

A STUDY OF THE RELATIONSHIP OF THE POSSESSION OF MOTOR
VEHICLES TO THE SCHOLASTIC ACHIEVEMENT OF THE BOYS
AT THE SOUTH DADE HIGH SCHOOL,
HOMESTEAD, FLORIDA

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Traditionally, the principal concern of American schools has been scholastic achievement. Thus, one of the important problems engaging educators today is the identification of factors which influence scholastic success. Student ownership of automobiles is often listed among these factors. However, there is little evidence from which conclusions can be formed concerning the relationship of motor vehicle ownership to scholastic achievement.

I. THE PROBLEM

Statement of the problem. Does possession of a motor vehicle affect the scholastic achievement of boys at South Dade High School, Homestead, Florida?

Component questions were as follows:

1. Do the ninth grade boys who possess motor vehicles differ scholastically from the ninth grade boys who do not possess motor vehicles?

2. Do the tenth grade boys who possess motor vehicles differ scholastically from the tenth grade boys who do not possess motor vehicles?

3. Do the eleventh grade boys who possess motor vehicles differ scholastically from the eleventh grade boys

who do not possess motor vehicles?

4. Do the twelfth grade boys who possess motor vehicles differ scholastically from the twelfth grade boys who do not own motor vehicles?

5. Do the boys who own motor vehicles differ scholastically from the boys who do not own motor vehicles?

6. Does the scholastic achievement of boys possessing motor vehicles differ from the scholastic achievement of the same boys prior to acquisition of a motor vehicle?

7. How much school time is lost by boys possessing motor scooters because of injuries sustained while operating these motor scooters?

8. How much school time is lost by boys possessing automobiles because of injuries sustained while operating these automobiles?

9. How much school time is lost by boys possessing motor vehicles because of injuries sustained while operating these motor vehicles?

10. Do boys who possess motor scooters differ scholastically from boys who possess automobiles?

11. How do boys who possess motor vehicles achieve scholastically in comparison to their ability as indicated by the Otis Quick-Scoring Intelligence Test?

12. To what extent do boys who possess motor vehicles elect courses from the five major academic subject areas:

(1) English, (2) Mathematics, (3) Social Studies, (4) Foreign Language, and (5) Science?

Importance of the study. The scholastic performance of many students does not reach the level that their measured potential might indicate, while others far surpass what is expected.¹ The scholastic success of a student is contingent upon interest and effort, which in turn are the product of all factors in a student's life.²

In recent years the relatively unrestricted use of motor vehicles has become, in ever increasing magnitude, a major factor in the life of American teenagers.³ With one passenger car for every three persons in the United States,⁴ increasing numbers of students are gaining access to automobiles. Thus, the greatly expanded scope of the motorized student's life directs attention to the possible effect of this factor upon scholastic achievement.

Most educators assume that the academic work in the school program is of primary importance and that any factor

¹John J. Kurtz and Esther J. Swenson, "Factors Related to Over-Achievement and Under-Achievement in School," School Review, 59:472-480, November, 1951.

²Howard Lane, "The Meaning of Disorder Among Youth," Education Digest, 21:34-36, April, 1956.

³Ibid.

⁴The Center for Safety Education, New York University, Man and the Motor Car (Englewood Cliffs: Prentice Hall, Inc., 1954), p. 42.

interfering with academic achievement should be disallowed.⁵

At South Dade High School several teachers noticed that many of the boys who were poor students owned motor vehicles. This study was conducted to determine the degree to which these observations were correct.

II. THE SETTING

South Dade High School is a four-year high school located thirty miles south of Miami, Florida. During the 1958-1959 school year, there were 1099 students, 551 boys and 548 girls. One hundred and sixty-two boys possessed motor vehicles, including eighty-seven motor scooters and seventy-five automobiles. Sixteen of the girls possessed automobiles; none possessed motor scooters.

Only five per cent of the students lived within two miles of the school; few lived farther than ten miles away.

Many of the families do not own their homes and move frequently within the South Florida area. Others move to the area only for seasonal employment. This highly mobile population is comprised of the following major components: (1) United States Air Force personnel, (2) farmers and farm workers, and (3) white-collar workers.

⁵Erwin F. Karner, "How Much Is Enough?" School Activities, 28:27, September, 1956.

III. DEFINITIONS OF TERMS USED

Driver. The term driver is used in this study to denote a student who has ready access to a motor vehicle.

Driver group. A group consisting of all drivers of South Dade High School will be referred to in this study as the driver group.

Motor scooter. Any motor-powered vehicle with two wheels will be referred to in this study as a motor scooter. Included are motor bicycles and motorcycles in addition to vehicles normally termed motor scooters.

Non-driver. The term non-driver is used in this study to denote a student who does not have ready access to a motor vehicle. Persons who drive but do not have ready access to a motor vehicle are included.

Non-driver group. A group consisting of all boys at South Dade High School not in the driver group will be referred to as the non-driver group.

Possession of a motor vehicle. A student was considered to have possession of a motor vehicle if he had ready access to this vehicle and could use it at any desired time.

Quality point rating. The phrase quality point rating will be interpreted to be a numerical rating indicating

degree of scholastic achievement. It is developed by awarding a student four points for each grade of "A", three points for each grade of "B", two points for each grade of "C", one point for each grade of "D", and no points for grades of "F". The total points are then divided by the number of grades earned, yielding a numerical rating within the range of .00 to 4.00. Thus, an attempt has been made to establish a rating of quality by assigning greater numerical weight to the superior letter grades. This system of rating the quality of work is widely used in American colleges and universities.

IV. PURPOSE OF THE STUDY

This study was conducted to determine the degree of relationship, if any, between ready access to motor vehicles and the scholastic achievement of boys at South Dade High School, Homestead, Florida. In addition, it was the purpose of this study to contribute information which, when supplemented by results of other studies, might lead to generalizations concerning the relationship of the possession of motor vehicles to scholastic achievement.

V. ORGANIZATION OF THE REMAINDER OF THE THESIS

Chapter two is a brief review of literature related to the problem. Chapter three describes the procedures used in assembling the data. Chapter four is the presentation of

the data collected. Chapter five includes a summary of the study, a statement of conclusions, and suggestions for further study.

CHAPTER II

REVIEW OF THE LITERATURE

The paucity of literature concerning the relationship of student use of motor vehicles to scholastic achievement has required the broadening of the scope of the ensuing review to include the bearing of other student interests upon scholastic success.

I. THE RELATIONSHIP OF STUDENT INTERESTS TO SCHOLASTIC ACHIEVEMENT

Hansen, in writing about extracurricular activities, expressed the fear that excess participation might encroach upon time normally devoted to study.¹ Karner had similar misgivings concerning the effects of part-time work upon school success.²

A study of 596 seniors in West Virginia showed that working seniors had significantly higher grades than non-working seniors, and that non-transported seniors maintained

¹Earl H. Hanson, "Is It Time to Close Our Carnival?" Education, 79:198, November, 1958.

²Erwin F. Karner, "How Much Is Enough?" School Activities, 28:29, September, 1956.

higher averages than those who were transported.³

Twining matched two groups of fifty seniors on the basis of scholastic point averages and scores on the Otis Quick-Scoring Intelligence Test. Results of this study indicated that participants in extracurricular activities received higher averages than those who did not participate, and that students participating only one semester showed a better mean average during the semester of participation than the semester of non-participation.⁴ In reviewing the reports on research concerning athletics and scholastic grades, Somers noted that studies of intramural competition indicated a trend toward a slight superiority of the participants over the non-participants; in the studies of varsity athletics the trend was in favor of the non-athletes.⁵

"Some current authors point up advantages of television in fostering academic attainment for all children. Other writers indicate that television viewing has shown,

³Berthold G. Pauley, "The Effects of Transportation and Part-Time Employment upon Participation in School Activities, School Offices Held, Acceptability for Leadership Positions and Grade Point Average among High School Seniors," Journal of Educational Research, 52:4, September, 1958.

⁴Charles W. Twining, "The Relationship of Extracurricular Activity to School Marks," School Activities, 28:183, February, 1957.

⁵Madeline R. Somers, "A Comparative Study of Participation in Extracurricular Sports and Academic Grades," Research Quarterly, 22:85, March, 1951.

and is showing, negligible effect upon the scholastic proficiency of all children," reported Scott.⁶ He studied 456 sixth and seventh grade children in California, comparing the twenty-seven per cent watching the most television with the twenty-seven per cent watching the least. The study revealed that those children who view more television achieve less proficiency in arithmetic and reading and are inferior in total achievement to those children who view less.⁷ It was suggested that neglect by the frequent television viewers of that portion of arithmetic development which depends upon completion of homework assignments may be severe enough to be reflected in achievement test scores.⁸

Bond assumed the existence in most students of a gap between potential and actual scholastic achievement.⁹ With this in mind, he conducted a survey to discover the factors considered by students to constitute the greatest hindrances to school work. Among those listed were the following:
(1) home chores or out-of-school jobs; (2) radio, television,

⁶Lloyd F. Scott, "Television and School Achievement," Phi Delta Kappan, 38:25, October, 1956.

⁷Ibid., p. 26.

⁸Ibid., p. 27.

⁹Jesse A. Bond, "Analysis of Factors Adversely Affecting Scholarship of High School Pupils," Journal of Educational Research, 46:1, September, 1952.

and other activities which take the student from home during study; and (3) neglect of studies to be with friends.

