a main effect for gender on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey, there was no significant interaction effect for mobility by gender.

5. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by ethnicity.

The data indicate that this null hypothesis is accepted. While there was a main effect for ethnicity on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey, there was no significant two-way interaction effect for mobility by ethnicity.

Discussion

The results of the current study can be interpreted to support the contention that mobility has an impact on student achievement. More specifically, the finding that

intra-city mobile students scored significantly lower than their non-mobile and extra-city mobile counterparts and experienced the highest rate of retention supports the view that mobility is harmful to student achievement, and lends credence to the results presented by Inbar and Adler,¹ Levine,² and Kealy³ who also noted that mobility is harmful to academic performance. Conversely, the finding that extra-city mobile students scored as well on standardized achievement tests and experienced rates of retention that were similar to the non-mobile students can be interpreted to support the results presented by Bollenbacker,⁴ Stiles,⁵ Fitch,⁶ and Black and Bargar,⁷ who all noted that mobility has no significant impact on student achievement.

It thus appears that some types of mobility may be harmful to academic achievement while other types of mobility may not be deleterious to school achievement. The unique demographic characteristics of students that make up a particular group of mobile students may account for, or explain, why some types of mobility may be harmful while other types of mobility apparently may not be harmful.

It was the intra-city mobile students--those students who have moved within the city--who earned the lowest scores on standardized achievement tests, and experienced the highest rate of retention. It was also the intra-city mobile student group that contained the highest percentage of disadvantaged students as well as the highest

concentration of minority students. Thus, the lower scores earned by the intra-city mobile students may have resulted from their limited exposure to the cultural activities afforded the community at large--museums, concerts, festivals, and similar activities that more affluent students may have had greater access to. The extra-city mobile students may have had access to a greater diversity of cultural activities found in the different municipalities in which they have lived. These differences in experiences outside the home and school may provide the extra-city mobile students with a broader base of knowledge with which to enhance their test scores.

In addition to the cultural differences just noted, the extra-city mobile students in the present study also come from more affluent families than did their intra-city mobile counterparts. The more affluent family may provide its children with enrichment materials and experiences, and additional encouragement to do well in school. This level of affluence, coupled with the increased exposure to diverse cultural activities as a result of the extra-city mobility, may further enhance the achievement test scores of the extra-city mobile student.

Thus, Jenck's claim that affluence was a primary factor in student achievement is partially borne out by the current study.⁸ The disadvantaged students scored significantly lower than the advantaged students, and they experienced the highest rate of retention. It is

interesting to note, however, that a main effect for both mobility and for economic status failed to interact to provide a significant two-way interaction effect for mobility by economic status. That is, both mobility and economic status were found to have a significant impact on the achievement of the students in the present study. However, affluence within the various mobility groups was not a factor in student achievement within that group.

In addition to economic status, the present study investigated mobility as a function of gender. The finding that female students outscored their male counterparts lends credence to the classic Gates study.⁹ He found that girls scored significantly higher in reading achievement than did boys of a similar age. There was no significant two-way interaction effect for mobility by gender; that is, the significant main effect for gender was consistent regardless of mobility group. The absence of a significant two-way interaction effect may indicate that factors other than mobility may explain why female students outscored their male counterparts.

Gender ratios within each mobility group were not a factor, however. An examination of the three mobility groups with respect to gender found each of the three mobility groups contained approximately the same ratio of female to male students. More specifically, the non-mobile and extra-city mobile groups were fifty-two percent female,

while the intra-city mobile group had only one more male than female.

With gender ratios being similar, perhaps parental and teacher expectations may have affected boys and girls in different ways. For example, girls are sometimes trained from an early age to be docile, contrite, submissive and dependent upon parents and teachers. Boys are just as often trained to be aggressive and independent. Studies by Switzer¹⁰ and Stubblefield¹¹ showed that aggression and independence are emotional traits that can be distorted by family moves.

In addition, the present study found that black students scored significantly lower than their white counterparts, and they were retained in greater numbers. This finding lends credence to Jensen's claim that students from a school division with a large minority student population would score lower than their counterparts attending more affluent school divisions.¹² Historically, black have been denied access to those cultural activities which may have enhanced their academic achievement. Cultural deprivation may partially explain the findings of blacks earning lower standardized achievement test scores than whites. While discrimination has been legislatively outlawed, most blacks remain economically and culturally disadvantaged. This economic deprivation also may place the black students at an academic disadvantage.

In summary, the reading, language arts, and composite scores were affected by mobility. Of note is the fact that reading and language arts are members of the same instructional family, and the composite score relies heavily on both reading and language arts. The intra-city mobile students earned the lowest scores. These same scores--reading, language arts, and composite--were also impacted by economic status (disadvantaged students earned the lower scores), gender (females outscored males), and ethnicity (blacks scored lower than whites). Mathematics scores were not affected by mobility, but were affected by economic status, gender, and ethnicity in the same manner as reading, language arts, and composite scores.

