A STUDY OF THE VALUE OF DRIVER EDUCATION

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PREFACE

Driver Education is a very popular course in some school districts in Oklahoma. The demand for the course by the students has caused several school districts to offer the course as part of the summer program in addition to the regular school terms. The opinion of the educators in such school districts is generally that driver education is essential to the well-being of the student, and its results are an economical asset to the community. However, there are some school districts whose educators are adamantly opposed to driver education and consider it only as an extra-curricular activity. The school districts, in these cases, permit driver education to be taught only after school hours and not as a part of the regular program. This conflict in values led to the purpose of this study. The purpose was to discover the value of a course in driver education in terms of its educational contributions.

Several persons displayed interest and provided assistance in the completion of this study. I am especially appreciative and grateful for the valuable guidance and diligent assistance of my thesis adviser, Dr. J. Paschal Twyman. I am also grateful for the counsel and interest of my doctoral committee advisers, Dr. Helmer E. Sorenson, Dr. Solomon Sutker, and Dr. Richard P. Jungers. Indebtedness is acknowledged to the members of the Driver and Traffic Safety staff of the Oklahoma City and Stillwater school systems for their assistance in administering the tests; to Mr. Edgar Butler and others of the Computing Center for processing the data; and to Dr. J. Connor Fitzgerald for his patience and insistence.

I express my deepest gratitude and appreciation to my wife, Evelyn, whose devotion and encouragement throughout the study made it possible; to my son and daughter, I thank them for foresaking the fatherless hours.

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CHAPTER I

THE PROBLEM

Traffic accidents in Oklahoma are increasing annually. The past two years have been record years for traffic fatalities with 709 in 1962 and 750 in 1963. The probability that the number of traffic accidents will continue to rise is magnified by the influx of new drivers and motor vehicles on the state's streets and highways.

The upward trend in traffic accidents is not only in Oklahoma but is nationwide. There are an estimated 76 million registered vehicles on the nation's roads today with 87 million licensed drivers.[1] Every eight seconds, according to the American Automobile Association, a potential driver is born who will take his place upon the streets and highways.[2] Though there are thousands of miles of secondary and primary roads in the United States, the problems of controlling the vehicles are increasing.

Organizations representing the three E's of accident prevention (education, enforcement, and engineering) are constantly seeking solutions to the problem. Enforcement officials have experimented with various techniques of preventing highway accidents. North Carolina has used a concentrated area technique, in cooperation with the State Department of Highways, in which manpower and equipment are concentrated in force in an effort to reduce accidents by strict enforcement. In Oklahoma, and

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[1]Insurance Institute for Highway Safety, "What Everyone Should Know About High School Driver Education," (Washington, D. C.), p. 2.

[2]American Automobile Association, "Today's Traffic Problems," (Washington, D. C.), p. 2. (mimeographed).

possibly other states, the Department of Public Safety has increased the number of state troopers as a means of better enforcement. This increase, though relatively recent, did not reduce the number of traffic fatalities. However, studies have not been released to indicate whether the percentage of traffic fatalities per miles driven has decreased.

Highway engineering has failed to keep pace with the tremendous increase in number of vehicles on our streets and highways to date though billions of dollars are spent on new roads annually. In Oklahoma there are 97,084 miles of county, state, and interstate roads with 324 miles of interstate highways in the planning stage, and plans are being made for an additional 100 miles of new interstate highway for each of the next ten years. The increase in new highways seems to be a small contribution in view of the fact that state drivers will increase by an estimated 300,000 in the next ten years.

Nevertheless, the interstate highways have a smaller percentage of accidents and fatalities when compared with their counterpart, the old two-lane highway. This reduction makes the interstate highways worth the funds appropriated for them.

Other than a small amount of incidental literature available and a few public service commentaries by radio and television announcers, driver education has been the "carrier of the banner" for the third E, Education, and the primary concern of education has been with the high school student. Oklahoma offered 352 standard driver education courses in its high schools in 1962. These schools trained 15,976 students or approximately 50 per cent of the total student body eligible for the course.

Although no official public information is available on the number of drivers trained through driver education programs who are involved in accidents in Oklahoma, it is estimated by the Department of Public Safety

that less than ten per cent of the automobile accidents involve trained drivers. (It might be mentioned that the reason for lack of an official statement is the inadequate equipment and facilities of the department which prevent its records from being complete and up to date.)

Studies of driver education have found trained drivers involved in fewer motor vehicle accidents than non-trained drivers. These studies, therefore, indicate that a standard course in driver education contributes to the reduction of motor-vehicle accidents. The ratio of trained drivers involved in vehicle accidents to the total population of trained drivers has not been fully determined. A general assumption is that if an individual is trained in a particular task, he should be able to perform this task better than the untrained individual. There are probabilities, though, that the untrained can "pick-up" these tasks and, within the same allotted time, perform as well as the trained.

Statement of the Problem

The purpose of this study was to determine the effects of driver and traffic education on the individuals who have completed the standard course in high school.

Specifically, the study was to evaluate (1) knowledge of traffic safety practices, (2) attitudes toward the safe driving of an automobile, and (3) personality factors that influence the acquisition of driving knowledge and attitudes of students who have completed a standard course in driver education in four selected high schools in Oklahoma.

Since driver education is a comparatively new subject, educationally speaking, it is often criticized about its direct value to the individual and to society. As a result, there is much misconception about the part that the subject plays, not only in reducing the death and accident toll

in our motorized society, but also in the development of better citizenship and the formulation of attitudes conducive to the eventual solution of the traffic problem.

The present study sought to determine the value of a standard course in driver education by comparing the data obtained from the evaluating instruments administered to two groups of students. One of these groups consisted of students who had completed a standard course in driver education. The other group consisted of students who had not taken a course in driver education.

Statistical analyses were made to determine if there were differences between the test scores of the two groups.

Limitations of the Study

Many criteria exist which might be used in evaluating a course in driver education, but the criteria used in this study were based entirely on the data obtained from the biographical questionnaire, Driving Knowledge Test, the Seibrecht Attitude Scale, and the Sixteen Personality Factor Questionnaire.

This study was limited to the measurement of the development of driving knowledge and attitudes by students completing a standard course in driver education and the relationship of personality factors, age, sex, parent's occupation, and grade point average to these developments.

The present study was also limited to students not possessing a driver's license and who were enrolled in a course in driver education in four schools of Oklahoma; namely Central, Southeast, and Star Spencer High School of the Oklahoma City Public School System, and Stillwater High School.

Finally, all criteria for a complete assessment of the value of a course in driver education have not been included in this study; however,

the main characteristics generally considered essential to a quality course are included.

Definition of Terms

A standard course in driver education, as defined for the purpose of this study, means at least thirty hours of classroom instruction, and at least six hours of practice driving instruction, exclusive of time in the car as an observer. The instruction is given by a teacher who holds a state teaching certificate in the field of driver and traffic safety education. For the purpose of this study Driver and Traffic Safety Education, Driver Education, and Driver Training have the same meaning.

Knowledge is defined as the amount of information a student possesses pertaining to laws, rules, and regulations of safe driving and traffic practices. Knowledge and driving knowledge are used synonymously in this study, except where stated differently.

Attitude is considered as the individual's responses to questions applicable to safe driving practices.

Personality factors are the patterns of traits or characteristics of an individual that lend themselves to special techniques of measurement and study.

High achievers are defined as those individuals whose scores fall above the interval which contains the mean score of the group.

Low achievers are those individuals whose scores fall below the interval which contains the mean score of the group.

Generalization is an inference which "goes beyond" the data. It may be either a statistical inference or a conclusion based upon findings.

A trained driver is a person who has successfully completed a course in driver education.

CHAPTER II

REVIEW OF LITERATURE

Much has been written concerning the necessity of driver education as a means for young men and women to survive this age of vehicular mass and speed. Some articles have expressed opinions that were based on experience, good and bad. Other articles were compilations of data relative to trained drivers; some based on various records and a few studies based on scientific research.

The paucity of research available in the field of driver education is indicative of its relatively recent entry into the high school curriculum. For this reason, much of the literature reviewed was of non-research origin.

The beginning of driver education as it is known today may be credited to a few who were very interested in traffic accidents as early as 1936. Among the earliest pioneers is Professor Amos E. Neyhart of Pennsylvania State University, who is sometimes referred to as the "Father of Driver Education." H. O. Carlton speaks of him in an address given at the Southern District Convention, American Association of Health, Physical Education and Recreation:

> I tried, but of course the approach was entirely from the classroom. It wasn't until 1938 that we put a car on the road to provide the in-car instruction phase of what was then called, Traffic Efficiency and Automobile Operation. Previous to this Professor Amos Neyhart had been doing some exploratory work at the high school at Pennsylvania State University. And,

> when his work showed promise the AAA borrowed him from the University as a consultant, to prepare teachers in this field throughout the country...[1]

With this meager beginning approximately thirty years ago, driver education has developed into a nationwide program in our high schools. In the past few years, driver education has progressed steadily. In 1947, there were less than 200,000 students enrolled in courses as compared to more than 1,400,000 in 1962. During this fifteen year span the number of courses offered in the high schools of this nation have increased from a little over 3,000 to approximately 13,000. Yet, there are some states where fewer than 50 per cent of the eligible students are enrolled in the course.

A. E. Spottke asserted that the driving environment is becoming more and more complicated, and several adjustments will be required to keep pace. To do this will require more thorough preparation of every driver. Those who have been driving for a number of years should re-evaluate their driving habits and discard those habits that are out-dated. He contends that universal driver training is a must for the present and future generations if they are to live successfully with the automobile.[2]

Driver Education in the High School Curriculum

Driver education courses in the high schools are considered by many to be frills and as not properly belonging in the academic curriculum. These opponents are not necessarily against the program *per se*, but

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[1]H. O. Carlton, "National Driver Education Trends--Forward or Backward?" (paper read at the Southern District Convention, American Association of Health, Physical Education and Recreation, Knoxville, Tennessee, February 21-25, 1963).

[2]A. E. Spottke, "Learning to Live," (paper read at the National Home Demonstration Council Conference on Traffic Safety, Michigan State University, February 7-9, 1961).

oppose it as a course to be offered in the high school and for high school credit. The proponents of driver education insist that the high school is the most logical place for it. They contend that the high school can provide the necessary equipment and the qualified instructors needed to prepare the students as drivers of tomorrow.

That driver education belongs into the high school curriculum today was well emphasized by Brody and Stack:

> Today driver education is recognized by leading educators as an essential part of the secondary school curriculum. It is a phase of general education designed to meet a pressing social need. If the high school is to prepare youth adequately to deal with life in today's society, it is only natural that high school graduates be prepared to drive safely in a society that depends on motor vehicles so extensively.[3]

Rogers and Cutter gave driver education special consideration in their writing and credited the course with saving several lives. They considered it a vital part of the high school curriculum and severely criticized Inez Robb's column in the New York World-Telegram and Sun when she wrote:

> Further: as an extracurricular activity for which no credit is offered, this program (driver education) is splendid. But it is boondoggling when it is offered as a credit course.[4]

Robb's viewpoint is held by many school administrators who schedule this course only during after-school hours, on Saturdays, or in the summer.

DeNike was in agreement with Rogers and Cutter and thought that a good course in driver education compared favorably with any of the high

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[3]Leon Brody and Herbert J. Stack, Highway Safety and Driver Education (Englewood Cliffs, 1959), p. 63.

[4]Virgil M. Rogers and Walter A. Cutter, "Driver Education: The Case for Life," The American School Board Journal (October, 1958), exerpt.

school subjects. He also believed it was a firmly established school subject with rousing endorsements, and said of driver education:

> Driver Education has received the rousing endorsement of leading police officials, state authorities, insurance companies, parents' organizations, school administrators, and Presidents Hoover, Truman, Eisenhower and Kennedy. It has been introduced into the curriculums of many European schools--including some in Russia, a country supposedly not given to adopting worthless educational fads.[5]

In his study Key made an assessment of driver education and concluded that driver education was an accepted responsibility of public education in forty-seven of the (then) forty-eight states.[6] This study was a summary of such criteria as high school and college teacher qualifications, curriculum, typical teaching load, age of students, and other aspects that would be of concern to those engaged in activities on a national level.