II. THE IMPORTANCE OF MOTOR VEHICLES TO AMERICAN BOYS

Ford asserted that the American boy of junior high school age is frequently seeking to validate his maleness through appropriate behavior, and that scholastic achievement does not serve this function so well as does performance in other areas.¹⁰ "The basic need for zestful experience is particularly urgent during adolescence. 'For kicks' is adequate reason for an activity. The hot-rod set seeks the same goals sought by their grandfathers on broncos," stated Lane.¹¹

American adults accept the automobile, with all of its glamour and conveniences, as a symbol of success.¹² Hence, teenagers look forward to the day when they may possess an automobile and the prestige which accompanies it. Look Magazine reported that teen-age boys of White Plains, New York, almost universally respected one symbol, the

¹⁰Thomas R. Ford, "Social Factors Affecting Academic Performance: Further Evidence," School Review, 65:417, December, 1957.

¹¹Howard Lane, "The Meaning of Disorder Among Youth," Education Digest, 21:36, April, 1956.

¹²Sam Levinson, "Make Your Kids Good Drivers," The Charlotte Observer This Week Magazine, June 14, 1959, p. 5.

automobile.¹³ Loeb contended that "the boy's salvation today is the car--he looks forward to the time when he's 16 and can have a car because to him it means independence, risk-taking, work, strength."¹⁴

According to Look Magazine, "At driving age, a boy can hit the road, can escape, can move. He has 'jet' power under his right foot. He is closeted in a private, mobile space in which he may begin ritual courtship. Above all the fast getaway to the sumptuous look of the average car, he has new standards of manliness that dispel all doubts about who's a kid any longer."¹⁵ It is interesting to note that Nelson¹⁶ and Levinson¹⁷ also listed sexual success as one of the goals which teenagers attempted to reach through the privacy afforded by automobiles.

¹³"What a Car Means to a Boy," Look, 23:86, January 20, 1959.

¹⁴Jean Wardlow, "'Be a Dad, Not a Buddy,' Says Expert," Miami Herald, April 7, 1959, Section B, p. 1.

¹⁵"What a Car Means to a Boy," op. cit., p. 84.

¹⁶The Citizen's Law Enforcement Council of Rexburg, Idaho, Help Promote Self-Discipline and Respect for Authority by Cooperating with Citizen's Law Enforcement Council and Rexburg Youth Congress (Rexburg, 1958).

¹⁷Levinson, op. cit., p. 7.

III. THE RELATIONSHIP OF THE POSSESSION OF MOTOR VEHICLES TO SCHOLASTIC ACHIEVEMENT

Levinson expressed the opinion that an automobile offers power, freedom, and temptations which a teenager cannot handle.¹⁸

Nelson conducted an informal study during the 1957-1958 school year at Madison High School in Rexburg, Idaho. The results were as follows:

1. No A student drove to school.
2. Fifteen per cent of the B students drove to school.
3. Forty-one per cent of the C students drove to school.
4. Seventy-one per cent of the D students drove to school.
5. Eighty-three per cent of the F students and drop-outs drove to school.¹⁹

The grades of students at Madison High School were checked again after the first nine-week grading period of the 1958-1959 school year. Results revealed that of forty-five with one or more failing grade thirty-three drove automobiles to school, and that of the ten girls with one or more failing grade none drove to school.²⁰

¹⁸Ibid., p. 5.

¹⁹Willis G. Nelson, "Grade Point Averages Class of 1958." (Mimeographed.)

²⁰Ibid.

The most extensive study of the problem has been done by Sharp, during the 1954-1955 school year, at the Selma Union High School in Selma, California. The study was restricted to the 347 boys attending the school. Ninety-eight drove to school at least two times a week; these boys made up the driver group.²¹ Grouping boys who drove to school two times a week with boys who have ready access to automobiles may not be advisable. The use of automobiles during after-school hours, rather than driving to school, would seem to be the logical factor to put in question.

"Most students of legal age have the use of a car after school and at night at least frequently. That could cause some damage to scholastic marks. But just driving a car to school seems harmless enough."²²

The results revealed a grade point average²³ of 8.39 for the non-drivers as compared with a grade point average of 7.92 for the frequent driver group, with a mean superiority for the non-driver group of .47 (this figure based on the

²¹Selby S. Sharp, "A Survey of Student Use of Automobiles and the Effect upon Certain Factors of the School Adjustment of Male Students at the Selma Union High School, Selma, California" (unpublished Master's thesis, Fresno State College, Fresno, 1956), pp. 18-20.

²²Editorial in the Gastonia Daily Gazette, March 13, 1959.

²³All quality points were added and divided by the number of courses carried. The resulting quotient was the grade point average.

quality point rating as used in the present study would be .08). In addition, the non-driver group passed an average of 5.46 subjects per student, while the frequent driver group passed an average of 5.15 subjects per student. Thus, there was a mean superiority for non-drivers of .13 subjects passed. Sharp summarized by stating that there may not be a significant difference between the driver and non-driver groups, although the non-driver group showed some superiority.²⁴

IV. SUMMARY

The literature reviewed seemed to indicate that extra-scholastic interests and activities did affect scholastic achievement and that students displayed great interest in motor vehicles.

The modest differences between drivers and non-drivers, denoted in Sharp's survey, and the striking scholastic deficiencies of drivers observed by Nelson during his informal study, leave the question of the relationship of scholastic achievement to student possession of motor vehicles unanswered.

Nelson wrote: "Individually we may accomplish very little but the united efforts and data from many must

²⁴Sharp, op. cit., pp. 56-58.

certainly and eventually focus the active attention of the nation on a growing problem of student cars."²⁵

²⁵Letter from Willis G. Nelson to the Writer, May 5, 1959.

CHAPTER III

PROCEDURE

I. THE QUESTIONNAIRE

The questionnaire¹ which was administered during the second semester of the 1958-1959 school year was designed to answer the following questions:

1. Does the student have ready access to a motor vehicle?
2. Is this vehicle an automobile or a motor scooter?
3. On what date did the student first acquire a motor vehicle?
4. Has the student been injured during the 1958-1959 school year while operating this vehicle?
5. How many school days and how many class periods of physical education were missed because of injuries sustained while operating motor vehicles?

The writer administered the questionnaire individually to each ninth and tenth grade student during the play portion of physical education classes. The writer administered the questionnaire to every eleventh and twelfth grade student during homeroom period.

¹A copy of the questionnaire and accompanying special instructions is found in the Appendix.

Several students indicated that they had owned both a motor scooter and an automobile. They were requested to indicate ownership of both and which of these they currently possessed. In some cases it was difficult to determine the existence of an injury. In each of these cases the students were asked to decide if, based on the instructions, he believed his injury worthy of noting.

As each class was surveyed, the names of those students who were not present were listed. The questionnaire was administered to the absentees upon their return to school.

II. THE GROUPS STUDIED

Sixteen of the 548 girls possessed motor vehicles. This small number seemed to preclude significant findings. The study was therefore limited to the boys.

The driver group. The driver group was established by compiling a list of all boys who had indicated on the questionnaire their ownership of motor vehicles. The group was composed of 162 boys; 87 possessed motor scooters and 75 possessed automobiles. There were 38 ninth-graders: 34 possessed motor scooters and 4 possessed automobiles. There were 36 tenth-graders: 23 possessed motor scooters and 13 possessed automobiles. There were 51 eleventh-graders: 24 possessed motor scooters and 37 possessed

automobiles. There were 37 twelfth-graders: 6 possessed motor scooters and 31 possessed automobiles.

TABLE I

THE DISTRIBUTION BY GRADES OF MOTOR SCOOTER DRIVERS, AUTOMOBILE DRIVERS, DRIVERS, AND NON-DRIVERS

Grade	Boys	Motor scooter drivers	Automobile drivers	Drivers	Non-drivers
9	170	34	4	38	132
10	164	23	13	36	128
11	116	24	27	51	65
12	101	6	31	37	64
Total of all grades	551	87	75	162	389

The non-driver group. The 389 boys whose names did not appear on the driver group list comprised the non-driver group. There were 132 ninth-graders, 128 tenth-graders, 65 eleventh-graders, and 64 twelfth-graders.

III. SCHOOL RECORDS

A permanent record card for each student, containing the subjects taken and the grades earned in high school, is maintained by the school. The following information was

compiled through the use of these records:

1. The quality point rating of every boy. This was determined by adding all of the quality points that a student earned during the first semester of the 1958-1959 school year and dividing this figure by the number of grades earned.
2. All high school subjects taken by each driver.
3. All grades earned in all high school subjects taken by each driver.

A cumulative record folder kept by the school contains a varying degree of information concerning each student. For most students there are results of standardized tests, samples of work, and lists of subjects taken with grades earned prior to high school. The following information was compiled from the cumulative record folders:

1. Intelligence quotients developed from Otis Quick-Scoring Intelligence Tests for 147 of the driver group.
2. Grades earned in the seventh and eighth grades by the driver group.

The recording vehicle. A form² was developed upon which all of the data concerning each driver were recorded. All work with the data was done from these records.

²A sample specimen appears in the Appendix.

IV. TREATMENT OF THE DATA

Comparing the scholastic achievement of the driver group with that of the non-driver group. In comparing the scholastic achievement of any individual with another, it was assumed that the grades earned, as reflected in the quality point rating, were good indicators of an individual's level of scholastic attainment.

The boys were divided into eight groups, a driver group and a non-driver group on each grade level.

Three frequency distributions of quality point ratings were prepared for ninth grade boys: one for all ninth grade boys, one for the ninth grade driver group, and one for the ninth grade non-driver group. The quartile points for the frequency distribution of quality point ratings of all ninth grade boys were determined. To insure exactness in establishing the quartile points, the data were not grouped into class intervals. The real limits of a particular rating were the point half the distance from the next lower rating and the point half the distance to the next higher rating.