Retention was not affected by mobility; all three mobility groups experienced similar rates of retention. However, the disadvantaged student, the male student, and the black student did not experience retention in greater numbers.

Implications

While the findings of this study have definite policy implications for the urban school division facing the urbanization process, care must be taken in the interpretation of the results. The intra-city mobile group was found to be a primary depressant with respect to standardized achievement test scores. This same intra-city mobile group was also found to contain a higher concentration of

disadvantaged students, and minority students. There is a serious possibility that confounding of the variables caused the intra-city mobile group to score as low as it did. Did the intra-city mobile group earn the lowest scores because they were intra-city mobile, or because they were poor and black? With this question under consideration, the implications of this study can be considered.

Not only does intra-city mobility affect the school system, it impacts upon other public and private urban agencies. In fact, it may be that intra-city mobility is a symptom of a greater social disorder. As the disadvantaged intra-city mobile family moves within the city, the public health agencies, utilities billing, welfare, and even the sheriff's department must continuously adjust and update records of the moving families and their members. If the factors which predicated the need for the inner-city family to move could be identified, efforts by the various agencies involved could possibly be brought to bear that would either expedite the move--i.e., make the transfer of appropriate documentation easier and more efficient, or to provide interventions which would make the move unnecessary. Before either condition can be implemented, additional study of the intra-city mobile student and his family must be undertaken.

If the incidence of intra-city mobility can not be sufficiently reduced to limit the impact of that mobility

upon standardized achievement test scores and rates of retention, then the schools may need to undertake action to identify those students who may, by the end of their educational experience, be members of the intra-city mobile student group. Once identification has been made, appropriate interventions can be implemented, included (1) resource staff in the appropriate schools within the division, (2) enrichment activities to compensate for the possible cultural deprivation, and (3) student and family counseling to help the student and family adjust to the new school environment. By enhancing the individual student, the student's family, the schools, and the urban municipality will all benefit.

Finally, the intra-city mobile students were predominantly lower socio-economic status and black. Within the socio-economic levels and ethnic groups, it was the disadvantaged and black who earned the lowest test scores. Schools within "deprived" areas are now being served by specialists in the areas of reading and mathematics. In these reading and mathematics labs, selected students are being given remedial instruction that is intended to aid them in overcoming the negative effects of their deprived status. If additional specialists were used in those schools with a high ratio of disadvantaged and/or black students, or if teachers working in those identified schools were provided additional training that would

enhance their ability to teach deprived students, perhaps the individual student test scores would improve. Specifically, if students who will, as a grade six student, become a member of the intra-city mobile (disadvantaged and/or black) groups are identified early in their elementary educational experience, compensatory programs can be implemented to enhance student scores and dilute the impact of the deprivation on grade six test scores.

The findings of this study and the implications thus noted indicate the need for additional study and research. The following research questions need to be addressed:

1. What are the specific characteristics of the intra-city mobile student and his family? How does this family differ from the non-mobile and extra-city mobile families that it should be a negative influence on the school and the city at large?
2. What procedures are already in place to accommodate the intra-city mobile student in his adjustments to the new school? What procedures need to be implemented to afford greater accommodation?
3. What steps can be taken to reduce the amount of intra-city mobility within the city and the schools? Or, what steps can be taken to reduce the impact of intra-city mobility on the various municipal agencies?

FOOTNOTES

¹Inbar and Adler, Ethnic Integration in Israel: A Case Study of Moroccan Brothers Who Settled in France and Israel.

²Levine, "Residential Change and Social Adjustment," pp. 1-9.

³Kealy, "Student Mobility and It's Effect on Achievement," pp. 358-59.

⁴Bollenbacker, "A Study of the Effect of Mobility on Reading Achievement," p. 356.

⁵Styles, "Families on the Move," pp. 467-74.

⁶Fitch, "Geographic Mobility and Academic Achievement of a Group of Junior High Students," pp. 334-35.

⁷Black and Barger, "Relating Pupil Mobility and Reading Achievement," pp. 370-74.

⁸Jencks, Inequality.

⁹Gales, "Sex Differences in Reading Ability," pp. 931-34.

¹⁰Switzer.

¹¹Stubblefield.