One of the most interesting and provocative articles on the subject of driver education in relation to its inclusion in the high school curriculum appeared in a National Safety Council publication. This article included one letter from Menno Duerksen, a newspaper safety editor, questioning the necessity for the course in the curriculum. He wrote:

> ...I have taken the position that if driver education is desirable and a necessity it does not necessarily follow that it must be done by the public schools. What does it really matter who does the job so long as it gets done?[7]

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[5]Howard R. DeNike, Why Driver Education? (National Safety Council, Chicago, 1962).

[6]Norman Key, Status of Driver Education in the United States (Washington: National Commission on Safety Education, National Education Association, 1960), p. 61.

[7]"More About Driver Education," Traffic Safety, April, 1962, p. 33.

The other letter in this article was an answer by F. R. Noffsinger of the training division of Northwestern University's Traffic Institute. Noffsinger replied:

> Driver education, particularly that part that is in the car on the street, offers better than any other high school subject, practical opportunity for the student to exercise courtesy, consideration for the rights of others, sportsmanship and citizenship responsibility. This aspect of driver education is the only real justification for the inclusion of the subject in the high school program from the education point of view.[8]

The national concern for the improvement of driving records was vividly brought into focus by the President's Committee for Traffic Safety. The Committee stated:

> The secondary school has a traffic safety challenge of critical proportions. The most dramatic evidence of this can be found in the accident-involvement record of 15 to 19 year old drivers--particularly those who have not had the benefit of driver education courses. Younger drivers have the worst record of any, and yet secondary school students have the capacity to become the Nation's best drivers.[9]

The Committee recommended:

> The secondary school can and should play a vital role in realizing the potential represented by those youths. As far as driver education is concerned, the need for its extension so that the instruction will be available to all high school students.[10]

Educational Tasks of Driver Education

Several opponents of driver education and many of the lay public consider a course in driver education as a course designed only for the development of the manipulative skills necessary for beginning drivers

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[8]Ibid.

[9]President's Committee on Traffic Safety, A Challenge for Our High Schools...Driver Education (Washington, 1961), p. 7.

[10]Ibid.

to control a motor vehicle. Though driving skills are taught in the courses, one of the prime objectives is the development of attitudes proper to safe and courteous driving.

Stack pointed out that one of the weaknesses in most of the driver education programs is the limited time allotted to the development of attitudes. Furthermore, classroom instruction time now allotted is insufficient in length, and if more time were allotted, much more could be done.[11] Of this he said:

> First of all, it cannot be assumed that simply being enrolled in driver education courses will automatically improve attitudes. Just as special lessons are designed to improve skills, so lessons should be planned for the purpose of improving attitudes...[12]

Stack continued by explaining some situations the teacher can use as a means of assisting students in the development of safe driving attitudes. He also suggested that while attitudes could be taught like rules and regulations, it was desirable that time be spent through class discussion in identifying good attitudes and, at the same time, pointing out the serious effects of undesirable attitudes.[13]

Case, in his report to the National Safety Congress, pointed out the variety of definitions for attitude and the fallacy of the techniques generally used in the field of driver attitudes. The methods used to determine the significance of attitudes as causative agents of accidents or violations were the following: (1) impressionistic generalization; (2) informal interview; (3) the structural interview using either: /a/ the carefully designated approach, or /b/ the direct and planned

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[11]Herbert J. Stack, "How Can Driver Attitudes Be Affected by Education?" National Safety Congress Transactions, (Volume 31, 1950), pp. 82-83.

[12]Ibid.

[13]Ibid.

sequential questioning technique; (4) the non-directive interview; (5) the questionnaire; and (6) the attitude scale.[14]

Regardless of the method used for reporting attitudes of the driver, the problem of improving driver attitude remained to be solved. Case suggested:

> In order to attain the goal of improving these attitudes, it will first be necessary to make a careful and concerted effort not only to measure the attitudes of drivers as reflected by opinions, interviews, questionnaires, and attitude scales, but also by a closely controlled study of the behavior of groups of drivers.[15]

Loft found in his study that boys and girls who had completed a course in driver education possessed desirable attitudes toward driving and adequate traffic and driving knowledge. He also found that girls were not materially affected by a driver education course in attitudes related to driver responsibility.[16] This might lead one to conclude that those who took the course could have possessed desirable attitudes toward driving prior to the course. One of Loft's recommendations was that teachers of driver education place more emphasis on the development of desirable attitudes through classroom instruction.[17]

Goldstein and Mosel approached the study of driver attitudes by hypothesizing four factors: (a) appreciation of hazard, (b) social responsibility or conformity, (c) attitude toward the vehicle itself, and (d) attitude toward speed. A 186 item attitude inventory developed to

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[14]Harry W. Case, "Attitudes--What Are They? How Are they Changed?" National Safety Congress Transactions, XXXI (1950), pp. 75-77.

[15]Ibid., p. 80.

[16]Bernard L. Loft, "The Effects of Driver Education on Driver Knowledge and Attitudes In Selected Public Secondary Schools," Traffic Safety, June, 1960, pp. 12-13.

[17]Ibid.

measure 14 aspects of driver attitudes was administered to 323 general drivers.[18] One of the items of their study appeared clearly to be measuring the attitude of competitiveness or aggression. In relation to this they noted:

> Within the limits of the measures and samples used, it appears that competitiveness, or aggression, is related to violations and accidents for which responsible, at least for the men; greater aggression is associated with more violations and accidents/responsible. Also, as would be expected, this measure is related to age, younger men being more aggressive.[19]

In their summary statement they identified five factors: (a) attitude toward competitive speed, (b) attitude toward other users of the roadway, (c) attitude toward cops, (d) attitude toward the vehicle, and (e) a general attitude of care and concern for safety. The first three of these factors were substantially correlated. The fourth factor was orthogonal to the others while the fifth factor was highly correlated with the first three. There also appeared to be correlation between the attitude cluster (aspects) scores and the background and experience variables of the drivers.[20]

Rommel considered the possibility of driving being a social situation to which the individual brings his attitudes, and in which he subsequently defines the situation in attitudinal terms. Personality characteristics and attitudes within this frame of reference were considered as possible important variables entering into accident-producing

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[18]Leon C. Goldstein and James N. Mosel, "A Factor Study of Drivers' Attitudes, With Further Study on Driver Aggression," Highway Research Board Bulletin 172, ("Driver Characteristics and Behavior Studies," National Academy of Sciences, National Research Council /presented at the 36th annual meeting January, 1957, pub. 532, 1958/), pp. 9-11.

[19]Ibid., p. 27.

[20]Ibid., p. 26.

behavior. His study was an effort to isolate those particular personality characteristics and attitudes which might serve to distinguish between accident-repeating and accident-free youth.[21]

The analysis of data obtained from scores of the five sub-scales of the Minnesota Multiphasic Personality Inventory and the Driver Attitude Inventory which were administered to the study group revealed a relationship between personality and attitude differences and accident repeaters. Rommel concluded:

> Several potentially valuable dimensions have been uncovered which point directly to the existence of certain personality and attitude differences between the two types of youths....[22]

Beamish and Malfetti, in a more recent study, concur to the relationship of personality traits and the differentiation between traffic violators and non-violators.[23]

In a master's thesis, Brown studied the relationship between personality traits and driver behavior by comparing the driving records of his study group with their scores on the Minnesota Multiphasic Personality Inventory which they had taken as a freshman in college. His findings were:

> This study shows that there is a significant relationship between the offenses a person has credited against him, i.e. number of violations

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[21]R. C. S. Rommel, "Personality Characteristics and Attitudes of Youthful Accident-Repeating Drivers," Traffic Safety, March, 1959, pp. 13-14.

[22]Ibid.

[23]Jerome J. Beamish and James L. Malfetti, "A Psychological Comparison of Violator and Non-Violator Drivers in the 16 to 19 Year Age Group," Traffic Safety, March, 1962.

> and number of accidents, and the scores that he receives on the Pd Ma scales of the MMPI.[24]

Brady's study was very similar to Brown's with the exception that Brady used the interview technique in obtaining the accident record. Otherwise, both used the Minnesota Multiphasic Personality Inventory for personality scores. In summary Brady stated:

> The correlations found for the individual scales and minor accidents of admitted fault occurring during the past year indicate that those reporting minor accidents tended to have generally high T scores in the Pd, Sc, and Ma scales.[25]

Very few studies have been made to determine the immediate effectiveness of a driver education program in terms of changes in attitudes toward safe driving and knowledge of safe driving practices. One study was made by Scherer, who, in his investigations of the effect of various driver improvement programs reported that each of the controlled school programs produced significant gains in driving knowledge and driving attitudes.[26]

The Center for Safety Education in its textbook on driver education rates young drivers as potentially the best drivers in the nation but report that too many young drivers possess driving deficiencies which reflect unfavorably on all young drivers.[27] It also reported:

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[24]Paul L. Brown, "Driver Behavior: A Study of Personality Characteristics," Minnesota Highway Department, "Personality Traits and Driving Behavior" (Master's Thesis, University of Minnesota, 1959), p. 45.

[25]Roger O. Brady, "A Preliminary Study Into the Relationship Between Accident Rates and the Personalities of Automobile Drivers" (unpublished Master's thesis, Catholic University of America, Washington, D. C., 1948), p. 19.

[26]Ben F. Scherer, "Effectiveness of Three Methods of Instruction in a Driver Improvement School Program" (unpublished Doctoral thesis, Indiana University, 1962), p. 106.

[27]The Center for Safety Education, Man and the Motor Car, New York University (Englewood Cliffs, 1959), p. 4.

> Studies of accidents indicate that faulty personality traits and attitudes are contributing factors in over 80 per cent of all traffic accidents. It is clear that both right attitudes and well-developed skills are necessary to make the expert driver.[28]

Backed by surveys showing the driving records of students successfully completing a course in driver education to be superior to those young people who have not had the training, the Auto Industries Highway Safety Committee published this statement:

> In our highly complex and competitive society, the task of education is to provide our young people with the knowledge, the skills, and most important, the attitudes they must have to survive. Driver education contributes significantly to the accomplishment of the basic program:
>
> 1. It fosters a strong sense of personal responsibility for the common welfare.
> 2. It nurtures effective habits of cooperation in solving public problems.
> 3. It develops pride in high standards of performance and conduct.
> 4. It promotes the safe, efficient and rewarding use of automobiles.[29]

Brody and Stack applied several specific learning products to the objectives of driver education. The objectives were:

> 1. To develop in young people a strong sense of personal and social responsibility for the common welfare, particularly as it is affected by and involved in the operation of motor vehicles.
> 2. To develop pride in maintaining high standards of performance, particularly in the operation of motor vehicles.
> 3. To promote safe, efficient, and enjoyable use of equipment and environment, especially of motor vehicles and highways.
> 4. To promote effective habits of cooperation in meeting problems of the common welfare especially of motor vehicles and highways.
> 5. To prepare young people for socially useful vocations suited to their individual ability, particularly those that involve the use of motor vehicles.[30]

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[28]Ibid., p. 6

[29]Auto Industries Highway Safety Committee, "Statement on Driver Education" (January, 1961, mimeographed).

[30]Brody and Stack, pp. 66-69.

Bishop believed there was more to driver education than the mere teaching of simple maneuvers. It should go much deeper in scope. The driver must be able to interpret road conditions and to adjust accordingly. According to Bishop, a course in driver education was incomplete unless it included the development of knowledge of the laws of nature as applied both to the environment and the automobile.[31]

Another area in driver education that receives considerable emphasis in the classroom is alcohol and its effect on the driver. Prior to his deliberations on alcohol, Fox gave four possible ways that a driver education teacher who he says has been charged with the task of preparing youngsters for their adult responsibilities as operators of automobiles can handle the information about drinking and driving. He suggests: (1) ignoring it, (2) emphasizing the "don't," (3) encouraging drinking and driving, and (4) imparting information about tolerance limits.[32]

Blaisdell discussed the economical feasibility of driver education concerning the premium discounts given by insurance companies on automobile drivers by young men who have had a standard course in driving. He related:

> The lack of standard driver education courses in many of the nation's public high schools is costing America's young men--or their parents--millions of dollars in hard cash each and every year.
>
> A country-wide study just completed shows that it costs those young men far more in insurance premiums to be without driver education than the cost-per-pupil of a standard course.[33]

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[31]Richard W. Bishop, "Stop in Time," Safety Education, January, 1964, p. 3.