Using the quartile points thus established, a table was prepared to show the number and per cent of boys in the driver and non-driver groups who were in each quarter. The chi-square test was employed to conclude whether the observed

difference between the driver group and the non-driver group reflected in this table was a significant difference or was a difference probably attributable to chance. Null hypotheses were formulated purporting that no true difference existed between the distribution of quality point ratings of the boys in the two groups, but that the observed distribution was the result of chance.

The value of chi-square was computed by squaring the difference in each cell between the observed frequency and the expected frequency, then dividing the resulting quotient by the expected frequency for that cell. Summing these quotients rendered the value of chi-square. Greater divergence between the expected and observed frequencies results in larger values for chi-square. A table of chi-square values was consulted to determine the degree of significance. Null hypotheses were rejected when the values of chi-square were significant at less than .01. This indicated that the distribution would occur less than one time in a hundred.

In the case of the ninth grade boys the value of chi-square was sufficient to reject the null hypothesis. The statistics, therefore, were evaluated as indications of true dissimilarities. The quality point ratings of all boys, all drivers, and all non-drivers were separately totaled. These totals were divided by the number of persons in each group, supplying a mean quality point rating for each group. The

difference between the quality point ratings of the driver and non-driver groups was found. The percentage difference between the means of the groups was also computed.

The process described for the refining of data for the analysis of the difference in scholastic achievement between the ninth grade driver group and ninth grade non-driver group was repeated for each of the other grade levels and the total groups.

Additional facts about the driver group. The intelligence quotients, based on the Otis Quick-Scoring Intelligence Test, were paired with the quality point ratings of the 147 drivers whose scores were available. The drivers were divided into three groups on the basis of I. Q.: a sub-normal group with scores of 89 and below, a normal group with scores of 90 through 110, and a super-normal group with scores of 111 and above. Using the quartile points from a frequency distribution of the quality point ratings of all boys, a table was developed to show the relationship of the I. Q. of drivers to their scholastic achievement.

A quality point rating was developed for each of the 135 drivers whose records contained grades earned before acquiring a motor vehicle. All grades recorded from the seventh grade through the twelfth grade were used. A quality point rating was developed for the same boys after they

acquired a motor vehicle. Grades earned during the semester in which a motor vehicle was acquired were included with the grades earned after acquiring a motor vehicle. The variation of the quality point rating earned after acquiring a motor vehicle from the quality point rating earned before acquiring a motor vehicle was computed for each driver numerically and in percentage. Tables were prepared to compare the frequency and degree of loss with the frequency and degree of gain numerically and in percentage.

A null hypothesis was formulated. The chi-square test was applied to determine the probability of significance of these data. The means, numerically and in terms of percentage, were determined for: (1) the quality point rating before acquiring a motor vehicle; (2) the quality point rating after acquiring a motor vehicle; and (3) the difference between the means of these quality point ratings.

The mean percentage of loss in quality point rating by drivers after acquiring motor vehicles was compared with the mean percentage of fewer quality points earned by drivers than earned by non-drivers. The same comparison was made using numerical loss and numerically fewer quality points earned. By dividing the mean loss into the mean of fewer quality points earned, the relationship was expressed in terms of percentage.

An affinity quotient was developed to express by

percentage the agreement of the percentage to which the drivers earned fewer quality points than the non-drivers earned in each grade. A similar affinity quotient was developed in this manner, using the mean numerical loss in each grade.

All elective subjects selected by drivers were totaled and compared with the number elected in the major academic subjects, including (1) Science, (2) Social Studies, (3) Foreign Language, and (4) Mathematics. This figure was expressed as a percentage.

The number of drivers injured while operating motor vehicles was divided into grade levels. The total school hours lost because of these injuries were computed by grade levels. Six hours was considered to represent one school day, and each absence was counted as six hours lost. One hour was counted as lost for each period of physical education missed. The mean loss was then computed.

Comparing boys who possess motor scooters with boys who possess automobiles. In comparing the quality point ratings of boys who possessed motor scooters with boys who possessed automobiles, the same procedure was used in all respects as was used to compare drivers with non-drivers.

The mean I. Q., as indicated by the Otis Quick-Scoring Intelligence Test, was computed by grade for boys who

possessed automobiles and boys who possessed motor scooters. These data were placed in a table for comparison.

A list was compiled of boys who possessed motor scooters and boys who possessed automobiles to indicate the variation of quality point ratings after they acquired these vehicles from the quality point ratings before they acquired these vehicles.

The mean quality point loss and the percentage of drivers whose quality point ratings became lower were computed.

CHAPTER IV

PRESENTATION OF DATA

Table I, page 19, indicates that of the 551 boys studied, 162, or 29.4 per cent, possessed motor vehicles. In terms of numbers the drivers were almost evenly distributed: the ninth grade had 38; the tenth grade, 36; the eleventh grade, 51; and the twelfth grade, 37. However, the eleventh and twelfth grades had greater percentages of drivers. The ninth grade had 22.4 per cent; the tenth grade, 22 per cent; the eleventh grade, 44 per cent; and the twelfth grade, 36.6 per cent. Of the 38 ninth grade drivers, 34, or 89.5 per cent, possessed motor scooters. This was sharply contrasted in the twelfth grade where only 6, or 16.2 per cent, of the drivers possessed motor scooters. In the tenth grade, 23, or 63.9 per cent, of the drivers possessed motor scooters; in the eleventh grade, 24, or 43.9 per cent, possessed motor scooters. The percentage of motor scooters was smaller in each higher grade.

I. COMPARING THE QUALITY POINT RATINGS OF NINTH GRADE DRIVERS WITH NINTH GRADE NON-DRIVERS

The number and percentage of drivers and non-drivers in each quarter of the ninth grade are represented in Table II. Nineteen of the 38 drivers, or 50 per cent, were in the

TABLE II

THE DISTRIBUTION OF NINTH GRADE DRIVERS AND NINTH GRADE
NON-DRIVERS ON THE BASIS OF QUALITY POINT RATINGS

QUARTER	DRIVERS		NON-DRIVERS	
	Number	Per cent of drivers	Number	Per cent of drivers
First	2	5.3	38	28.8
Second	7	18.4	40	30.3
Third	10	26.3	36	27.3
Fourth	19	50.0	18	13.6

fourth quarter, with quality point ratings below the first quartile, 1.50. The non-driver group had a much smaller percentage in the fourth quarter: 13.6 per cent, or 18 of the 132 boys. Although the driver group was only 22.4 per cent of all ninth grade boys, in the fourth quarter 51.4 per cent of the boys were drivers. There were twice as many drivers in the fourth quarter as there would have been if they had been evenly distributed.

Quality point ratings above 2.704, the third quartile point, were earned by 40 boys; of these only 2 were drivers. Although 22.4 per cent of the ninth grade boys were drivers, only 5 per cent of the boys in the first quarter were drivers, four times less than the number that there would have been if they had been evenly distributed. Of 38 drivers, only 2, or 5.3 per cent, were in the first quarter. In comparison, of 132 non-drivers 38, or 28.8 per cent, were in the first quarter. Thus, more than 5 times the percentage of non-drivers than the percentage of drivers were in the first quarter. It is interesting to note that the drivers represented only 5 per cent of the boys in the first quarter but 51.4 per cent of the boys in the fourth quarter.

The null hypothesis was formulated asserting that the distribution of the quality point ratings of ninth grade drivers and non-drivers resulted by chance. The value of chi-square with three degrees of freedom was 21.8165. This

value of chi-square is significant at less than the .01 level;¹ consequently, the null hypothesis was rejected.

The mean quality point rating for all ninth grade boys was 2.11. The driver group had a mean quality point rating of 1.45. The non-driver group had a mean quality point rating of 2.30. Hence, the driver group earned an average of .85, or 36.96 per cent, fewer quality points than the non-driver group. The driver group was more than one-third less proficient scholastically than the non-driver group.

II. COMPARING THE QUALITY POINT RATINGS OF TENTH GRADE DRIVERS WITH TENTH GRADE NON-DRIVERS

The number and percentage of drivers and non-drivers in each quarter of the tenth grade are represented in Table III. Sixteen of the 36 drivers, or 44.4 per cent, were in the fourth quarter, having scores below the first quartile, 1.340. Less than half that percentage of non-drivers, 21.2 per cent, were in the fourth quarter. This represented 27 of the 128 non-drivers.

The driver group represented 22 per cent of the tenth grade boys, but contained 37.2 per cent of those in the

¹Quinn McNemar, Psychological Statistics (New York: John Wiley and Sons, Inc., 1949), pp. 350-351, abridged from Table IV of Fischer and Yates, Statistical Tables for Biological, Agricultural and Medical Research.

TABLE III

THE DISTRIBUTION OF TENTH GRADE DRIVERS AND TENTH GRADE
NON-DRIVERS ON THE BASIS OF QUALITY POINT RATINGS

QUARTER	DRIVERS		NON-DRIVERS	
	Number	Per cent of drivers	Number	Per cent of drivers
First	2	5.6	34	26.6
Second	8	22.2	34	26.6
Third	10	27.8	33	25.8
Fourth	16	44.4	27	21.2

fourth quarter.

Of the 36 drivers only 2 were in the first quarter, having quality point ratings above 2.668, the third quartile. This represents 5.6 per cent of the driver group, while 34 of the 128 non-drivers, or 26.6 per cent, were in the first quarter. Nearly five times the percentage of non-drivers were in the first quarter than were the percentage of drivers. Only 5.6 per cent of the boys in the first quarter were from the driver group; 94.4 per cent were non-drivers.