¹²Jensen, "How Can We Boost IQ and Scholastic Achievement?", pp. 1-123.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The Problem

This study was concerned with the possible impact of student mobility on the achievement of grade six students in an urban environment. A review of the literature revealed that existing research had failed to address the impact of mobility on an urbanizing municipality. Adjunct to this knowledge gap was the condition where existing research was inconclusive, inconsistent, and even conflicting. A second gap of knowledge existed with respect to the interaction effect of mobility with gender and ethnicity, two factors over which the student and his/her family have no control. The third gap of knowledge existed with respect to the interaction effect of mobility with the socioeconomic status of the students. This factor was closely related to mobility in that it (the economic status of the family) was often a primary factor in the decision to move.

Hypotheses

In order to provide insight into unresearched areas and to add to existing research in the area of the effects of mobility on grade six students, the following hypotheses

were tested:

1. There is no significant difference between the scores obtained by extra-city mobile, intra-city mobile, and non-mobile grade six students on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey.

2. There is no significant difference in the rate of retention of extra-city mobile, intra-city mobile, and non-mobile grade six students.

3. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by economic status.

4. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by gender.

5. There is no significant difference in the achievement of extra-city mobile, intra-city mobile, and non-mobile grade six students by ethnicity.

Design and Statistical Treatment

An ex post-facto design was used. Subjects in grade six were assigned to one of three mobility groups based on the degree and/or nature of their mobility during their elementary school years. The members of each mobility group were further identified by economic status, gender, ethnic group, and rate of retention. Standardized achievement test scores for each subject were obtained as a

regular part of the instructional program during the 1983-84 school year. From this standardized achievement test the reading, mathematics, language arts, and composite scores were obtained for each student. The data were subjected to a factorial analysis of variance design; where appropriate, a Duncan's New Multiple Range Test was used to interpret statistical significant relationships among three or more categories of the independent variables and the dependent variables.

The independent variables were three levels of mobility (extra-city mobile, intra-city mobile, and non-mobile); two levels of economic status (advantaged and disadvantaged); two levels of gender (male and female); and two levels of ethnicity (black and white). The dependent variables are the scores earned by the students on the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey, and the rate of retention experienced by the student.

Subjects

One thousand, six hundred eighty-six grade six students from the Chesapeake Public Schools were used as subjects. Chesapeake, Virginia, is located in the southeast corner of the Commonwealth; in 1983, it was a rapidly urbanizing environment. The grade six student population was predominantly white (1126 white, 560 black), nearly equal in gender (808 males, 878 females), and predominantly

economically advantaged (1206 advantaged, 480 disadvantaged).

Collection of Data

Demographic data were collected from the cumulative folders of each student maintained in that student's home school. Economic status was determined using applications for free and reduced priced lunch; these were maintained in the school office. Raw scores for the reading, mathematics, language arts, and composite sections of the SRA Assessment Survey were obtained from a master computer print-out maintained in the office of Research and Testing, Chesapeake Public Schools.

Instrumentation

The SRA Assessment Survey (Form 1/f, 1978 edition) was given to each grade six student as a normal part of the instructional assessment program. The test was administered by the appropriate homeroom teacher, in the home school of each student.

Results and Discussion

The following results were obtained using the SRA Assessment Survey. Mobility, the primary factor of this study, was found to have a main effect ($p < .05$) with respect to reading, language arts, and composite sections. There was no main effect for mathematics with respect to mobility. An examination of the three separate mobility

groups showed that the intra-city group was consistent in earning the lowest group mean for all four sections of the tests under study. In addition, the rate of retention for the intra-city mobile group was significantly higher than its extra-city mobile and non-mobile counterparts.

The economic status of the students had a main effect ($p < .001$) for all four sections of the SRA Assessment Survey under study. The advantaged groups consistently achieved the highest means. It was the advantaged group that experienced the lower rate of retention. There was no significant interaction effect for economic status by mobility.

Gender also had a main effect ($p < .001$) for all four sections of the SRA Assessment Survey under study. Female students consistently outscored male students; the female students also had the lower rate of retention. When the results were examined for interaction effects with mobility, no significant results were found. However, when gender was crossed with economic status, a significant ($p < .001$) two-way interaction was found. Advantaged male and female students experienced identical rates of retention. Disadvantaged females experienced a slightly higher rate of retention, while disadvantaged males experienced a significantly higher rate of retention. A three-way interaction of mobility by gender by economic status showed that except for the disadvantaged females, the intra-city mobile student group experienced the highest rate of retention.

The final independent variable, ethnicity, had a main effect ($p < .001$) for all four sections of the SRA Assessment Survey under study. White students consistently earned the higher test means and the lower rate of retention. When crossed with mobility, ethnicity showed a significant two-way interaction for reading.

For rates of retention there were three significant two-way interaction effects. Ethnicity crossed with mobility found white students, regardless of mobility group, experiencing the lower rate of retention. Ethnicity crossed with gender found white males and females experiencing similar rates of retention, while black students experienced a rate of retention that was significantly higher. Economic status crossed with ethnicity showed disadvantaged students experiencing a significantly higher rate of retention; black disadvantaged students experienced the highest rate of retention.