[32]James H. Fox, "Alcohol and Driving Behavior," Fifth Annual Conference Proceeding of American Driver Education Association (Washington, D. C., 1961), p. 18.

[33]Paul H. Blaisdell, "Penny Wise, Pound Foolish," The Journal of Insurance Information, December, 1962, (reprint).

The National Commission of Safety Education, in commenting on the development of knowledge and habits of observance of traffic laws and safety rules, related that there were two problems involved. One was how to convince students of the necessity of laws and rules; the other was how to help students acquire correct judgments and maneuvers required by laws and rules. The Commission also submitted a variety of techniques driver education teachers used to help the student develop knowledge and habits of observance of traffic laws and safe driving rules.[34]

An advocate of the believe that driver education should also be extended to "old timers" was McDermott whose application for license renewal had been rejected. He stated:

> My earnest suggestion is that every driver, no matter how young or how old, who has not had scientific training, voluntarily have himself tested by a trained instructor and correct his habits accordingly.[35]

Need for Research

As previously mentioned, most of the literature reviewed was of non-research design. The present investigator was able to find only a few pieces of research directed to driver education. Although several studies of industrial safety were reviewed that could be related to some aspect of driver and traffic safety, few were considered applicable to this study.

The 1957 report by the National Commission on Safety Education lists only four comprehensive reports, summaries, or analyses of research on

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[34]National Commission of Safety Education, How Experienced Teachers Develop Good Traffic Citizens (Washington, D. C., 1958), pp. 11-14.

[35]William F. McDermott, "I Thought I Knew How to Drive," Traffic Safety, July, 1963, p. 13.

the effectiveness of driver education, and each of these reports provided different answers.[36] The report also considered state and local studies which compared the accident and violation records of trained and untrained drivers.[37]

Rex M. Whitton of the Bureau of Public Roads was quite aware that more research needed to be done in driver and traffic safety. He noted:

> Judging by research accomplished and underway the answer is far too little, if we are to search deeply and arrive at intelligent answers. And we need intelligent answers.[38]

Mr. Whitton was also very concerned about the effect of slogans, "hard sell" efforts, and scare programs and believed there may be too many attacks on the driver. He maintained:

> We must face up squarely to this premise: The majority of drivers are performing as well as we can reasonably expect under existing conditions. From that premise it is logical to reason that the conditions must be changed--we must improve the road, the vehicle and the basic control measures of the system.
>
> This is not to say that driver performance cannot be improved by training and experience. Nor am I suggesting that we stop public educational programs aimed at improving driver attitude and behavior.[39]

This statement suggests that more emphases should be placed on other conditions or areas of driver and traffic safety as a means of reducing traffic accidents and fatalities rather than on driver education alone.

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[36]The National Commission on Safety Education, A Critical Analysis of Driver Education Research (Washington, D. C., 1957), p. 17.

[37]Ibid., pp. 36-53.

[38]Rex M. Whitton, "The Traffic Situation...Present and Past," Traffic Safety, December, 1963, p. 34.

[39]Ibid.

The statement by Carlton, "...in fact, it is the only subject I know which has to constantly prove itself,"[40] points to another of the many reasons why more research is needed. It is evident that more research in driver education must be increased both in quantity and quality. Perhaps it is because of its brief history in our educational programs that research is lacking.

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[40]Carlton, p. 5.

CHAPTER III

METHOD AND PROCEDURE

The review of literature failed to reveal any studies that evaluated the achievement of driver education students on driving attitudes and knowledge during a regular period of class attendance. One of Loft's recommendations was a need for:

> ...a study to determine the effectiveness of driver education by means of a pre-test and a post-test of driving attitudes and driving knowledge.[1]

In compliance with the above suggestion, one purpose of the present research was to study the driver education classes in a limited number of schools to determine their effectiveness. The obtained data could possibly provide information to be used as a guide for the improvement of driver education programs. Another intent was to discover personality differences between those who were enrolled in a driver education class and those who were not, and to determine if personality factors influenced the degree of performance of the student on the knowledge test and attitude scale.

Setting for the Study

In order to randomize as much as possible, this study was conducted in four high schools, each offering a standard course in driver education taught by a state-certified teacher. Three of these schools were in a metropolitan area, and each was in a somewhat different socio-economic

[1]Loft, p. 15.

environment. The fourth school selected was from a city with one high school. The latter provided a composite socio-economic environment for the study. For purposes of operational distinction, each school was assigned a region number.

All students enrolled in the driver education classes of the four schools participated in the study. These students were the experimental group and are referred to in this study as Group B. Group A, the control group, was composed of students selected at random from the student body of each of the participating schools. The major criteria for the selection of students in Group A were that each student did not possess a driver's license and that each student would be eligible for a driver's license prior to the beginning of the fall term of school.

Each group was administered three testing instruments and a biographical questionnaire at the beginning of the spring semester. These three testing instruments were the (1) Siebrecht Attitude Scale, (2) the Sixteen Personality Factor Questionnaire, and (3) the Driving Knowledge Test. Prior to the end of the spring semester each group was administered the Siebrecht Attitude Scale and the General Driving Knowledge Test the second time.

To control as many variables as possible, the two groups were matched as to age, sex, and father's occupation. The age data were coded as to whether the participant's birthdate was during the semester, before the semester, or after the end of the semester. Each group was matched as to birth month where possible, otherwise the ages were matched in accordance with the code.

The Dictionary of Occupational Titles was used as the reference in coding the father's occupation. It classified occupations as follows:

0 - Professional and managerial occupations
1 - Clerical and sales occupations

2 - Service occupations
3 - Agricultural, fishery, forestry and kindred occupations
4 and 5 - Skilled occupations
6 and 7 - Semi-skilled occupations
8 and 9 - Unskilled occupations[2]

Instrumentation

The Siebrecht Attitude Scale is one of the few tests designed specifically to measure attitude toward the safe driving of an automobile. It is perhaps the most widely used measuring instrument for studies pertaining to driver education since it is distributed by and readily available from the American Automobile Association. For this study the exponents for each possible answer were omitted.

The Manual of Directions for the Siebrecht Attitude Scale provides the following information on the reliability and validity of this testing instrument:

Reliability. By the split-half method a reliability of .81 + .02 PE has been secured on a group of 100 students enrolled in driver training classes.

Validity. The validity of the scale rests upon the following basis:

1. The judgments of experts in traffic safety and attitude measurement were utilized to determine the factors which were believed to be important in the safe driving of the automobile and to evaluate the statement of opinion which comprised the preliminary form of the scale.

2. In the final form of the scale have been included those statements which differentiated significantly between the mean scores of high- and low-scoring groups of students; a 20 per cent segment of the extremes was used. For none of the statements is the critical ratio of the difference between the means of the 20 per cent segments less than 3.00. The average ratio is 6.234.

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[2]"Definitions of Titles," Dictionary of Occupational Titles (Washington, D. C., 1939), p. xxiii.

> 3. The scale seems actually to differentiate between groups presumed to possess a difference of attitude toward the issue of safe driving.... The greatest differences occur between the groups presumed to possess the greatest difference in attitude....[3]

Since many school administrators refuse to dismiss students from class to engage in research projects that are extremely time consuming and since many students fail to answer test questions properly after a long period of time, the decision was made to use a measuring instrument with a limited number of questions. The Sixteen Personality Factor Questionnaire, Form A, commonly referred to as IPAT 16, was selected for this phase of the study. This instrument is composed of 187 questions giving information about most personality traits identifiable in basic factor analytic research.

The authors, Cattell and Stice, have this to say about their instrument:

> ...The present questionnaire meets a long-standing demand for a personality-measuring instrument properly validated with respect to the primary personality factors that are rooted in general psychological research. It is at present unique in: (a) having every item possessed of a demonstration saturation with respect to each of the factors which it sets out to measure, and (b) having proof that each of the questionnaire factors corresponds to a primary personality factor found elsewhere...[4]

The general driving knowledge test was a 100-question test adopted for use by driver education classes at the schools in the metropolitan city. There was found no published test with reliability and validity that would better serve the purpose of the study.

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[3]Center for Safety Education, Manual of Directions, Siebrecht Attitude Scale, New York University, (New York).

[4]Raymond B. Cattell and Glen F. Stice, Handbook for the Sixteen Personality Factor Questionnaire. The Institute for Personality and Ability Testing (Champaign, Illinois, 1957, with 1962 supplementation), p. 2.

The biographical questionnaire, although a little different for each school, provided sufficient information as to age, sex, driving experience, semester grades for all high school subjects, driver's license, number of brothers and sisters, and parent's occupation. The grade point averages were compiled and checked with the official school records.

Analysis of the Data

The data obtained from the testing instruments were coded and punched on IBM cards at the Computing Center at Oklahoma State University. The IBM 650 at the Center was used to perform the statistical computations.

To determine statistical differences in the scores on knowledge tests between groups A and B, the analysis of covariance was the statistic used. The analysis of covariance provided a means of attaining a measure of control of the individual scores on the pre-tests, or "X" factors, and allowed for comparison of the two groups based on the treatment as determined by the scores on the post-tests, or "Y" factors. The analysis of covariance was also used to determine differences in scores on the attitude tests.

The analysis of variance was used to determine any significant differences in total personality factor scores between the two groups under study.

The chi-square test was the non-parametric technique used to test the significance of relationship between knowledge scores, attitude scores, and personality factors and the variables age, sex, grade point average, and parent's occupation.

Data from each school or region in this study were treated separately for each comparison. This procedure was intended to provide

findings for each region that otherwise might have been difficult to observe.

The contingency tables for some chi-square tests were quite large which resulted in a larger number of degrees of freedom than is usually expected. This is especially true for the tests of personality factors. This was done intentionally as an attempt to observe the results more closely by scattering the frequencies rather than grouping them into larger cell entries that would have provided more expedient statistics.

CHAPTER IV

INTERPRETATION OF DATA RELATIVE TO KNOWLEDGE

One major purpose of the study was to investigate the value of a course in driver education in terms of the development of knowledge considered essential to safe driving practices. The hypothesis was that there would be a significant difference between the scores achieved on the Driving Knowledge Test by the students completing a standard course in driver education (Group B) and students who had not taken a standard course in driver education (Group A).

The analysis of covariance lends itself satisfactorily to comparing groups and to securing the final scores by allowing for differences in the pre-test scores. For these reasons it was the statistic used to determine the difference in the mean scores of the two groups under study. The null hypothesis, testing that the two populations sampled were alike, was rejected if the obtained F value was at the .05 level of confidence or at a more exacting level.

This study also investigated the relationship of personal data to the development of safe driving knowledge to which four subhypotheses were subscribed. The results of the Driving Knowledge Tests and the personal data questionnaire were statistically analyzed by the chi-square technique to determine if relationships existed. The null subhypotheses were tested and the relationships were not considered statistically significant unless the obtained chi-square values were at or more exacting than the .05 level of confidence.

The subhypotheses so tested were:

1. There will be no significant relationship between the obtained driving knowledge test scores of each group and sex.
2. There will be no significant relationship between the obtained driving knowledge test scores of each group and the parent's occupation.
3. There will be no significant relationship between the obtained driving knowledge test scores of each group and grade point average.
4. There will be no significant relationship between the obtained driving knowledge test scores of each group and age.

Tables pertaining to the hypothesis and to each of the subhypotheses accompany the findings. The table for the hypothesis includes the summary table for each region. The F values found to be statistically significant are starred to indicate their level of confidence. Tables for the subhypotheses identify the regions of each group and include the chi-squares as well as the degrees of freedom. Chi-square values found to be statistically significant are starred to indicate their level of confidence.

The Influence of Driver Education Upon Knowledge Scores

The hypothesis states that there will be a significant difference in knowledge scores on the Driving Knowledge Test between students who have completed a standard course in driver education and students who have not taken the standard course. The Driving Knowledge Test was administered to Group A (control) and Group B (experimental) during the earlier

part of the semester in which the study was conducted. The same test was given again to both groups near the close of the same semester. The scores of the earlier test, or pre-test, were controlled by the analysis of covariance in order to determine statistical differences between scores obtained on the final or post-test.