The null hypothesis was formulated asserting that the distribution of the quality point ratings of tenth grade drivers and non-drivers resulted by chance. The value of chi-square with three degrees of freedom was 13.7142. This value of chi-square is significant at less than the .01 level;² consequently, the null hypothesis was rejected.

The mean quality point rating for tenth grade boys was 2.02. While the mean quality point rating for the driver group was 1.52, for the non-driver group it was 2.15. The average inferiority in quality points earned by the driver group was .63. This is 29.3 per cent fewer than the quality points earned by the non-driver group.

²Ibid.

III. COMPARING THE QUALITY POINT RATINGS OF ELEVENTH GRADE DRIVERS WITH ELEVENTH GRADE NON-DRIVERS

The number and percentage of drivers and non-drivers in each quarter of the eleventh grade are represented in Table IV.

Of the 51 drivers, 26, or 51 per cent, were in the fourth quarter, with quality point ratings lower than 1.68, the first quartile. Three of the 65 non-drivers, or 4.6 per cent, were in the fourth quarter. Thus, more than ten times the percentage of boys from the driver group were in the fourth quarter than were the percentage of the non-driver group. Of the 29 boys in the fourth quarter, 26, or 82.7 per cent, were from that 44 per cent of the eleventh grade boys who were drivers. The remaining 17.3 per cent of the boys in the fourth quarter were from the 56 per cent who made up the non-driver group.

The first quarter was comprised of boys with quality point ratings above 2.6, the third quartile. Although the one boy with a 4.0 rating was a driver, only 5 drivers were among the 29 boys in the first quarter. This represented 9.8 per cent of the driver group and 17.2 per cent of the boys in that quarter. The 24 non-drivers in the first quarter represented 36.9 per cent of the non-drivers and 82.8 per cent of the boys in the first quarter.

TABLE IV

THE DISTRIBUTION OF ELEVENTH GRADE DRIVERS AND ELEVENTH GRADE
NON-DRIVERS ON THE BASIS OF QUALITY POINT RATINGS

QUARTER	DRIVERS		NON-DRIVERS	
	Number	Per cent of drivers	Number	Per cent of drivers
First	5	9.8	24	36.9
Second	12	23.5	15	23.1
Third	8	15.7	23	35.4
Fourth	26	51.0	3	4.6

The null hypothesis was formulated asserting that the distribution of the quality point ratings of eleventh grade drivers and non-drivers resulted by chance. The value of chi-square with three degrees of freedom was 39.0955. This value of chi-square is significant at less than the .01 level;³ consequently, the null hypothesis was rejected.

The mean quality point rating for eleventh grade boys was 2.09. The mean quality point rating for drivers was 1.68 and for non-drivers, 2.42. The average fewer quality points earned by drivers than those earned by non-drivers was .74, or 30.58 per cent.

IV. COMPARING THE QUALITY POINT RATINGS OF TWELFTH GRADE DRIVERS WITH TWELFTH GRADE NON-DRIVERS

The number and percentage of drivers and non-drivers in each quarter of the twelfth grade are represented in Table V.

The first quartile was a quality point rating of 1.60. Those boys whose quality point ratings were below this point were in the fourth quarter. Of the 37 drivers, 20, or 54.1 per cent, were in the fourth quarter; 6, or 9.4 per cent, of the non-drivers were also in the fourth quarter. Thus, more than five times the percentage of drivers were in the fourth

³Ibid.

TABLE V

THE DISTRIBUTION OF TWELFTH GRADE DRIVERS AND TWELFTH GRADE
NON-DRIVERS ON THE BASIS OF QUALITY POINT RATINGS

QUARTER	DRIVERS		NON-DRIVERS	
	Number	Per cent of drivers	Number	Per cent of drivers
First	0	0	25	39.0
Second	6	16.2	19	29.7
Third	11	29.7	14	21.9
Fourth	20	54.1	6	9.4

quarter than were the percentage of non-drivers. Seventy-six and nine-tenths per cent of the boys in the fourth quarter were from the 36.6 per cent of the boys who made up the driver group. Only 23.1 per cent were from the 63.4 per cent of the boys who made up the non-driver group.

All of the 25 boys who earned quality point ratings above the third quartile, 2.705, were non-drivers. Thirty-nine per cent of the non-drivers were in the first quarter, and the driver group was not represented. Seventy-six and nine-tenths per cent of all boys in the fourth quarter were drivers; this was 54.1 per cent of the driver group.

The null hypothesis was formulated asserting that the distribution of the quality point ratings of twelfth grade drivers and non-drivers resulted by chance. The value of chi-square with three degrees of freedom was 39.9228. This value of chi-square is significant at less than the .01 level;⁴ consequently, the null hypothesis was rejected.

The mean quality point rating for twelfth grade boys was 2.20. The mean quality point rating for twelfth grade drivers was 1.62, and for non-drivers it was 2.53. The drivers earned quality points on an average of .91, or 35.97 per cent, less than the non-drivers, a considerable deficiency.

⁴Ibid.

V. COMPARING THE SCHOLASTIC ACHIEVEMENT OF DRIVERS
WITH THAT OF NON-DRIVERS

The number and percentage of drivers and non-drivers are represented in Table VI.

Of the 162 drivers, 78, or 48.2 per cent, were in the fourth quarter, with quality point ratings below 1.486, the first quartile. Forty-nine, or 12.6 per cent, of the 389 non-drivers were in the fourth quarter. Thus, almost four times the percentage of drivers were in the fourth quarter than were the percentage of non-drivers. Sixty-one and four-tenths per cent of the boys in the fourth quarter were part of the 29.4 per cent of the boys who made up the driver group. Only 38.6 per cent of the boys in the fourth quarter were part of the 70.6 per cent of the boys who made up the non-driver group. Thus, the number of drivers in the fourth quarter was slightly more than twice that which there would have been if they had been evenly distributed; and the number of non-drivers in the fourth quarter was slightly more than half that which there would have been had they been evenly distributed.

The third quartile was 2.678; boys whose quality point ratings were above this were considered to be in the first quarter. The driver group was represented in the first quarter by 8, or 4.9 per cent, of its 162 members.

TABLE VI

THE DISTRIBUTION OF DRIVERS AND NON-DRIVERS ON THE
BASIS OF QUALITY POINT RATINGS

QUARTER	DRIVERS		NON-DRIVERS	
	Number	Per cent of drivers	Number	Per cent of drivers
First	8	4.9	120	30.9
Second	37	22.8	114	29.3
Third	39	24.1	106	27.6
Fourth	78	48.2	49	12.6

The non-driver group had 120, or 30.9 per cent, of its 389 members in the first quarter. Six and three-tenths per cent of the boys in the first quarter were part of the 29.4 per cent of the boys who made up the driver group, while 93.7 per cent of the boys in the first quarter were part of the 70.6 per cent of the boys who made up the non-driver group. Hence, the number of drivers in the first quarter was less than one-fourth of the number there would have been if there had been an even distribution. The percentage of non-drivers in the first quarter was almost fifteen times that of the drivers.

The null hypothesis was formulated asserting that the distribution of the quality point ratings of drivers and non-drivers resulted by chance. The value of chi-square with three degrees of freedom was 116.4514. This value of chi-square is significant at less than the .01 level;⁵ consequently, the null hypothesis was rejected.

The mean quality point rating for all boys was 2.09. The mean quality point rating for all drivers was 1.58, and for non-drivers it was 2.31. Drivers earned quality points at a rate of .73, or 31.60 per cent, less than non-drivers. This deficiency is best understood when it is noted that the difference between the first and second quartiles is .609,

⁵Ibid.

and the difference between the second and third quartiles is .583. Since the deficiencies denoted are .121 and .147 respectively, it can be asserted that more than one-fourth of the cases would lie within the .73 divergence.

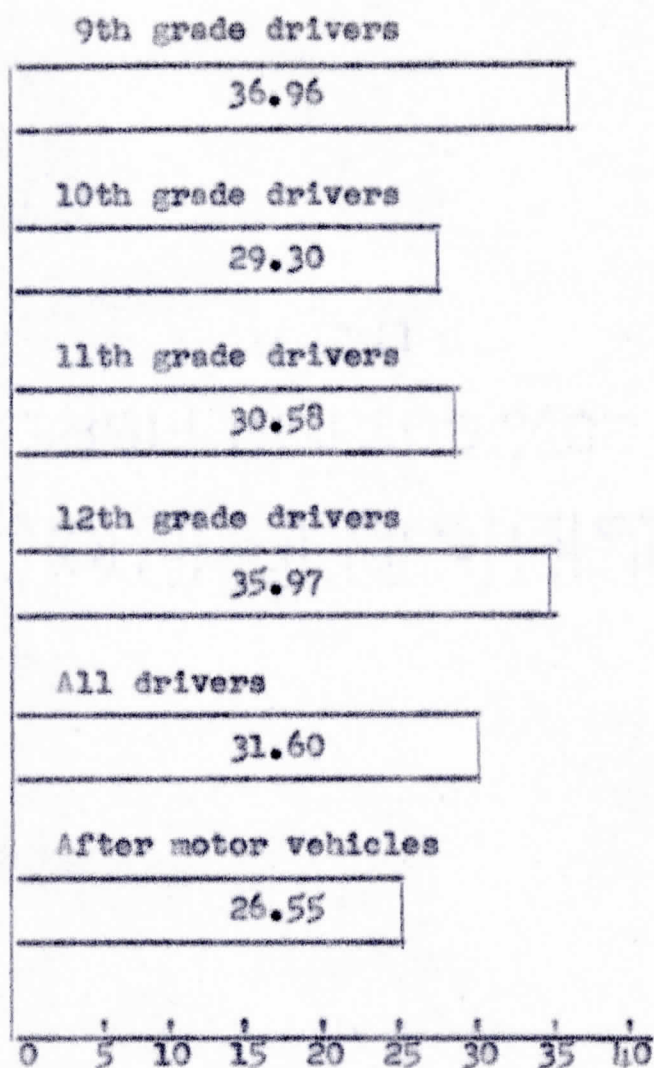
The similarity of the data in each grade is of consequence. These data have been expressed, therefore, as quotients depicting affinity in terms of percentages. Each quotient was developed in the following manner: Using a group of figures A, B, and C, the percentage that A varied from B was computed by dividing their numerical difference by A and multiplying the resulting quotient by 100. This process was repeated for A from C, B from A, B from C, C from A, and C from B. The resulting quotients were summed and divided by the number of quotients. This rendered in percentage form an expression of deviation, which was subtracted from 100 per cent to supply the desired quotient.