A three-way interaction of mobility by economic status by ethnicity showed that disadvantaged males experienced significantly higher rates of retention, with intra-city mobile students experiencing the highest rate. Ethnicity crossed with gender by mobility found black males experiencing significantly higher rates than those experienced by black females and white students; within the black male group, it was the intra-city mobile students who had the highest rate of retention. Ethnicity crossed with

gender and economic status indicated that advantaged white males experienced the lowest rate of retention; advantaged females, both black and white, experienced similar rates of retention. The highest rate of retention was experienced by the disadvantaged black males.

Conclusions

Demographic data indicate that the students moving into the City of Chesapeake and the Chesapeake Public Schools were slightly more affluent, and consisted of fewer minority students than the existing student population. The extra-city mobile students enhanced the over all divisional test scores for reading, mathematics, language arts, and composite sections of the SRA Assessment Survey. It was the intra-city mobile student groups that were in the greatest need of public assistance, and contained the highest concentration of minority students. It was the intra-city mobile student group that earned the lowest test scores on the various sections of the SRA Assessment Survey under study, thus depressing the divisional test scores. It was also the intra-city mobile group that experienced the highest rate of retention. While it was the student who moved from school to school within the division that provided the greatest degree of depression to the divisional scores, it was not mobility alone that produced the negative results; it was the cumulative interaction of

mobility crossed, individually and collectively, with economic status, gender, and ethnicity that limited the increase in divisional test scores.

Recommendations

The results of this study indicate several areas that require additional investigation.

1. A more detailed examination of the intra-city mobile student is indicated. If mobility alone was a factor in the depressed test scores, then the extra-city mobile students should have earned scores similar to those of the intra-city mobile students. This was not the case, however. As noted previously, the special characteristics of the intra-city mobile group influenced the test scores --i.e., this study found that the intra-city mobile student group contained more disadvantaged and black students than did the extra-city mobile group. Apparently both the socio-economic level and ethnicity of the student had a negative influence on the students' ability to score well on the standardized achievement tests. A more detailed study, using case studies and direct interviews, may show that it was not the mobility per se that affected the test scores. Rather, the confounding impact of the students' depressed socio-economic living conditions and/or the ethnic influences of the family and environment may have depressed the scores.

2. There also needs to be an examination of

existing procedure used to acclimate the intra-city mobile students and their families to the new community and school. The schools currently provide remedial instructional programs for students who are in need of special instructional techniques to overcome the negative impact of physical handicaps, mental handicaps, and emotional handicaps. There are, however, no remedial programs for the culturally or socially handicapped students. A detailed study of the intra-city mobile student may find a lack of exposure to the events and conditions that expand the awareness of the more affluent student exists. In this case, the schools would be well-serving of their students by providing a program that would expose the intra-city mobile, disadvantaged, minority students to those events, activities, and experiences that the school system deems advantageous to low-scoring students. In addition, the existing instructional programs could be augmented through in-service activities designed to make teachers more aware of the special needs of disadvantaged and/or minority students.

3. Existing policies need to be re-examined with respect to reducing the amount of intra-city mobility, and, at the same time, reducing the negative impact of intra-city mobility on the families and the various municipal agencies, including the schools. A shift from one service area to another requires the transfer of records which may delay the delivery of services to the student or family.

For example, a move from one medical clinic to another may delay medical treatment while the appropriate charts and records are transferred. And in fact, the move from one area of the city to another may put access to the needed services out of reach unless there is adequate public transportation to return the recipients to the old neighborhood where they can still be serviced. This assumes that the move from the old neighborhood does not make them ineligible to receive service in the old neighborhood facility. If the municipality can examine the mobility patterns and conditions that precipitated the need to move, then perhaps interventions can be put into place which would either negate the need for the intra-city move, or to facilitate the transfer of records between social agencies, between the agencies and the schools, and between schools. This would somewhat lessen the impact of any undesirable consequences of the move on the family and the student.

The findings of this study present considerations for not only the school division, but also for the municipality at large. The research recommendations offered above indicate the need to examine existing programs and procedures for the assimilation of new students into existing school structures. If the school system intends to improve divisional test scores and to meet the diverse needs of its students, it must address the

problems of the intra-city mobile students. If the intra-city mobility is indeed a symptom of a greater social ill, then the needs of the family, and the family's circumstance, should be addressed with dispatch. Remedial and compensatory programs must be re-examined, and where appropriate, restructured. Finally, the consistency of the instructional curricula, and the municipal and school delivery systems must be examined to assure the ability of the intra-city mobile students and their families to be assimilated quickly into the new neighborhood schools and programs.

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