Table 1, a summary table for the analysis of covariance related to knowledge, indicated that two of the regions had F values of statistical significance and that the F values of the other two regions were not statistically significant.

The F value of Region 1 was statistically significant at the .01 level of confidence. Group B had a mean score of 70.64 on the pre-test and a mean score of 78.84 on the post-test. This was approximately an 8.20 gain for the group. Group B also showed improvement on driving knowledge with a gain of 6.09 between the pre- and the post-tests. This group had a pre-test mean score of 63.11 and a post-test mean score of 69.20. The findings indicated the post-test scores of Group B as the factor of significant difference in the analysis.

Region 2 was found to have a F value statistically significant at the .01 level of confidence. Group A of this region had a gain of 3.38 on the mean score between the pre-test and post-tests, while Group B gained 9.37 on the mean scores between the two tests. Although Group B of this region had a larger mean score difference (gain) than did Group B of Region 1, the degrees of freedom and N of Region 2 were smaller which could account for a less significant difference. The evidence, however, indicated that Group B of Region 2 exceeded Group A in the driving knowledge acquired during this span of time.

Neither Region 3 nor Region 4 had a statistically significant F value. The pre-test mean score of Group A in Region 3 was well below

TABLE I

SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE
RELATED TO KNOWLEDGE

Region 1

Source of Variation	df	Pre-Test SS_{XX}	SS_{XY}	Post-Test SS_{YY}	df	SS COR	MS	F
Between	1	1171.98	1556.58	2067.38	1	409.06		12.048**
Within	87	6298.74	4313.03	5873.07	86	2919.74	33.95	
Total	88	7470.72	5869.61	7940.45	87	3328.80		

Region 2

Between	1	550.02	953.24	1650.50	1	328.37		4.811*
Within	31	4596.53	4199.21	5884.05	30	2047.82	68.26	
Total	32	5146.55	5152.45	7534.55	31	2376.19		

Region 3

Between	1	2682.47	3233.18	3896.95	1	245.98		4.056
Within	32	5547.06	4639.88	5761.17	31	1880.11	60.65	
Total	33	8229.53	7873.06	9658.12	32	2126.09		

Region 4

Between	1	129.56	116.34	104.46	1	265.18		4.726
Within	46	4918.92	2712.46	4132.79	45	2637.05	56.107	
Total	47	5048.48	2596.12	4237.25	46	2902.23		

*significant at .05 level of confidence
**significant at .01 level of confidence

the pre-test mean score of Group B and had the smallest gain difference (2.29) on the mean scores between the pre-test and post-test of any of the groups in all regions. A mean score difference of 17.76 on the pre-tests existed between the two groups of Region 3 with Group B having the larger mean score. The findings indicated that the post-test mean scores of Group B tended to be higher than the scores of Group A.

Group A of Region 4 was the only one of the control groups to exceed Group B in pre-test mean scores. Group A had a 3.29 larger mean score on the pre-test but failed to obtain a post-test mean score larger than Group B by 3.15. Evidence is lacking to indicate any significant differences between Group A or Group B, or within either group, on knowledge scores. The trend toward a significant F value was similar to the other three regions in that the experimental group tended to make higher scores on the post knowledge test.

A summary of the difference in knowledge scores between the two groups under study notes that two of the four regions had statistically significant F values, and two of the regions had no statistical significance at the .05 level, although the trend was in this direction. There were differences (gains) in mean scores on the pre-test of 6.71 and differences (gains) on the mean scores of the post-test of 11.46 between Group A and Group B with the differences being in favor of Group B. The difference in the gain between the pre- and post-tests for Group B was 4.75 larger than Group A.

The definitive conclusion was that there was a significant difference in knowledge scores between students who had completed a standard course in driver education and students who had not completed the course. The evidence is sufficient to infer that a course in driver education improves the driving knowledge of students who complete the course.

The Relationship of Knowledge Scores to Sex

At the present time, most insurance companies offer a premium discount to young men who have completed a standard course in driver education. This premium discount is not offered young women drivers since they are not included in the insurance companies' high risk premium bracket with the young male driver. The fact that young females are favored by lower insurance premiums indicates they either possess a higher degree of driving skill, better attitudes towards safe driving, more knowledge about safe driving, or better driving records. Since most studies by insurance companies involve analyzing accident reports, perhaps better driving records influence the lower risk insurance premium for young females.

Subhypothesis 1 asserts no significant relationship between scores obtained on a driving knowledge test and sex. The data in Table 2 reveal that only Region 3 of Group B had a chi-square value of statistical significance. The total chi-square value of Group B, influenced by the significant chi-square of Region 3, was significant at the .05 level of confidence. Group A had no significant chi-squares.

With the exception of Region 2, the males of Group A had slightly higher mean scores on the knowledge pre-test than the females. The difference in the pre-test mean scores of the other three regions was so small that difference of the mean scores for the females in Region 2 was large enough to favor the females with higher total mean scores. The difference, however, was not statistically significant. It was not inferred that either sex was superior to the other in regard to knowledge of safe driving practices.

For Group B the chi-square of Region 3 was the only significant value for the pre-test knowledge scores as related to sex. The pre-test

mean score for the males in this region was twice as large as the pre-test mean score of the female. In the other regions of Group B the mean scores for the males were larger than the mean scores for the females. The total chi-square value of Group B was statistically significant at the .05 level of confidence. This indicated that the males of Group B were more knowledgeable about safe driving practices before taking a standard course in driver education than the females.

TABLE II

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST KNOWLEDGE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
.3009	3	1	4.2507	4
9.5992	5	2	.5156	3
3.4611	5	3	17.0099**	3
5.5036	4	4	2.5132	3
18.8648	17	Total	24.2894*	13

*significant at .05 level of confidence
**significant at .01 level of confidence

Practically the same interpretation can be made of the post-test knowledge scores (Table 3) as was made of the pre-test knowledge scores. With the exception that the females had larger post-test mean scores than the males in Group B of Region 1, the differences are the same as for the pre-test. The significant chi-square of Group B in Region 3 was due to the larger mean score of the males as compared to the mean score of the female. Since the total chi-square was significant at the .05 level of confidence, it was inferred that a relationship existed between knowledge scores and sex, also that males who had completed a course in driver education were better informed on safe driving practices than were the females who had completed the course.

TABLE III

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST KNOWLEDGE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
1.0186	3	1	2.7104	3
9.7416	6	2	1.9887	4
7.9767	5	3	17.0098**	3
6.4300	4	4	1.2187	2
25.1669	18	Total	22.9276*	12

*significant at the .05 level of confidence
**significant at the .01 level of confidence

Table 4 shows the difference between the pre-test knowledge scores and the post-test knowledge scores as they relate to sex. The data for Group A fail to provide significant differences between the two tests and sex. Both the males and females of Group A made higher scores on the post-test than on the pre-test, but neither sex made significantly higher scores. In fact only a difference of 1.24 separated the mean scores of each sex.

TABLE IV

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST KNOWLEDGE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
2.2973	3	1	2.9259	3
2.4261	3	2	4.0518	3
.7471	3	3	7.9732*	3
7.5585	4	4	6.4329*	2
13.0290	16	Total	21.3833*	11

*significant at the .05 level of confidence

There were two regions in Group B with chi-squares of statistical significance. Region 3 and Region 4 were significant at the .05 level of confidence. The females in these regions made significant gains in mean scores of the post-test as compared to the mean scores of the pre-test. The total chi-square of Group B, significant at the .05 level of confidence, indicated that a course in driver education improved the knowledge of safe driving practices more for the female than for the male.

The null subhypothesis stated that there would be no relationship between the obtained driving knowledge test scores of each group and sex. Evidence is lacking from these data to demonstrate a relationship between driving knowledge and sex. The conclusion was made, however, that of the students who had enrolled in a course in driver education the males were more knowledgeable about safe driving practices than the females, both before the course was taken and after it was completed. Also, an inference was drawn that students of both sex who had enrolled in a standard course in driver education were better informed on safe driving practices before as well as after a course in driver education than students who had not enrolled in the course. Evidence indicated that the females learned more about safe driving practices as a result of a standard course in driver education but failed to be as well informed on the subject as the males.

The Relationship of Knowledge Scores to Parent's Occupation

The parent's occupation generally determines the socio-economic status of the family in the community. The family income reflects the number of automobiles available for each member to drive. The availability of the family car(s) sometimes determines the amount of driving the young

man or woman can do, whether or not a valid drivers' license is in the driver's possession. This factor plus other environmental factors influenced by the family socio-economic status may very well influence the acquisition of skills, attitudes, and knowledge conducive to safe driving. Therefore, the purpose of this part of the study was to determine if a relationship existed between the parent occupation and the scores obtained on a driving knowledge test.

The occupation of the father was considered as the parent's occupation and was coded in accordance with the Dictionary of Occupational Titles. Since the data were processed by the Oklahoma State University Computing Center, it was necessary to omit "0" in the code. This required the alteration of the code number by one digit, therefore, all "0" occupations as shown in the Dictionary of Occupational Titles are coded as "1" occupations, "1" becomes "2," "2" becomes "3," and like changes continue throughout the code.

Subhypothesis 2 states there will be no significant relationship between the obtained driving knowledge test scores of each group and the parent's occupation. The data in Table 5 reveal the chi-square value of Region 1 in Group A as the only chi-square value of statistical significance on the pre-test knowledge scores as related to the parent's occupation.

TABLE V

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST KNOWLEDGE SCORES AS RELATED TO PARENT'S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
38.0454*	21	1	27.7402	28
22.5529	20	2	13.5671	12
13.1156	20	3	10.3471	12
13.5260	20	4	10.0118	15

*significant at the .05 level of confidence

The students with parents in the professional or managerial occupations (1) had the highest scores and a larger percentage of scores above the mean score of Region 1, Group A, than did students whose parents had different occupations. Students whose parents are in skilled occupations made the lowest scores on the knowledge test.

Although there were no chi-square values of statistical significance on the post-test scores (Table 6), those students with professional parents tended to make the highest scores on the knowledge test.

TABLE VI

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST KNOWLEDGE SCORES AS RELATED TO PARENT'S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
25.5620	21	1	23.9801	21
17.5957	17	2	12.1599	16
19.9870	20	3	15.4849	12
19.8724	20	4	10.6263	10

Table 7 shows that Region 1 of Group B had a chi-square value statistically significant at the .01 level of confidence for the difference between the pre-test and post-test scores as related to parent's occupation. All of the parent's occupational groups had higher scores on the post-tests than on the pre-tests, but the students whose parents pursued skilled occupations made the greatest improvement.

On the basis of chi-square analyses, the conclusion was drawn that the occupation of the parent had no significant relationship with the acquisition of driving knowledge test scores. Also concluded was that no significant relationship existed between the knowledge scores of Group A and Group B which may be attributed to the parent's occupation.

TABLE VII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN THE PRE-TEST AND POST-TEST KNOWLEDGE SCORES AS RELATED TO PARENT'S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
11.1385	21	1	39.2585**	21
12.1893	12	2	8.6843	12
15.3937	12	3	16.7030	12
13.7719	20	4	7.1829	10

**significant at the .01 level of confidence

Relationship of Knowledge Scores to Grade Point Average

A grade point average is often thought to be indicative of a student's ability to understand the fundamentals and principles of the subject matter of the courses he has completed. As this is not always the case, the grade point average must be considered only as the cumulative average of the scores or grades given a student by the teachers of the different subjects.

For the purpose of this study a recognized method for computing the grade point average was used which has 4.0 as a basis. A grade of A is 4.0, B is 3.0, C is 2.0, D is 1.0, and F is 0. The total grade points for all the high school subjects or courses the student had completed were added, then divided by the number of the subjects or courses to arrive at the grade point average.

Subhypothesis 3 states there will be no significant relationship between the obtained driving knowledge test scores of each group and grade point average.