By so comparing each figure to each of the others the quotient evolving becomes a composite of these comparisons and represents the percentage to which the components are similar. Hence, the affinity quotient.

The degrees to which drivers earned fewer quality points than non-drivers earned are represented in Figure 1.

These expressions were compared, revealing that:

(1) the mean variation of the numerical expressions of deviation was .158; (2) the mean variation of the percentage



Percentage Fewer Quality Points Earned

FIGURE 1

PERCENTAGE FEWER QUALITY POINTS EARNED BY DRIVERS THAN BY NON-DRIVERS, AND THE PERCENTAGE FEWER QUALITY POINTS EARNED BY DRIVERS AFTER ACQUIRING A MOTOR VEHICLE THAN EARNED BEFORE ACQUIRING A MOTOR VEHICLE

expressions of deviation was 4.73; (3) the affinity quotient for the numerical expressions of deviation was 79.78 per cent; and (4) the affinity quotient for the percentage expressions of deviation was 85.76 per cent.

Of ninth grade drivers 50 per cent were in the fourth quarter, as were 44.4 per cent of tenth grade drivers, 51 per cent of eleventh grade drivers, and 54.1 per cent of twelfth grade drivers. Figure 2 depicts the percentage of drivers and non-drivers who were in the fourth quarter of each class. Approximately half of the driver group in each grade was in the fourth quarter of that group. The mean deviation of these percentages was 4.93, and the affinity quotient was 89.68 per cent.

Of ninth grade drivers only 5.3 per cent were in the first quarter, as were 5.6 per cent of the tenth grade drivers, 9.8 per cent of the eleventh grade drivers, and none of the twelfth grade drivers. Figure 3 depicts the percentage of drivers and non-drivers who were in the first quarter of each class. In no grade were 10 per cent of the drivers in the first quarter. The mean variation of these percentages was 4.95. With no twelfth grade drivers in the first quarter, the affinity quotient could not be computed.

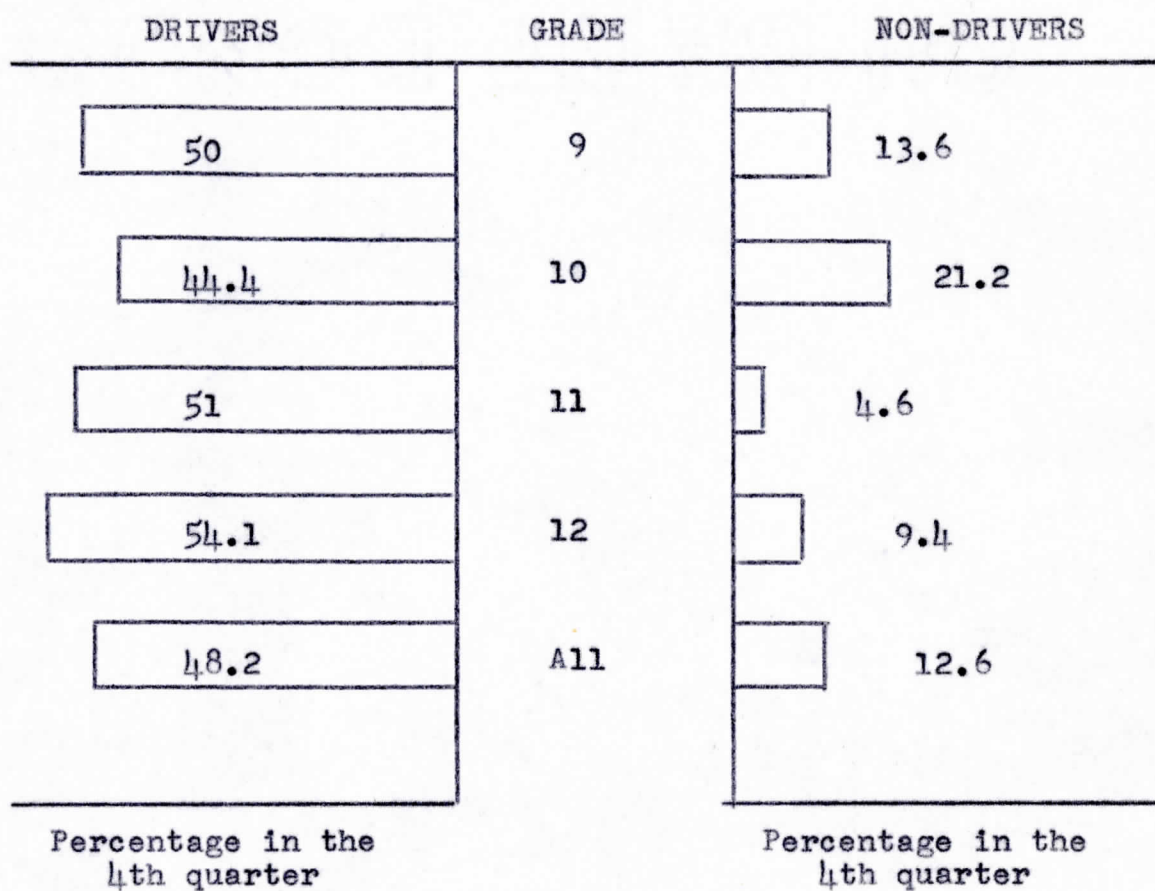


FIGURE 2

THE PERCENTAGE OF DRIVERS AND NON-DRIVERS IN
THE FOURTH QUARTER OF EACH CLASS

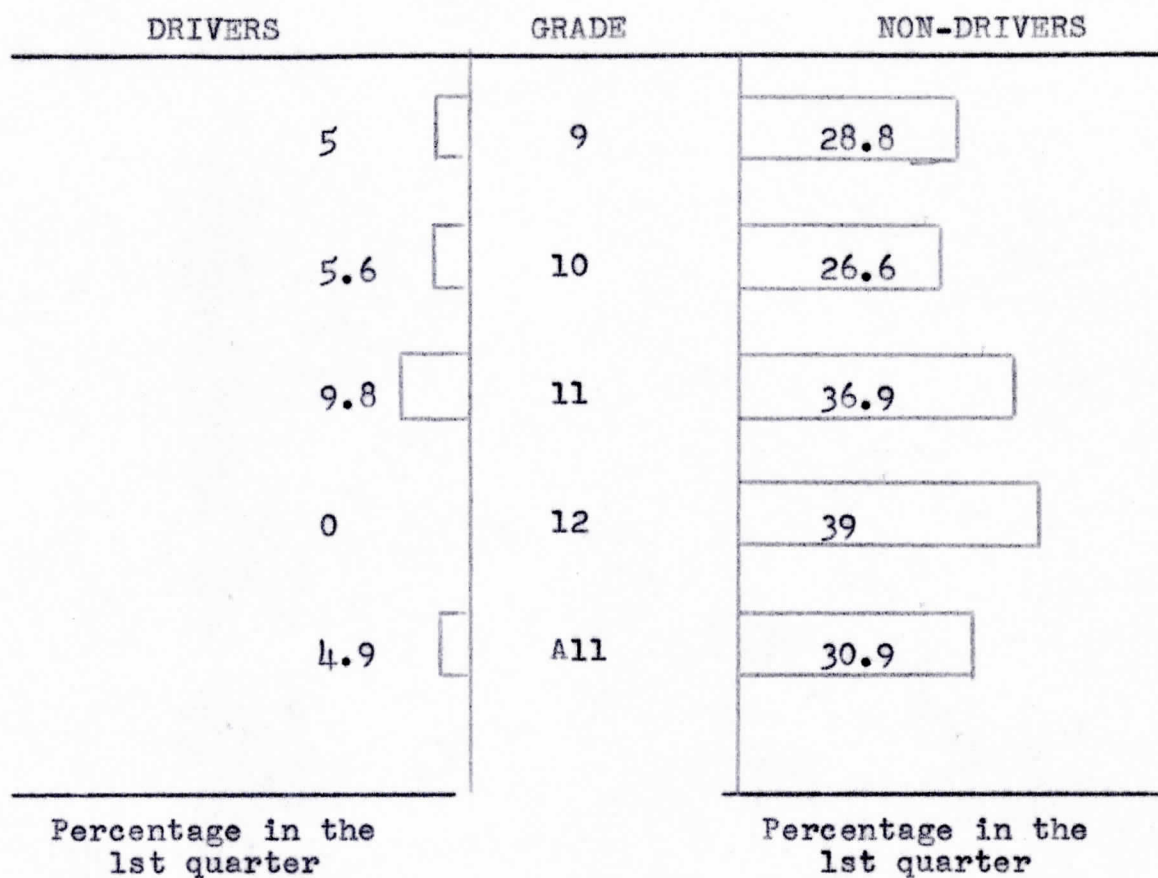


FIGURE 3

THE PERCENTAGE OF DRIVERS AND NON-DRIVERS IN
THE FIRST QUARTER OF EACH CLASS

VI. THE QUALITY POINT RATING OF DRIVERS AFTER ACQUIRING
A MOTOR VEHICLE COMPARED WITH THE QUALITY POINT RATING
OF DRIVERS BEFORE ACQUIRING A MOTOR VEHICLE

Table VII shows the number and percentage of drivers losing and gaining scholastically, by degree, after acquiring a motor vehicle. Table VIII shows the number and percentage of drivers losing and gaining scholastically, by percentage, after acquiring a motor vehicle.

Quality point ratings, before and after acquiring a motor vehicle, were developed for the 135 drivers whose records included grades earned before acquiring a motor vehicle.

To facilitate the presentation of these data, the quality point average developed for a boy on the basis of his grades before acquiring a motor vehicle will be referred to as the "quality point rating before"; the quality point rating developed from the grades earned after acquiring a motor vehicle will be referred to as the "quality point rating after."

One hundred and twenty drivers, or 88.89 per cent, showed a loss in quality point rating after, while 13 drivers, or 9.63 per cent, showed a gain in quality point rating after. The remaining 2 boys maintained the same quality point rating.

TABLE VII

DRIVERS LOSING AND GAINING AFTER ACQUIRING A MOTOR VEHICLE,
AND THE VALUE IN QUALITY POINTS OF THESE VARIATIONS
FROM THE QUALITY POINT RATINGS EARNED BEFORE
ACQUIRING A MOTOR VEHICLE

DEGREE OF VARIATION	DRIVERS GAINING		DRIVERS LOSING	
	Number	Per cent	Number	Per cent
2.21-2.40			1	.74
2.01-2.20			1	.74
1.81-2.00			3	2.22
1.61-1.80				
1.41-1.60			2	1.48
1.21-1.40			5	3.71
1.01-1.20			21	15.56
.81-1.00	1	.74	17	12.59
.61- .80	3	2.22	18	13.33
.41- .60	1	.74	20	14.82
.21- .40	3	2.22	17	12.59
.01- .20	5	3.71	15	11.11
No variation	2	1.48	2	1.48

TABLE VIII

DRIVERS LOSING AND GAINING AFTER ACQUIRING A MOTOR VEHICLE,
AND THE VALUE IN PERCENTAGE OF THESE VARIATIONS
FROM THE QUALITY POINT RATINGS EARNED BEFORE
ACQUIRING A MOTOR VEHICLE

PERCENTAGE OF VARIATION	DRIVERS GAINING		DRIVERS LOSING	
	Number	Per cent	Number	Per cent
90.01-100.00				
80.01- 90.00	1	.74	3	2.22
70.01- 80.00	1	.74	1	.74
60.01- 70.00			10	7.41
50.01- 60.00	1	.74	8	5.92
40.01- 50.00	1	.74	18	13.33
30.01- 40.00			19	14.08
20.01- 30.00	1	.74	27	20.00
10.01- 20.00	2	1.48	15	11.11
.01- 10.00	6	4.45	19	14.08

The mean quality point rating before was 2.26; the mean quality point rating after was 1.66. The average loss after was .60. The average loss after was 82.19 per cent of the mean fewer quality points earned by drivers than the quality points earned by non-drivers. The percentage loss after was 84.02 of the average percentage fewer quality points earned by drivers than by non-drivers.

The average quality point loss after was 19.15 per cent. A loss after of 20 per cent or more was displayed by 65.93 per cent of the drivers. Seventeen and four-hundredths per cent of the drivers showed a loss after of 50 per cent or more. Thus, approximately two-thirds of the drivers were performing 20 per cent below the level at which they had performed before acquiring a motor vehicle. Nearly one out of five, 17.04 per cent, was performing at less than half of his previous efficiency, and nearly 90 per cent were performing below their previous level.

VII. THE INTELLIGENCE QUOTIENTS OF DRIVERS COMPARED WITH SCHOLASTIC ACHIEVEMENT

Table IX shows the distributions by quarters of three categories of drivers: those with sub-normal I. Q.'s; those with normal I. Q.'s; and those with super-normal I. Q.'s, as determined by the Otis Quick-Scoring Intelligence Test.

Of the 147 drivers for whom Otis Quick-Scoring

TABLE IX

THE INTELLIGENCE QUOTIENTS OF DRIVERS AS INDICATED BY THE
 OTIS QUICK-SCORING INTELLIGENCE TEST, WITH
 THE SCHOLASTIC STANDING BY QUARTERS

Quarter	Sub-normal 89 and below	Normal 90-110	Super-normal 111 and above
First	0	2	5
Second	0	27	8
Third	3	22	10
Fourth	9	50	11
Totals	12	101	34

Intelligence Test scores were available, 12 had sub-normal I. Q.'s of 89 or below; 101 had normal I. Q.'s of 90 to 110; and 34 had super-normal I. Q.'s of 111 or above. This indicated that the driver group was at least normal in I. Q.

Five of the 7 drivers in the first quarter were among the 34 with super-normal I. Q.'s. Two of the 101 drivers with normal I. Q.'s and none of the drivers with below normal I. Q.'s were in the first quarter.

Nine of the 12 drivers with sub-normal I. Q.'s were in the fourth quarter; the other 3 were in the third quarter. Hence, none of the drivers with sub-normal I. Q.'s were in the upper half, while only 2 of the 101 drivers with normal I. Q.'s were in the first quarter and 50, or 25 times as many, were in the fourth quarter. Five of 34 drivers who had super-normal I. Q.'s attained the first quarter, while 11, or more than twice as many, were in the fourth quarter.

VIII. ELECTIVE SUBJECTS CHOSEN BY DRIVERS

Table X shows the number of electives which drivers chose, by subject and grade. The electives chosen by drivers were classified as academic, including mathematics, foreign language, science, and social studies, and non-academic, including all other electives. English could not be elected since it is required each year.

TABLE X

SUBJECTS ELECTED BY DRIVERS IN EACH GRADE

SUBJECT AREA	GRADE				All
	9	10	11	12	
Non-academic areas					
Agriculture	15	17	31	22	85
Art	5	8	41	31	85
Band	3	11	22	32	68
Bookkeeping			1	5	6
Chorus	1	1	3	7	12
Diversified Training			3	7	10
Dramatics				7	7
Grafic Arts	1	8	24	8	41
Journalism			1		1
Physical Education			36	51	87
R. O. T. C.			4		4
Shop	10	19	34	37	100
Study Hall	8	22	60	61	151
Typing		9	30	24	63
Totals	43	95	290	292	720
Academic areas					
French		1	1		2
German			1		1
Spanish	4	3	13	8	28
Latin	1	5	6	13	25
Mathematics			25	28	53
Science		13	38	37	88
Social Studies		20	19	13	52
Totals	5	42	103	97	247
Total frequencies	48	137	393	389	967

Of 967 possible choices, 247, or 25.54 per cent, were made in the academic areas. Almost three-fourths of the choices were exercised in the non-academic areas.

IX. SCHOOL HOURS LOST BECAUSE OF INJURIES SUSTAINED
WHILE OPERATING MOTOR VEHICLES

Table XI shows the number of drivers injured while operating motor vehicles, and the days, hours, and periods of physical education lost because of these injuries. The data are classified into that which concerned motor scooter drivers and that which concerned automobile drivers. It is presented by grades. Table XII presents the following data concerning injuries sustained while operating motor scooters and injuries sustained while operating automobiles: (1) number injured, (2) percentage injured, (3) total hours lost, (4) mean hours lost per driver, (5) total days lost, (6) mean days lost per student, and (6) the percentage of the school year lost.

Six hours or six periods of physical education were considered to constitute one school day.

Of the 87 motor scooter owners, 64, or 73.68 per cent, were injured during the 1958-1959 school year, losing a total of 2205 school hours, or an average of 25.34 hours per student. The 2205 hours lost are equivalent to 367.5 school days, actually more than two school years.

TABLE XI

INJURIES AND TIME LOST IN EACH GRADE BY DRIVERS,
MOTOR SCOOTER DRIVERS, AND AUTOMOBILE DRIVERS

	GRADE				Total
	9	10	11	12	
MOTOR SCOOTER DRIVERS					
Number of drivers	34	23	24	6	87
Number injured	26	15	20	3	64
Days lost	159	37	83	15	294
Periods of physical education lost	141	26	269	5	441
Hours lost	1095	248	767	95	2205
AUTOMOBILE DRIVERS					
Number of drivers	4	13	27	31	75
Number injured	2	3	9	11	25
Days lost	5	13	39	32	89
Periods of physical education lost	0	0	15	204	219
Hours lost	30	78	249	396	753
ALL DRIVERS					
Number of drivers	38	36	51	37	162
Hours lost	1125	326	1016	491	2958
Mean hours lost	29.36	9.06	19.92	13.70	18.26

TABLE XII
INJURIES AND TIME LOST BY MOTOR SCOOTER DRIVERS AND AUTOMOBILE DRIVERS

Type of vehicle	Number of drivers	Number injured	Per cent injured	Hours lost	Mean hours lost	Days lost	Mean days lost	Per cent of school year lost
Motor scooters	87	64	73.68	2205	25.34	367.5	4.22	2.34
Automobiles	75	25	33.33	753	10.04	125.5	1.67	.01
Totals	162	89	54.32	2958	18.26	493	3.04	1.69

Twenty-five of the 75 automobile drivers, or 33.33 per cent, were injured during the 1958-1959 school year. The mean hours lost per automobile driver was 10.04.

The total driver group averaged 18.26 hours lost per driver.