In Table 8, Region 3 of Group B had a chi-square value significant at the .05 level of confidence. The students with the highest grade point

average made higher scores on the driving knowledge test while those students with lower grade point averages made the lowest scores on the driving knowledge test.

TABLE VIII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST KNOWLEDGE SCORES AS RELATED TO GRADE POINT AVERAGE

Group A			Group B	
x^2	df	Region	x^2	df
20.8045	15	1	21.9582	20
20.8856	20	2	11.8921	12
10.0336	15	3	21.3759*	12
13.5260	20	4	11.7817	15

*significant at the .05 level of confidence

There were no chi-square values of statistical significance on the post-tests (Table 9), and on the difference between the pre- and post-tests (Table 10). There was a tendency for those students with higher grade point averages to make higher scores on the post-tests than the students with the lower grade point averages.

TABLE IX

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST KNOWLEDGE SCORES AS RELATED TO GRADE POINT AVERAGE

x^2	df	Region	x^2	df
26.1833	18	1	22.0536	15
29.3293	24	2	20.3362	16
19.2904	15	3	19.7244	12
12.9803	20	4	9.8207	10

TABLE X

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN THE PRE-TEST AND POST-TEST KNOWLEDGE SCORES AS RELATED TO GRADE POINT AVERAGE

Group A			Group B	
x^2	df	Region	x^2	df
10.2717	15	1	10.0981	15
7.9988	12	2	10.0248	12
10.3518	9	3	13.9824	12
17.4974	20	4	12.3265	10

In conclusion, although there was only one chi-square value of statistical significance relating knowledge test scores to grade point averages, most students with high grade point averages made high scores on the driving knowledge test, and, conversely, those students with a lower grade point average made lower scores. The students with the highest grade point average (3.6-4.0) did not make scores higher than the students with a grade point average of 2.1 to 2.5; also, some of the students with the highest grade point average made scores lower than did students with grade point averages between 2.1 and 3.6. In both Group A and Group B students with grade point averages of 3.1 to 3.5 had the highest percentage of scores above 60 on the pre-test and 70 on the post-test.

Evidence from these data is lacking to establish sufficient relationship between knowledge test scores and grade point averages; therefore, the null subhypothesis asserting there will be no significant relationship between the obtained driving knowledge test scores of each group and grade point average was not rejected.

Relationship of Knowledge Scores to Age

The age of sixteen has been set by this state as the legal age for obtaining an unrestricted operator's (driver's) license. So that upon

completion of a standard course in driver education a student will be eligible for this license. Most students are permitted to enroll in the driver education class the semester during which he will have reached the legal driving age of sixteen. For several reasons, though, students do enroll in driver education courses who are either underage or overage according to this criterion. For this reason the affects of age upon the obtaining of driving knowledge (as determined by test scores) were studied.

Each group was separated into three age brackets. The prime bracket consisted of the students who would become sixteen years of age during this spring semester for which the study covered. The other brackets consisted of the students who were sixteen years of age prior to the beginning of the semester and those students who would become sixteen years old after the end of the semester.

Approximately two-thirds of the students were in the prime age bracket. The remaining one-third was divided with one-third (1/9th of the group) being over-age or sixteen years old at the start of the study and two-thirds (2/9) of the students having not reached their sixteenth birthday by the completion of the spring semester.

Subhypothesis 4 states there will be no significant relationship between the obtained driving knowledge test scores of each group and age. Only one chi-square value for the pre-test knowledge scores was statistically significant (Table 11). This chi-square value was in Region 1 of Group B, and it was significant at the .05 level of confidence. This significant chi-square value resulted from the oldest students making the highest scores and, also, a larger percentage of the oldest students scoring higher on the knowledge pre-test than students in the other two age brackets.

On the post-test knowledge scores, Table 12 shows that Region 3 of Group B had a chi-square value statistically significant at the .005 level of confidence. The oldest students made the highest scores on the knowledge post-test while the youngest students made the lower scores. A larger percentage of the oldest students made higher grades than did the students in the prime age bracket who, in turn, had a larger percentage of students who made higher grades than the youngest students.

There were no chi-square values of statistical significance for the difference between the pre-test and post-test as related to age as shown in Table 13.

The conclusion was drawn that no significant relationship existed between scores obtained on the driving knowledge tests and the age of the students in this study.

TABLE XI

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST KNOWLEDGE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
3.3114	6	1	18.2690*	8
16.4433	10	2	6.3601	6
13.3881	10	3	5.7478	6
.0037	0	4	.0016	0

*significant at the .05 level of confidence

TABLE XII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST KNOWLEDGE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
3.5988	6	1	6.5590	6
10.1304	12	2	7.7025	8
13.0699	10	3	20.9817***	6
.0029	0	4	.0003	0

***significant at the .005 level of confidence

TABLE XIII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN THE PRE-TEST AND POST-TEST KNOWLEDGE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
3.0804	6	1	3.0804	6
7.8718	6	2	3.1989	6
6.9930	6	3	7.5573	6
.0044	0	4	.0030	0

Summary and Conclusions of Findings Related to the Subhypotheses

None of the four null subhypotheses which were tested to determine the relationship of knowledge test scores to sex, parent's occupation, grade point average, and age were rejected.

There was insufficient evidence to demonstrate that either sex was superior in driving knowledge although in most regions the males had the higher mean scores.

There was no statistically significant relationship between knowledge test scores and parent's occupation. The data revealed that students whose parents were in the professional or managerial classification had a

tendency to make slightly higher scores on the knowledge tests than did students whose parents were engaged in other occupations.

The grade point average of a student was not significantly related to the score obtained on the driving knowledge test although most students with high grade point averages made higher scores on the test than did students with low grade point averages.

Age as related to scores on a knowledge test was not statistically significant. In several instances the oldest students made the highest scores on the knowledge test. On the post-test there was a tendency for the oldest students to make the highest scores, for the students in the prime age bracket to make the next highest scores, and for the youngest students to make the lowest scores.

CHAPTER V

INTERPRETATION OF DATA RELATIVE TO ATTITUDES

There are perhaps as many definitions of attitude as there are authors of articles on attitude, but still all are very similar. Shaffer and Shoben gave a definition of attitude that, in essence, is generally accepted and is applicable to this study.

> An attitude is an organization of motives around an individual's responses to a person, situation, or institution....The basic attitudes are acceptance and rejection, which correspond to the elementary drives of adience and avoidance. They are often so defined in practical studies, in which one's attitude toward political liberalism, toward religion, or toward motion pictures means the degree to which these institutions are accepted or rejected.[1]

Attitude toward safe driving is manifested by the increase in traffic casualties on the nation's streets and highways. The automobile is the instrument of accidents, but the driver provides the instrumentation which is contingent upon his attitude. One of the objectives of driver education is to develop attitudes acceptable as the proper behavior of capable, safety-minded drivers.

This chapter developed from the research hypothesis that there would be a significant difference in attitude scores as measured by the Seibrecht Attitude Scale between students who had completed a standard course in driver education (Group B) and students who had not taken the standard course (Group A)

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[1]Laurence F. Shaffer and Edward J. Shoben, Jr., The Psychology of Adjustment (Boston: Houghton Mifflin Company, 1956), p. 93.

The results obtained from the Seibrecht Attitude Scales for both groups were statistically analyzed by the use of the analysis of covariance to determine if any significant difference existed between the scores of Group A and the scores of Group B. The analysis of covariance, using the pre-test scores as the control variable, was considered the most appropriate statistic to use for this hypothesis since it allows for the correlation between the initial and final scores and determines the difference between the two means on the post-test. The null hypothesis was being tested although differences in a normally distributed population were expected. No differences among the means were considered statistically significant unless the variance ratio, or F, was at or more precise than the .05 level of confidence.

Five subhypotheses were subscribed on the assumption that no relationship existed between certain related variables and the development of attitudes toward safe driving practices. The results from the Seibrecht Attitude Scale and the personal data questionnaire were statistically analyzed by the use of chi-square in order to determine this relationship. Since the chi-square is based on the assumption that no difference would be expected on a normally distributed pupulation, null hypotheses were being tested. When the differences are statistically significant from what would be expected by chance at some predetermined level, the null hypothesis is rejected and the observed differences are said to be due to differences in the sample and not to chance. Thus, each of the subhypotheses was tested for no relationship between the variable and the total scores of the attitude scale. Relationships were not considered statistically significant unless they were at the .05 level of confidence or at a more precise level.

The null subhypotheses so tested were:

1. There will be no significant relationship between the obtained total attitude scores of Group A and Group B and the scores obtained on the driving knowledge test.

2. There will be no significant relationship between the obtained total attitude scores of Group A and Group B and sex.

3. There will be no significant relationship between the obtained attitude scores of Group A and Group B and the parent's occupation.

4. There will be no significant relationship between the obtained total attitude scores of Group A and Group B and grade point average.

5. There is no significant relationship between the obtained total attitude scores of Group A and Group B and age.

Tables pertaining to the hypothesis and to each subhypothesis accompany the findings. The table for the hypothesis includes the summary tables for each region. F values found to be statistically significant are starred to indicate their level of confidence. Tables for the subhypotheses identify each region and include the chi-square as well as the degrees of freedom. Chi-squares values found to be statistically significant are starred to indicate their level of confidence.

The Influence of Driver Education Upon Total Attitude Scores

The hypothesis states that there will be a significant difference in total attitude scores as measured by the Seibrecht Attitude Scale between students who had completed a standard course in driver education and students who had not taken the standard course. The summary table of the analysis of covariance related to attitude, Table 14, failed to reveal any F values significant at the .05 level of confidence for any of the regions under study.

Both Group A and Group B were given the Seibrecht Attitude as a pre-test at the beginning of the semester during which the study was

conducted. The same attitude scale was administered again at the end of the semester as a post-test. Group B had larger mean total pre- and post-test scores than Group A, but Group A had a larger gain on mean scores between the two tests than Group B. The gain was 17.81 for Group A as compared to a gain of 9.06 for Group B.

TABLE XIV

SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE RELATED TO ATTITUDE

Region 1

Source of Variation	df	Pre-test SS_{XX}	SS_{XY}	Post-test SS_{YY}	df	SS COR	MS	F
Between	1	1.40	17.40	22.40	1	202.75		1.74
Within	87	12225.60	6322.60	13279.40	86	10009.60	116.39	
Total	88	12227.00	6340.00	13499.80	87	10212.35		

Region 2

Between	1	239.43	34.62	5.00	1	98.82		.47
Within	31	9070.81	4592.38	8653.24	30	6328.20	210.94	
Total	32	9310.24	4557.76	8658.24	31	6427.02		

Region 3

Between	1	130.03	232.53	409.52	1	178.37		1.02
Within	32	5516.94	3227.53	7336.36	31	5448.18	175.75	
Total	33	5648.97	3460.06	7745.32	32	5626.55		

Region 4

Between	1	620.38	543.65	476.36	1	89.67		.67
Within	46	10447.52	5065.95	8709.54	45	6253.09	133.04	
Total	47	11067.90	5609.60	9185.90	46	6342.76		

It was concluded from the findings that there was no statistically significant difference in attitudes toward safe driving between students who had completed a standard course in driver education and students who had not taken a course in driver education.

The Relationship of Attitude Scores to Knowledge Scores

Subhypothesis 1 states there is no significant relationship between the obtained total attitude scores of each group and the scores obtained on a driving knowledge test. To provide for any generalizations that might be statistically applicable to the study, each region was treated separately.

On the pre-test scores one region in each group produced a chi-square value of significance (Table 15). However, when the chi-squares and degrees of freedom of the regions for each group were added, the sums gave a chi-square value for Group B which was significant at the .01 level of confidence.

TABLE XV

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST TOTAL ATTITUDE SCORES AS RELATED TO PRE-TEST KNOWLEDGE SCORES

Group A			Group B	
x^2	df	Region	x^2	df
18.3787	15	1	104.6672**	20
30.5572	25	2	23.0840	18
34.6075*	20	3	14.7843	18
17.8784	20	4	31.4030	21
101.4418	80	Total	173.9385**	77

*significant at the .05 level of confidence
**significant at the .01 level of confidence

With the exception of Region 4 in Group A and Region 3 in Group B, each chi-square value of the pre-test scores was either significant or

near significance. The fact that the combined chi-squares of the two groups produced a value of statistical significance denoted there was a significant relationship between the total pre-test scores obtained on the attitude test and the pre-test scores obtained on the driving knowledge test. The findings revealed those with high attitude test scores also possessed high knowledge test scores.