X. COMPARING MOTOR SCOOTER DRIVERS WITH AUTOMOBILE DRIVERS

Table XII, page 55, shows that 73.68 per cent of the motor scooter drivers and 33.33 per cent of the automobile drivers were injured during the 1958-1959 school year. The mean hours lost by motor scooter drivers was 25.34 and by automobile drivers it was 10.04.

Table XIII shows that the mean I. Q. for motor scooter drivers was 104.7, while that for automobile drivers was 103.9.

Table XIV compares the quality point ratings of motor scooter drivers before and after acquiring a motor scooter with those of automobile drivers earned before and after acquiring an automobile. It shows that 64 of 69 motor scooter drivers and 58 of 66 automobile drivers had lower quality point ratings after acquiring a motor vehicle. The percentage of motor scooter drivers losing was 92.75 per cent, while 87.88 per cent of automobile drivers had lower quality point ratings after acquiring a motor vehicle.

TABLE XIII

INTELLIGENCE QUOTIENTS, IN EACH GRADE, OF DRIVERS,
MOTOR SCOOTER DRIVERS, AND AUTOMOBILE DRIVERS

GRADE	MOTOR SCOOTER DRIVERS		AUTOMOBILE DRIVERS		ALL DRIVERS	
	Number	Mean IQ	Number	Mean IQ	Number	Mean IQ
9	32	102.8	4	102.5	36	102.8
10	20	108.1	12	102.4	32	106.0
11	21	105.0	26	105.8	47	105.4
12	4	102.0	28	102.9	32	102.8
All	77	104.7	70	103.9	147	104.3

TABLE XIV

THE DRIVERS WHOSE QUALITY POINT RATINGS VARIED
AFTER ACQUIRING A MOTOR VEHICLE

Drivers	Motor scooter drivers	Automobile drivers
Total number of drivers	69	66
Number losing	64	58
Number gaining	5	8
Mean loss	.74	.47
Per cent losing	92.75	87.88

Table XV shows the percentage and number of motor scooter drivers and automobile drivers in each quarter of a frequency distribution of the quality point ratings of drivers. The motor scooter drivers were almost equally distributed, with 23 per cent of their number in the first quarter and 27.6 per cent in the fourth quarter being the extremes. Thirty-three and thirty-three hundredths per cent of the automobile drivers were in the first quarter, and 14.7 per cent were in the fourth quarter.

The null hypothesis was formulated asserting that the distribution of the quality point ratings of motor scooter drivers and automobile drivers resulted by chance. The value of chi-square was 5.9721. This value of chi-square was not significant at the .01 level; therefore, the null hypothesis was not rejected.

Table XVI shows that the mean quality point rating of automobile drivers, 1.66, was .16, or 9.6 per cent, superior to the mean quality point rating of the motor scooter drivers.

TABLE XV

THE DISTRIBUTION OF MOTOR SCOOTER DRIVERS AND AUTOMOBILE DRIVERS ON THE BASIS OF A FREQUENCY DISTRIBUTION OF THE QUALITY POINT RATINGS OF ALL DRIVERS

QUARTER	MOTOR SCOOTER DRIVERS		AUTOMOBILE DRIVERS	
	Number	Per cent	Number	Per cent
First	20	23.0	25	33.3
Second	23	26.4	16	21.3
Third	20	23.0	23	30.7
Fourth	24	27.6	11	14.7

TABLE XVI

THE MEAN QUALITY POINT RATING AND THE PERCENTAGE OF MOTOR SCOOTER DRIVERS AND AUTOMOBILE DRIVERS IN EACH GRADE

GRADE	MOTOR SCOOTER DRIVERS			AUTOMOBILE DRIVERS		
	Number	Mean QPR	Per cent	Number	Mean QPR	Per cent of each grade
9	34	1.37	39.08	4	2.05	5.33
10	23	1.67	26.44	13	1.26	17.33
11	24	1.52	27.59	27	1.81	36.00
12	6	1.50	6.89	31	1.65	41.33
ALL	87	1.50	100.00	75	1.66	100.00

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

I. SUMMARY

Summary of the introduction. American boys in ever increasing numbers are gaining ready access to motor vehicles. Attention is therefore directed to the effect that possession of motor vehicles might have on the activities of boys.

The 551 boys at South Dade High School, Homestead, Florida, were studied during the 1958-1959 school year. The purpose of the study was to determine the degree of relationship, if any, between ready access to motor vehicles and the scholastic achievement of the boys.

Summary of the related literature. The literature reviewed seemed to indicate that extra-scholastic interests and activities did affect scholastic achievement, and that students displayed great interest in motor vehicles.

Two studies of the relationship of automobile driving to scholastic achievement have been conducted of note.

Nelson conducted an informal study during the 1957-1958 school year at Madison High School in Rexburg, Idaho. The results were as follows:

1. No A student drove to school.
2. Fifteen per cent of the B students drove to school.
3. Forty-one per cent of the C students drove to school.
4. Seventy-one per cent of the D students drove to school.
5. Eighty-three per cent of the F students and drop-outs drove to school.¹

The most extensive study of the problem was done by Sharp, during the 1954-1955 school year, at the Selma Union High School in Selma, California. Driving to school twice a week was the criterion for grouping the students. Grouping boys who drove to school twice a week with boys who had ready access to automobiles does not seem advisable. Sharp summarized by stating that there may not be a significant difference between the driver and non-driver groups, although the non-driver group showed some superiority.²

Summary of the procedure. The boys were classified by placing those who had ready access to a motor vehicle in the driver group and all others in a non-driver group. There

¹The Citizen's Law Enforcement Council of Rexburg, Idaho, Help Promote Self-Discipline and Respect for Authority by Cooperating with Citizen's Law Enforcement Council and Rexburg Youth Congress (Rexburg, 1958).

²Selby S. Sharp, "A Survey of Student Use of Automobiles and the Effects upon Certain Factors of the School Adjustment of Male Students at the Selma Union High School, Selma, California" (unpublished Master's thesis, Fresno State College, Fresno, 1956), pp. 56-58.

were 162 boys in the driver group and 389 in the non-driver group. Comparisons of scholastic achievement were made on each grade level and with the total group. The criterion used to determine the level of scholastic achievement was the quality point rating during the first semester of the 1958-1959 school year.

The quality point rating was also applied to a comparison of the scholastic achievement of drivers before and after acquiring motor vehicles. Injuries incurred by drivers while operating motor vehicles, school time lost because of these injuries, intelligence quotients of drivers, and the degree to which drivers elect courses from the major academic subject areas were computed. The motor scooter drivers were compared with automobile drivers on the basis of (1) quality point rating during the first semester of the 1958-1959 school year; (2) the difference between the quality point ratings before and the quality point ratings after acquiring motor scooters or automobiles; (3) intelligence quotients; (4) injuries incurred while operating motor vehicles; and (5) time lost because of these injuries.

Summary of the data important to the conclusions.

A. Ninth grade boys

1. There were 170 boys, 38 drivers and 132 non-drivers.
2. Five and three-tenths per cent of the drivers and 28.8 per cent of the non-drivers were in the first

quarter of the class scholastically.

3. Fifty per cent of the drivers and 13.6 per cent of the non-drivers were in the fourth quarter of the class scholastically.
4. The data concerning the distribution of drivers and non-drivers scholastically among the several quarters of the class were significant at the .001 level.
5. The mean of quality points earned by drivers was .85, or 36.96 per cent, less than the non-drivers.

B. Tenth grade boys

1. There were 164 boys, 36 drivers and 128 non-drivers.
2. Five and six-tenths per cent of the drivers and 26.6 per cent of the non-drivers were in the first quarter.
3. Forty-four and four-tenths per cent of the drivers and 21.2 per cent of the non-drivers were in the fourth quarter.
4. The data concerning the distribution of drivers and non-drivers scholastically among the several quarters of the class were significant at the .01 level.
5. The mean of the quality points earned by drivers was .63, or 29.3 per cent, less than non-drivers.

C. Eleventh grade boys

1. There were 116 boys, 51 drivers and 65 non-drivers.
2. Nine and eight-tenths per cent of the drivers and

36.9 per cent of the non-drivers were in the first quarter of the class scholastically.

3. Fifty-one per cent of the drivers and 4.6 per cent of the non-drivers were in the fourth quarter of the class scholastically.
4. The data concerning the distribution scholastically of drivers and non-drivers among the quarters of the class were significant on the .001 level.
5. The mean of the quality points earned by drivers was .74, or 30.58 per cent, less than non-drivers.

D. Twelfth grade boys

1. There were 101 boys, 37 drivers and 64 non-drivers.
2. None of the drivers and 39 per cent of the non-drivers were in the first quarter of the class scholastically.
3. Fifty-four and one-tenth per cent of the drivers and 9.4 per cent of the non-drivers were in the fourth quarter of the class scholastically.
4. The data concerning the distribution of drivers and non-drivers scholastically among the several quarters of the class were significant at the .001 level.
5. The mean of the quality points earned by drivers was .91, or 35.97 per cent, less than the non-drivers.

E. All boys

1. There were 551 boys, 162 drivers and 389 non-drivers.
2. Four and nine-tenths per cent of the drivers and 30.9 per cent of the non-drivers were in the first quarter of the class scholastically.
3. Forty-eight and two-tenths per cent of the drivers and 12.6 per cent of the non-drivers were in the fourth quarter of the class scholastically.
4. The data concerning the distribution of drivers and non-drivers scholastically among the several quarters of the class were significant at the .001 level.
5. The mean of quality points earned by drivers was .73, or 31.6 per cent, less than the non-drivers.