Relatively the same interpretation can be made for the post-test scores on the attitude scale and the knowledge tests as was made for the pre-test scores (Table 16). Again, tested for sufficient differences between total attitude scores and knowledge scores as measured by the post-tests, Region 4 of Group A had a chi-square value statistically significant at the .01 level of confidence and Region 3 of Group B had a chi-square value statistically significant at the .05 level of confidence.

TABLE XVI

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO POST-TEST KNOWLEDGE SCORES

Group A			Group B	
x^2	df	Region	x^2	df
15.9657	15	1	23.1165	20
37.5099	30	2	21.2211	16
30.4960	30	3	28.7616*	16
37.8544**	20	4	3.6305	4
121.8260*	95	Total	76.7297*	56

*significant at the .05 level of confidence
**significant at the .01 level of confidence

The chi-square values of each region were at a level of confidence sufficient to make the total chi-square value of each group significant at the .05 level of confidence. These findings indicated a significant relationship between the total post-test scores of the attitude scale and

the post-test scores on the driving knowledge test in that those with the highest attitude scores also made higher scores on the knowledge test.

Another objective of the analysis was to determine if any significant differences existed between the differences between the pre-test and the post-test of the knowledge scores and the differences between the pre-test and the post-test total attitude scores. In Group A, only Region 4 had a chi-square value of statistical significance (Table 17). A review of Tables 2 and 3 show that Region 4 had a statistical significant chi-square value on the post-test and no significant values on the pre-test. The chi-square value of the difference for this region indicated that it had a gain in total knowledge scores, but its gain in total attitude scores was negative.

For Group B, the chi-square value of Region 1 was of such statistical significance that the sum of the chi-square values of the group was statistically significant at the .05 level of confidence. This group made a significant gain in knowledge and attitude scores. Group A failed to produce a total chi-square value of statistical significance.

Thus, it was established that there was a statistically significant relationship between the differences of the pre-test and post-test total attitude scores and knowledge scores since the groups have a combined total chi-square value of statistical significance.

Subhypothesis 1 states that there will be no significant relationship between the obtained total attitude scores of each group and the scores obtained on a driving knowledge test. The analysis of the findings allowed for a rejection of the null hypothesis as the chi-square values of the pre-test scores and the post-test scores were significant with the exception of pre-test scores of Group A. Therefore, the conclusion is that a relationship of statistical significance exists

between the total attitude scores and the knowledge scores and that students with a knowledge of safe driving practices possessed positive attitudes toward safe driving.

TABLE XVII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST KNOWLEDGE SCORES

Group A			Group B	
x^2	df	Region	x^2	df
13.5631	12	1	32.9072**	15
9.5678	12	2	14.9331	15
10.8593	8	3	15.3291	12
38.8064*	24	4	13.8975	10
72.7966	56	Total	77.0669*	52

*significant at the .05 level of confidence
**significant at the .01 level of confidence

The Relationship of Attitude Scores to Sex

Subhypothesis 2 states that there will be no significant relationship between the obtained total attitude scores of each group and sex. As shown in Table 18, Region 1 of Group A was the only region from either group with a chi-square value of statistical significance for the pre-test scores. In this region a larger percentage of the females made higher scores on the attitude scale than did males. Neither group had a total chi-square value on the pre-test which was statistically significant.

On the post-test scores, Region 3 of Group A had a chi-square value statistically significant at the .01 level of confidence (Table 19). The one female in this region had the lowest score on the attitude scale. Since this was the only region of either group to have a statistically significant chi-square value it was of insufficient value to establish a relationship between total post-test attitude scores and sex.

TABLE XVIII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST TOTAL ATTITUDE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
12.1427*	5	1	4.4030	6
8.1748	5	2	6.0415	6
1.9531	5	3	1.9513	6
3.4731	5	4	5.4757	7
25.7437	20	Total	17.8715	25

*significant at the .05 level of confidence

TABLE XIX

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
7.2173	5	1	10.5916	5
3.1977	6	2	4.9770	4
17.0116**	5	3	4.9651	4
4.1179	5	4	2.9616	2
21.5445	21	Total	23.4953	15

**significant at the .01 level of confidence

In Table 20, the findings pertaining to the difference between the pre-test total attitude scores and the post-test total attitude scores as related to sex failed to provide significant chi-square values in any region for either group. The total chi-square value of each group was not statistically significant; therefore, providing no evidence to support a relationship between the differences between the pre- and post-test of the total attitude scores and sex.

In the three tables showing chi-square values for this null hypothesis which asserted that there would be no significant relationship

between the obtained total scores of each group and sex, two regions had statistically significant chi-square values. The other chi-square values in each group were not statistically significant. With only two statistically significant chi-square values, there was insufficient evidence for statistical inference except that no significant relationship existed between the obtained total attitude scores for each group and sex. The null subhypothesis was not rejected.

TABLE XX

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO SEX

Group A			Group B	
x^2	df	Region	x^2	df
7.3680	4	1	3.4627	5
4.8341	4	2	5.3305	5
3.4593	4	3	.9478	4
5.6214	6	4	9.9093	5
21.2828	18	Total	19.6503	19

The Relationship of Attitude Scores to the Parent's Occupation

Subhypothesis 3 states that there will be no significant relationship between the obtained attitude scores of Group A and Group B and the parent's occupation.

The occupational status of the parent was not found to be statistically related to attitude scores on the pre-test (Table 21).

In Table 22, the total post-test scores of Group B indicated a statistically significant relationship between the parent's occupation and total attitude scores. The students whose fathers were employed in professional and sales occupations had considerably higher total attitude scores than did the students whose fathers had a different occupation.

TABLE XXI

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST TOTAL ATTITUDE SCORES AS RELATED TO THE PARENT"S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
33.6008	35	1	24.2930	42
25.7314	20	2	32.4744	24
15.5226	20	3	31.0679	24
39.6939*	25	4	28.0974	35
114.5487	100	Total	115.9327	125

*significant at the .05 level of confidence

TABLE XXII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO THE PARENT'S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
44.4686	35	1	48.7194	35
30.2193	24	2	10.5227	16
19.8881	20	3	23.8131	16
36.0514	25	4	18.3514*	10
130.6274*	104	Total	101.4066*	77

*significant at the .05 level of confidence

Table 23 shows no significant relationship between the pre-test and post-test difference scores and occupation of the parent for either Groups A or B.

A statistical inference could not be made that there was a significant relationship between the total attitude scores and the parent's occupation. Thus, the subhypothesis, asserting no relationships, was not rejected.

TABLE XXIII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO THE PARENT'S OCCUPATION

Group A			Group B	
x^2	df	Region	x^2	df
25.3728	35	1	39.4512	35
20.9322	16	2	24.7605	20
20.5110	16	3	23.4807	16
24.3938	30	4	19.9523	25
91.2098	97	Total	107.6447	96

The Relationship of Attitude Scores to Grade Point Average

The grade point average of each student was obtained to determine if the level of the student's academic record had a statistically significant relationship to the scores on the attitude test. The pre-test scores (Table 24) indicate that Region 4 of Group A had a statistically significant chi-square value but the group's total chi-square value was not statistically significant. Group B had a total chi-square value of statistical significance which was produced by the significant chi-square value of Region 3 and the nearness to significance of the other three regions.

There was a tendency for the higher total attitude scores to be made by those with a high grade point average (2.0 to 3.0) with the exception of the students having the highest grade point average. The students with the highest grade point average, 3.0 and above, seemed to fluctuate between middle and high scores on the attitude scale for both Group A and Group B.

TABLE XXIV

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST TOTAL ATTITUDE SCORES AS RELATED TO GRADE POINT AVERAGE

Group A			Group B	
x^2	df	Region	x^2	df
23.4320	25	1	40.5561	30
24.1765	20	2	24.3537	24
9.9561	15	3	37.2729*	24
45.6424**	25	4	39.8961	35
103.2060	85	Total	142.0788*	113

*significant at the .05 level of confidence
**significant at the .01 level of confidence

Neither Group A or Group B had statistically significant chi-square values on the post-test attitude scores (Table 25).

The significant chi-square in Table 26 indicated that those with a grade point average below 3.0 tended to improve considerably on the post attitude test scores.

This analysis failed to produce evidence showing a significant relationship between the total attitude scores and the grade point average. Therefore, this subhypothesis was not rejected.

TABLE XXV

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO GRADE POINT AVERAGE

Group A			Group B	
x^2	df	Region	x^2	df
17.9374	25	1	21.6908	25
19.1075	24	2	26.1321	16
14.2321	15	3	24.3313	16
25.4087	25	4	8.7373	10
76.6857	89	Total	80.8915	67

TABLE XXVI

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO GRADE POINT AVERAGE

Group A			Group B	
x^2	df	Region	x^2	df
19.1456	20	1	22.0879	25
16.8649	16	2	16.5319	20
5.9261	12	3	18.5822	16
34.6167	30	4	39.5339*	25
76.5533	78	Total	96.7359	86

*significant at the .05 level of confidence

The Relationship of Attitude Scores to Age

Subhypothesis 5 asserts that there will be no significant relationship between the obtained total attitude scale and age.

Table 27 reveals only one region as having a chi-square value of statistical difference on the pre-tests. For this region, the oldest students made the lowest scores on the attitude test while the youngest students made the highest scores on the test. The scores of the students in the prime age bracket (16th birthday during semester of study) were between these two extremes.

TABLE XXVII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE PRE-TEST TOTAL ATTITUDE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
9.8923	10	1	15.5164	12
19.2571*	10	2	14.3676	12
17.3229	10	3	14.4875	12
.0010	0	4	.0027	0
46.4733*	30	Total	44.3742	36

*significant at the .05 level of confidence

There were no significant relationships between age and post-test attitude scores for any of the regions in either Group A or Group B (Table 28). There was, however, a tendency for those in the first (oldest) and second (prime) age brackets to improve on the total attitude test scores while those in the third (youngest) age bracket failed to gain (Table 29).

TABLE XXVIII

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
16.1547	10	1	8.7494	10
11.9964	12	2	5.6273	8
10.5179	10	3	13.9389	8
.0046	0	4	.0033	0
38.6736	32	Total	28.3189	26

TABLE XXIX

CHI-SQUARES AND DEGREES OF FREEDOM FOR THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST TOTAL ATTITUDE SCORES AS RELATED TO AGE

Group A			Group B	
x^2	df	Region	x^2	df
15.2139	8	1	19.4151*	10
8.8125	8	2	6.6635	10
14.4122	8	3	20.3676**	8
.0014	0	4	.0028	0
38.4400*	24	Total	46.4490*	28

*significant at the .05 level of confidence
**significant at the .01 level of confidence

Although the subhypothesis that there will be no statistically significant relationship between total attitude test scores and age

was not rejected, it was generalized that students in the prime age bracket tend to make higher scores on the attitude tests.

Summary and Conclusions of Findings Related to the Subhypotheses

Of the five null subhypotheses which were tested to determine the relationship of the total attitude test scores to knowledge scores, sex, parent's occupation, grade point average, and age, four were confirmed. The evidence supporting the four subhypotheses confirmed that there was no statistical significant relationship between the total attitude test scores and sex, parent's occupation, grade point average, and age, though there were some regions that showed statistical significant chi-square values. The subhypothesis that was not confirmed asserted that a statistically significant relationship did not exist between the total attitude test scores and knowledge.

The subhypothesis which asserted no relationship between total attitude test scores and grade point average presented inconclusive evidence that higher grade point averages related to higher scores on the attitude test. The highest grade point average did not produce the highest attitude test scores, but those grade point averages ranking from the next highest to the lowest compared favorably with corresponding attitude test scores.

One of the subhypotheses which was concerned with the relationship between attitude test scores and age presented evidence to infer that those students in the prime age bracket made higher scores on the attitude test than those students in the other age bracket.

The subhypotheses asserting no relationship between total attitude test scores and the variables were only partially supported by an analysis

of the findings. Only one variable, knowledge, was statistically significant in its relationship with attitude test scores.

CHAPTER VI

INTERPRETATION OF DATA RELATIVE TO PERSONALITY FACTORS

Any statistical significance revealed in the different aspects of this study might be attributable to some personal characteristic of the students in each group. To be able to identify personal characteristics, a personality factor questionnaire was administered to each student. This instrument, the Sixteen Personality Factor Questionnaire, measured the student along a continuum in terms of sten scores. The personality factors measured were:

1.	Aloof, Cold (Schizothymia)	Warm, Sociable (Cyclothymia)
2.	Dull, low Capacity (Low "g")	Bright, Intelligent (High "g")
3.	Emotional, Unstable (Low Ego Strength)	Mature, Calm (High Ego Strength)
4.	Submissive, Mild (Submissiveness)	Dominant, Aggressive (Dominance)
5.	Glum, Silent (Desurgency)	Enthusiastic, Talkative (Surgency)
6.	Casual, Undependable (Low Super Ego Strength)	Conscientious, Persistent (High Super Ego Strength)
7.	Timid, Shy (Threctia)	Adventurous, "Thick Skinned" (Parmia)
8.	Tough, Realistic (Harria)	Sensitive, Effeminate (Premsia)
9.	Trustful, Adaptable (Inner Relaxation)	Suspecting, Jealous (Protension)
10.	Conventional, Practical (Praxernia)	Bohemian, Unconcerned (Alaxia)
11.	Simple, Awkward (Naivete)	Sophisticated, Polished (Shrewdness)
12.	Confident, Unshakable (Confidence)	Insecure, Anxious (Timidity)
13.	Conservatism, Accepting (Conservatism)	Experimenting, Critical (Radicalism)
14.	Dependent, Imitative (Group Dependence)	Self-Sufficient, Resourceful (Self-Sufficiency)

15.	Lax, Unsure (Low Integration)	Controlled, Exact (Self Sentiment Control)
16.	Phlegmatic, Composed (Low Ergic Tension)	Tense, Excitable (High Ergic Tension)

The results obtained from the questionnaire were statistically analyzed by the use of the analysis of variance to determine if a significant difference prevailed between the personality factors of the students who were enrolled in a standard course in driver education and students who were not enrolled in a course. This is the basis for the hypothesis--that there will be no significant difference between the personality factors of students enrolled in a standard course in driver education (Group B) and the students who are not in a course (Group A). Since the null hypothesis was being tested, the variance ration, or F, was not considered statistically significant unless at the .05 level of confidence or on a more definitive level.

In determining a relationship between personality factors and any of the six related variables only two were treated statistically. The results from the Seibrecht Attitude Scale, the Driving Knowledge Test, and the Sixteen Personality Factor Questionnaire were statistically analyzed by the use of the chi-square tests to determine relationship. A more detailed observation of the frequencies was desired, thereby increasing the degrees of freedom for each of the chi-square tests. To decrease the errors, a correction for continuity was made in each chi-square test shown in the tables relating personality factors to knowledge and, also, to attitude.

To test personality factors as they relate to knowledge test scores a multi-fold contingency table was used with the total sten scores of the personality factors as the attribute under investigation and the knowledge test scores classified into categories. This same technique was used to determine the relationship of personality factors to attitudes.

The null hypothesis was being tested and no relationship was assumed statistically significant unless the chi-square value was at .05 level of confidence or at a more definitive level.

The null subhypotheses tested were:

1. There will be no significant relationship between personality factors and knowledge test scores.
2. There will be no significant relationship between personality factors and total attitude test scores.

Other issues examined from a descriptive standpoint were:

1. The relationship between personality factors and sex;
2. The relationship between personality factors and parent's occupation;
3. The relationship between personality factors and grade point average; and
4. The relationship between personality factors and age.

Tables for the hypothesis and each subhypothesis accompany the findings. The table for the hypothesis includes the summary tables for each region with the F values of statistical significance starred to indicate the level of confidence. Tables for subhypotheses 1 and 2 identify each region, group, chi-square, and the degrees of freedom. Chi-square values found to be statistically significant are starred to indicate their level of confidence.*

Comparison of Personality Factors for Group A and Group B

The hypothesis asserts that there would be a significant difference in the personality factors as determined by the Sixteen Personality Factor Questionnaire between students enrolled in a standard course in driver education and students who are not enrolled in a driver education course.

The Summary Table for the Analysis of Variance Relating to Personality Factors (Table 30) revealed no F values statistically significant at the .05 level of confidence. In Region 1, Group A had a total sten score mean of .53 larger than Group B but the difference between the high and low total sten scores was more pronounced in Group B. The sten score range in Group B was from 60 to 105 while in Group A the range was from 65 to 100 or a total of 10 smaller than Group B.

Group B had the larger total sten score mean in Region 2, exceeding Group A by 2.59. As in Region 1, Group B had a larger sten score range. Group B scores were from 60 to 100 while Group A scores ranged from 70 to 90. The sten score range of Group B was 20 larger than Group A.

The range of total sten scores for both groups in Region 3 was the smallest of all the regions. The sten score range for Group B was 5 larger than for Group A, extending from 75 to 95 while the range for Group A was 70 to 95. Also, the total sten score mean of Group A was 2.06 larger than Group B.

In Region 4, there was no difference between Group A and Group B in sten score range as both had scores from 60 to 100. Group B had only .64 larger total sten score mean than Group A.

For all the regions the total sten score mean of Group B exceeds the mean of Group A by .16 which would imply that both groups were comparable in total sten scores. The greatest difference in personality factors seem to be within each group rather than between groups.

Conclusively, there were no statistically significant differences in the personality factors between students enrolled in a standard course in driver education (Group B) and students not enrolled in the course (Group A), and the samples were drawn from the same normally distributed population.

TABLE XXX

SUMMARY TABLE FOR THE ANALYSIS OF VARIANCE
RELATING TO PERSONALITY FACTORS

Region 1

Source of Variation	df	SS	MS	F
Total	88	9630.20		
Between	1	18.42		.167
Within	87	9611.76	110.48	

Region 2

Total	32	1518.55		
Between	1	50.31		1.062
Within	31	1468.24	47.36	

Region 3

Total	33	1442.47		
Between	1	33.99		.772
Within	32	1408.48	44.02	

Region 4

Total	47	2768.81		
Between	1	3.46		.060
Within	46	2765.35	57.61	

The Relationship of Personality Factors to Knowledge

Subhypothesis 1 asserts no significant relationship between personality factors and knowledge test scores. In Group A, of the sixteen personality factors only three had chi-square values of statistical significance for both the pre-test and post-test knowledge test scores (Table 31). These were personality factors 3 (Emotional-Mature), 8 (Tough-Sensitive), and 11 (Simple-Sophisticated). For personality factor 3, the students who had above average sten scores were the high achievers on the knowledge pre-test while those with average sten scores were the high achievers on the post-test.

The high achievers, both on the pre- and post-test, had average sten scores for personality factor 8 (Tough-Sensitive). For personality factor 11 (Simple-Sophisticated), the high achievers on the post-test had average sten scores, and the high achievers on the pre-test had below average sten scores.

The remaining chi-square values of statistical significance were personality factor 1 (Aloof-Warm) and 14 (Dependent-Self-Sufficient) on the pre-test. The sten scores of the high achievers with these personality factors tended to be below average. This was also found true on the post-test scores for personality factors 1 (Aloof-Warm), 5 (Glum-Enthusiastic), and 7 (Timid-Adventurous).

There were four personality factors in Group B that had statistical significance on both the pre-test and post-test in one region. These were factors 2 (Dull-Bright), 5 (Glum-Enthusiastic), 8 (Tough-Sensitive), and 11 (Simple-Sophisticated). Personality factor 2 was the most consistent in Region 1 where the students with high sten scores made the highest scores on the knowledge test. Personality factor 8 was irregular in that students with average sten scores yielded higher knowledge

TABLE XXXI

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO KNOWLEDGE TEST SCORES

Group A

	Region 1					Region 2			
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	29.6230*	18	18.6807	18	1	42.9332	35	59.0932*	42
2	14.7582	21	22.1399	21	2	30.1098	25	27.8196	30
3	32.0473	21	26.5938	21	3	34.4430	35	51.9985	42
4	15.1295	24	35.2578	24	4	21.3317	25	39.5369	30
5	25.4098	21	34.2818*	18	5	18.1326	25	29.3327	30
6	16.1768	21	18.2361	21	6	25.2209	25	41.7315	30
7	21.4866	18	21.5129	18	7	18.7107	20	36.9061*	24
8	20.2696	21	17.4465	21	8	26.2202	25	32.2627	30
9	27.3718	21	14.1089	21	9	13.4803	20	16.1473	24
10	22.6282	24	20.2686	24	10	21.2670	15	22.7008	18
11	23.1279	24	18.6941	24	11	32.7099	30	37.6165	30
12	22.5715	18	10.0990	18	12	16.8862	20	12.1027	24
13	16.2930	21	19.8332	21	13	21.2356	25	31.2230	30
14	31.6675*	18	17.4339	18	14	17.8858	20	33.1969	24
15	17.2832	21	20.5074	21	15	28.7999	30	34.3732	36
16	17.0523	18	16.3430	18	16	20.5332	20	23.0399	30

*significant at the .05 level of confidence

TABLE XXXI (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO KNOWLEDGE TEST SCORES

Group A

	Region 3				Region 4			
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	44.6493	35	41.8108	35	1	27.3746	24	20.7023	24
2	20.7562	25	29.3924	25	2	21.6344	24	27.6480	24
3	47.2709**	25	38.9287*	25	3	27.1714	24	27.7090	24
4	24.9475	25	26.6907	25	4	26.7407	20	17.5948	20
5	19.8467	20	30.0010	20	5	24.3208	24	17.6311	24
6	25.3747	30	34.0880	30	6	25.8192	20	40.0524***	20
7	33.4513	25	25.4169	25	7	22.3387	24	21.3828	24
8	54.0386**	30	59.5277**	25	8	30.1221	28	40.4833	28
9	19.2567	20	19.3725	20	9	27.1363	28	32.0494	28
10	15.8286	20	29.7630	20	10	21.5442	20	23.7859	20
11	30.3576	35	40.5115	35	11	43.9190*	28	41.4493*	28
12	32.3475	25	30.8864	25	12	17.8510	20	12.2960	20
13	27.8769	30	36.8500	30	13	29.5829	28	23.0318	28
14	20.6973	20	30.1434	20	14	26.3461	28	36.5058	28
15	14.5119	25	21.8313	25	15	27.2324	28	41.8440*	16
16	14.8867	20	25.0413	20	16	20.9640	20	18.2603	16

*significant at the .05 level of confidence
**significant at the .01 level of confidence
***significant at the .005 level of confidence

TABLE XXXI (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO KNOWLEDGE TEST SCORES

Group B

Region 1					Region 2				
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	40.0932	32	33.1530*	21	1	12.8014	9	13.0218	12
2	51.8761***	28	42.4268**	21	2	18.7776	18	21.5400	24
3	34.0919	24	36.5831**	18	3	20.6687	18	21.5424	24
4	32.2867	32	19.1332	24	4	15.7498	21	26.7756	28
5	28.0028	24	25.9487	18	5	14.2432	15	13.6028	20
6	63.2906***	32	23.9638	24	6	17.8915	18	20.4079	24
7	31.7070	24	18.1185	18	7	13.2341	12	15.8736	16
8	43.6413*	28	40.5178**	21	8	17.4250	15	20.2558	20
9	27.6121	28	31.1166	21	9	18.9910	15	22.4857	20
10	38.4145	32	34.2110*	21	10	21.6217	18	32.8792	24
11	34.2830	32	21.3182	24	11	29.1223*	18	23.4291	24
12	36.7861	28	19.5284	21	12	14.7103	15	17.0070	20
13	43.7800*	28	16.5148	21	13	9.5316	15	17.1956	20
14	41.1617	32	40.8455*	24	14	11.5606	18	21.0001	24
15	38.2717	28	19.1356	21	15	13.9603	18	20.5969	24
16	31.7185	24	18.4100	18	16	13.9601	12	26.4546*	16