F. The scholastic achievement of drivers before and after acquiring a motor vehicle.

1. Eighty-eight and eighty-nine hundredths per cent of the drivers showed a lower quality point rating after acquiring a motor vehicle than before.
2. The mean loss in quality point rating after acquiring a motor vehicle was .60.

G. Other facts about drivers

1. Of 147 drivers for whom Otis Quick-Scoring Intelligence Test scores were available, 12 had sub-normal I. Q.'s of 89 or below; 101 had normal I. Q.'s of 90

to 110; and 34 had super-normal I. Q.'s of 111 or above.

2. The mean I. Q. for the 147 drivers for whom Otis Quick-Scoring Test scores were available was 104.3.
3. The driver group used only 25.54 per cent of its possible elections to choose courses from the major academic areas.
4. Fifty-four and thirty-two hundredths per cent of all drivers were injured during the 1958-1959 school year while operating motor vehicles.
5. Injuries to drivers caused a mean loss in school time of 18.26 hours.

H. Comparing motor scooter drivers with automobile drivers

1. Twenty-three per cent of the motor scooter drivers and 33.3 per cent of the automobile drivers were in the first quarter of a frequency distribution of the quality point ratings for all drivers.
2. Twenty-seven and six-tenths per cent of the motor scooter drivers and 14.7 per cent of the automobile drivers were in the fourth quarter of a frequency distribution of the quality point ratings for all drivers.
3. The data concerning the distribution of motor scooter drivers and automobile drivers scholastically

among the several quarters of the driver group were only significant at the .20 level.

4. The mean advantage in quality point ratings for automobile drivers over motor scooter drivers was .16.
 5. Thirty-three and thirty-three hundredths per cent of automobile drivers and 73.68 per cent of the motor scooter drivers were injured during the 1958-1959 school year while operating these vehicles.
 6. The mean hours lost because of injuries incurred while operating motor vehicles during the 1958-1959 school year was 25.35 for motor scooter drivers and 10.04 for automobile drivers.
- I. The relationship of the data on the several grade levels
1. The percentage of drivers in the first quarter of each grade was as follows: (a) ninth grade, 5.3; (b) tenth grade, 5.6; (c) eleventh grade, 9.8; and (d) twelfth grade, 0.
 2. The percentage of drivers in the fourth quarter of each grade was as follows: (a) ninth grade, 50; (b) tenth grade, 44.4; (c) eleventh grade, 51; and (d) twelfth grade, 54.1.
 3. The percentage of fewer quality points earned by drivers than earned by non-drivers in each grade was as follows: (a) ninth grade, 36.96; (b) tenth

grade, 29.30; (c) eleventh grade, 30.58; and (d) twelfth grade, 35.97.

4. The affinity quotient for the expressions of deviation was as follows: (a) numerical, 79.78 per cent; and (b) percentage, 85.76 per cent.

J. The means: A hypothetical average driver with all of the mean characteristics of the driver group would:

1. Earn quality points at a rate 31.60 per cent fewer than the average boy.
2. Earn quality points at a rate 26.55 per cent lower than he had earned before acquiring a motor vehicle.
3. Have missed 18.26 hours of school during the 1958-1959 school year because of injuries sustained while operating a motor vehicle.
4. Have an I. Q. of 104.3.

II. CONCLUSIONS

The conclusions were formulated with full regard for the limitations of the study.

1. Ninth grade boys who possessed motor vehicles did not achieve so well scholastically as ninth grade boys who did not possess motor vehicles.
2. Tenth grade boys who possessed motor vehicles did not achieve so well scholastically as tenth grade boys who did not possess motor vehicles.

3. Eleventh grade boys who possessed motor vehicles did not achieve so well scholastically as eleventh grade boys who did not possess motor vehicles.
4. Twelfth grade boys who possessed motor vehicles did not achieve so well scholastically as twelfth grade boys who did not possess motor vehicles.
5. Boys who possessed motor vehicles did not achieve so well scholastically as boys who did not possess motor vehicles.
6. Boys who possessed motor vehicles did not achieve so well scholastically as they had before they acquired these vehicles.
7. Boys who possessed motor scooters lost a significant number of school hours because of injuries sustained while operating motor scooters.
8. Boys who possessed automobiles did not lose a significant number of school hours because of injuries sustained while operating automobiles.
9. The difference between automobile drivers and motor scooter drivers in school time lost because of injuries sustained while operating motor vehicles precluded any conclusion concerning the driver group and school time lost because of injuries sustained while operating motor vehicles.
10. There were not significant differences between the scholastic achievement of boys who possessed motor

scooters and that of boys who possessed automobiles.

11. Boys who possessed motor vehicles did not achieve scholastically at the level that their Otis Quick-Scoring Intelligence Test scores indicated they might.
12. Boys who possessed motor vehicles elected only one academic course with each four choices.
13. The driver group had a mean intelligence quotient within the normal range; however, in every class more than 44 per cent of the drivers were in the fourth quarter of the class scholastically.

There is a great similarity between the deficiencies in quality point ratings of boys who possessed motor vehicles and boys who did not possess motor vehicles. The percentage of fewer quality points earned by boys who possessed motor vehicles than earned by the same boys before they possessed motor vehicles closely resembles the percentage of fewer quality points earned by boys who possessed motor vehicles than earned by boys who did not possess motor vehicles. This consistency is the basis for the principal conclusion of this study: Boys who possess motor vehicles at South Dade High School cannot be expected to achieve

scholastically so well as boys who do not possess motor vehicles.

III. RECOMMENDATIONS FOR FURTHER STUDY

This study revealed a need for investigation of the following questions:

1. Does possession of a motor vehicle affect the mode of living of teenage boys?
2. Is there a relationship between possession of motor vehicles and boys dropping out of school?
3. Is there a relationship throughout the nation between possession of a motor vehicle and the scholastic achievement of high school boys?
4. Is there a relationship between possession of a motor vehicle and the program of courses elected by high school boys?
5. Is the safety of high school boys impaired by possession of motor scooters?
6. Are there conditions under which a boy may possess a motor vehicle without adverse effect upon scholastic achievement?
7. To which socio-economic groups do the boys who possess motor vehicles belong?
8. Is there a relationship between possession of a motor vehicle and participation in extracurricular activities?

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APPENDIX

THE QUESTIONNAIRE

Name

Grade

A. Check one of the following:

I own an automobile. _____

I own a motor scooter. _____

I own a motorcycle. _____

I do not own a motor
vehicle. _____

B. What was the date when you first acquired a motor vehicle?

C. Have you been injured in a motor vehicle?

YES _____ NO _____

D. Answer only if your answer to the preceding was YES.

1. How many days of school have you missed because of
this injury? _____2. How many days of physical education have you missed
because of this injury? _____

SPECIAL INSTRUCTIONS GIVEN WITH THE QUESTIONNAIRE

1. This survey is being done in an attempt to discover the effect, or lack of effect, of motor vehicle ownership upon the school work of students. Your name will not be used and once your records have been looked up you will be referred to by number, such as student number one or student number ten. I am not going to check to see if you have a license, or make any report to the police or school authorities.

2. Please do not fill in any section of this form until you are directed to do so.

3. Please print your name and grade in the spaces designated.

4. In filling in section A, I am not concerned with the name under which the vehicle is registered, but with the person who uses the vehicle. Even if the car or scooter is in your parents' name, if you use it whenever you wish and without asking permission, then check the line which indicates that you own it. If you have any doubt, please raise your hand and I will check with you.

5. If you do not own a motor vehicle, please do not fill in any of the remaining sections.

6. Indicate next to question B the date you first acquired a motor vehicle. If you have owned more than one, put

down the date when you acquired the first vehicle. Be as accurate as you can with the date. If you know the month, put it down. If you remember only the season, put it down. If you can remember only the year, put that down.

7. Check "yes" only if you were injured during this school year to the extent that you required first aid, or the injury interfered with your normal activities.

8. If you have missed any days of school because of these injuries, please put the number of days in D-one.

9. If you have been excused from physical education classes because of these injuries, please write the number of days that you were excused in D-two.

THE RECORDING VEHICLE

Name

School

Homeroom

Birth Date

Scooter _____

Automobile _____

Date Acquired _____

Injured:

Yes _____

No _____

School Missed:

Days _____

Physical Ed. Missed:

Days _____

STANDARD TEST RESULTS

Test	Date	Grade	C. A.	M. A.	I. Q.
S A T					
Verbal					
Quantitative					
Total					
Otis Quick-Scoring					
California T. M. M.					

THE RECORDING VEHICLE (cont'd)

Subject	GRADE 7		GRADE 8	
	Mark	Cit.	Mark	Cit.
Arithmetic				
Basic Ed.				
English				
Social Studies				
Science				
Physical Education				
Music				
Art				
Speech				
Ind. Arts				
Home Ec.				
Mech. Draw.				
Spanish				
Band				

Subject	9a	G	C	Subject	9b	G	C
English				English			
Mathematics				Mathematics			
Science				Science			
History				History			
Agriculture				Agriculture			
Physical Ed.				Physical Ed.			
Conduct				Conduct			

THE RECORDING VEHICLE (cont'd)

SUBJECT	G C	SUBJECT	G C
	10a		10b
English		English	
Mathematics		Mathematics	
Science		Science	
History		History	
Agriculture		Agriculture	
Physical Ed.		Physical Ed.	
Conduct		Conduct	
	11a		11b
English		English	
Mathematics		Mathematics	
Science		Science	
History		History	
Agriculture		Agriculture	
Physical Ed.		Physical Ed.	
Conduct		Conduct	
	12a		12b
English		English	
Mathematics		Mathematics	
Science		Science	
History		History	
Agriculture		Agriculture	
Physical Ed.		Physical Ed.	
Conduct		Conduct	