*significant at the .05 level of confidence
**significant at the .01 level of confidence
***significant at the .005 level of confidence

TABLE XXXI (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO KNOWLEDGE TEST SCORES

Group B

Region 3					Region 4				
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	11.4403	12	8.4842	12	1	24.9501	18	11.8230	12
2	22.9597	21	27.8855	21	2	22.7022	18	10.4188	12
3	23.1493	15	36.6131***	15	3	12.0913	15	2.6184	10
4	15.5887	15	18.2466	15	4	18.5913	18	19.7134	12
5	22.6292**	9	25.6297***	9	5	24.3407	18	11.6403	12
6	18.4252	18	24.0942	18	6	37.8783*	21	23.0949	14
7	14.2211	12	14.6939	12	7	34.3264*	21	16.8040	14
8	11.3876	18	17.6889	18	8	16.0616	18	21.0185	12
9	16.0612	15	21.9081	15	9	10.4715	15	5.0715	10
10	10.5835	12	18.3770	12	10	21.8782	24	11.8915	16
11	30.5888*	18	38.7956***	18	11	27.3917	18	22.9199*	12
12	17.5736	15	13.1341	15	12	16.6061	18	10.0828	12
13	22.6754	18	46.7678***	15	13	19.7714	18	13.0142	12
14	24.9169	18	20.6672	18	14	11.9452	18	12.4363	12
15	9.5084	15	10.1578	15	15	24.2216	21	13.8265	14
16	17.7624	15	16.4161	15	16	11.5217	15	10.9358	10

*significant at the .05 level of confidence
**significant at the .01 level of confidence
***significant at the .005 level of confidence

test scores, and the ones with low sten scores made low knowledge scores on the pre-test but produced higher sten scores on the knowledge post-test. Factors 5 and 11 were very similar with the high achievers being the ones with slightly low averages on the pre-test and average on the post-test.

The other significant chi-square values on the pre-test were for personality factors 6 (Casual-Conscientious), 7 (Timid-Adventurous), and 13 (Conservatism-Experimenting). Factor 6 was significant in two regions of this group. All of these students were high achievers with an average sten score but toward the low side of the scale. The personality factors of significance for the post-test, factors 1 (Aloof-Warm), 3 (Emotional-Mature), 10 (Conventional-Bohemian), 11 (Simple-Sophisticated), 13 (Conservatism-Experimenting), 14 (Dependent-Self-Sufficient), and 16 (Phlegmatic-Tense), were effected by high achievers with sten scores of average to above with the exception of factor 1 in which they had low sten scores.

Of the sixteen personality factors tested for statistical significance on pre-test and post-test knowledge scores for both groups, none were significant in all regions. An inference was made from these findings that those with high sten scores for personality factor 3 (Emotional-Mature) tended to score higher on the knowledge test; also, that higher scores were made on the knowledge tests by those students with average sten scores for personality factor 8 (Tough-Sensitive).

There were only two personality factors without at least one significant chi-square value. Generally, the personality factors with statistically significant chi-square values showed the high achievers tended to have average sten scores. There was insufficient evidence to establish a statistically significant relationship between personality factors and knowledge test scores with the data provided in this study.

The Relationship of Personality Factors to Attitude

Subhypothesis 2 states that there will be no significant relationship between personality factors and total attitude test scores. Upon review of Table 32, Group A was found to have seven personality factors with statistical significance but only three of which were significant more than once. The four remaining significant personality factors were scattered between the pre- and post-test and between regions.

Personality factor 6 (Casual-Conscientious) appeared to be the most consistent factor with four chi-squares of statistical significance, three of which were for the pre-tests. Personality factors 8 (Tough-Sensitive) and 9 (Trustful-Suspecting) had two significant chi-squares each while factors 2 (Dull-Bright), 3 (Emotional-Mature), 4 (Submissive-Dominant), 7 (Timid-Adventurous), 14 (Dependent-Self-Sufficient), and 16 (Phlegmatic-Tense) each had one chi-square value of significance.

Personality 6 (Casual-Conscientious) established a fairly consistent pattern with students having average sten scores tending to be the low achievers on the attitude pre-test and those with below average sten scores being the low achievers on the post-test. For factor 8 (Tough-Sensitive) the low achievers in Region 3 had average sten scores but in Region 4 those with average sten scores were the average achievers. Although the average achievers had average sten scores on the pre-test in Region 4 for factor 8 (Tough-Sensitive), the highest achievers consisted of those with both high and low sten scores. On the post-test the highest achievers had average to above average sten scores.

For personality factors 2 (Dull-Bright), 3 (Emotional-Mature), 4 (Submissive-Dominant), 9 (Trustful-Suspecting), and 16 (Phlegmatic-Tense) the high achievers had high sten scores; the average achievers had average sten scores; and the low achievers had low sten scores, while

TABLE XXXII

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO TOTAL ATTITUDE SCORES

Group A

Region 1					Region 2				
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	40.2584	30	36.6756	30	1	49.7922	42	38.2686	42
2	33.2226	35	50.6157*	35	2	39.0700	30	33.7822	30
3	40.4516	35	38.2730	30	3	37.2266	42	36.6163	42
4	56.7524*	40	52.0585	40	4	47.3190	36	43.5614	36
5	50.8918	40	42.1861	30	5	32.3137	30	43.4648	30
6	54.6236*	35	46.7129	35	6	32.2394	30	48.1912*	30
7	31.3717	30	37.1100	30	7	23.9624	24	22.6803	24
8	28.7280	35	33.5593	35	8	25.4161	30	35.7723	30
9	47.5527	35	65.9958***	30	9	21.5128	24	26.3024	24
10	33.7568	40	50.6464	40	10	18.2593	18	19.7077	18
11	38.0613	40	42.6817	35	11	37.3391	36	37.7967	36
12	23.8849	30	34.0916	35	12	40.5151	30	30.6164	30
13	31.5612	40	38.9468	35	13	40.6418	36	34.5565	36
14	24.7381	30	27.1692	30	14	17.1493	24	30.3052	24
15	25.4837	35	33.0600	35	15	42.5480	36	38.5072	36
16	43.2969	30	47.9340*	30	16	15.9486	24	25.2788	24

*significant at the .05 level of confidence
***significant at the .005 level of confidence

TABLE XXXII (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO TOTAL ATTITUDE SCORES

Group A

	Region 3				Region 4			
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	42.5207	35	29.6940	35	1	31.6243	24	27.0472	30
2	24.8033	25	25.3770	25	2	30.6119	24	33.6764	35
3	39.5910*	25	24.0204	25	3	28.1463	24	26.2392	25
4	29.7173	25	29.5950	25	4	23.0715	20	25.9968	25
5	18.0730	20	25.7020	20	5	27.3677	24	37.0491	30
6	48.8260*	30	33.4215	30	6	27.0637	20	39.5672*	25
7	31.9849	25	29.4049	25	7	18.4805	24	44.2228*	30
8	46.5961*	30	35.2573	30	8	44.1025*	28	44.1389	35
9	21.6161	20	18.7530	20	9	46.1131*	28	41.5065	35
10	19.0155	20	18.4478	20	10	27.2916	20	27.3073	25
11	36.8505	35	38.5967	35	11	27.9899	28	46.3287	35
12	13.7619	25	14.1865	25	12	24.5219	20	20.1430	25
13	23.0311	30	35.5973	30	13	39.8974	28	37.0633	35
14	24.8525	20	22.6312	20	14	56.2204**	28	47.2479	35
15	23.1148	25	24.9428	25	15	23.1996	28	41.6907	35
16	17.4235	20	28.8557	20	16	14.0360	16	21.2261	20

*significant at the .05 level of confidence
**significant at the .01 level of confidence

TABLE XXXII (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO TOTAL ATTITUDE SCORES

Group B

Region 1					Region 2				
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factor	Pre-Test X^2	df	Post-Test X^2	df
1	34.0051	48	41.8337	40	1	14.9067	18	8.9940	12
2	50.9135	42	51.8214*	35	2	35.9053	36	21.4960	24
3	35.4603	36	35.6324	30	3	47.2462	36	24.2533	24
4	35.4096	48	57.7004*	40	4	43.4656	42	22.4402	28
5	32.6744	36	30.1038	30	5	27.8744	30	20.0794	20
6	57.8992	48	52.6309	40	6	40.3961	36	23.9771	24
7	30.5403	36	28.9477	30	7	24.4524	24	20.7304	16
8	64.6697*	42	35.0039	35	8	38.0811	30	13.2537	20
9	47.8819	42	25.4526	35	9	28.4909	30	24.6861	20
10	35.1477	48	49.5908	40	10	34.9622	36	22.2053	24
11	42.0820	48	47.7502	40	11	36.4736	36	21.9681	24
12	49.4009	42	28.8775	35	12	27.9254	30	20.7664	20
13	49.5780	42	35.0953	35	13	34.7272	30	16.8915	20
14	37.9351	48	64.1376**	40	14	32.8694	36	26.6925	24
15	30.4449	42	35.0398	35	15	44.1765	36	27.6388	24
16	29.1056	36	46.8242*	30	16	21.0277	24	15.8293	16

*significant at the .05 level of confidence
**significant at the .01 level of confidence

TABLE XXXII (continued)

CHI-SQUARE AND DEGREES OF FREEDOM FOR PERSONALITY FACTORS AS RELATED TO TOTAL ATTITUDE SCORES

Group B

	Region 3					Region 4			
Personality Factor	Pre-Test X^2	df	Post-Test X^2	df	Personality Factors	Pre-Test X^2	df	Post-Test X^2	df
1	29.6718	24	32.1129**	16	1	52.2494	42	30.0298	30
2	49.4338	42	52.5118***	24	2	47.8746	42	20.7309	25
3	37.1313	30	24.0939	20	3	30.9165	35	20.1483	25
4	23.9498	30	26.4570	20	4	69.2685**	42	33.6852	30
5	14.6440	18	15.3552	12	5	39.0040	42	39.0487	30
6	28.0629	36	35.4348*	20	6	50.8656	56	26.1749	35
7	20.6737	24	23.4821	16	7	49.6493	49	25.4022	35
8	35.6505	36	23.1833	24	8	82.5337**	42	28.4330	30
9	42.7524	30	28.3473	20	9	24.7181	35	19.3556	25
10	18.7267	24	14.8369	16	10	60.4101	56	59.3482*	40
11	27.8703	36	40.6303*	24	11	70.9365***	42	27.2116	30
12	42.6127	30	27.3086	20	12	54.8955	42	36.8832	30
13	40.0578	36	25.5109	20	13	59.5426*	42	34.7367	30
14	36.8925	36	44.0539*	24	14	43.0018	42	27.7899	30
15	31.1080	30	20.9666	20	15	61.0970	49	35.7264	35
16	26.0564	30	32.5985*	20	16	43.7806	35	31.7452	25

*significant at the .05 level of confidence
**significant at the .01 level of confidence
***significant at the .005 level of confidence

for factor 14 (Dependent-Self-Sufficient) those with average sten scores were the high achievers.

Group B increased over Group A in the number of personality factors with statistical significance in more than one region with six factors having two significant chi-square values. Three of the chi-squares values were significant on pre-tests and the other three were mixed. It was noted that Region 2 failed to have a chi-square value of statistical significance for either of the tests.

In Regions 1 and 4 personality factor 8 (Tough-Sensitive) was significant on the pre-test. The other personality factors of significance, factors 4 (Submissive-Dominant), 11 (Simple-Sophisticated), and 13 (Conservative-Experimenting) were in Region 4. Neither Region 2 nor 3 had statistically significant chi-square values on the pre-tests.

The two significant chi-square values for personality factor 8 (Tough-Sensitive) revealed that those with average sten scores made higher scores on the attitude pre-test. Factor 4 (Submissive-Dominant) showed the above average attitude score to be made by those with slightly above average sten scores while those with other sten scores were not consistent in achievement. Some with higher sten scores were both above and below average in achievement as were some with lower sten scores.

On the post-test two of the personality factors with significant chi-square values were similar. For factor 2 (Dull-Bright) the high achievers were those with high sten scores in both regions with significant chi-square values. Also, in the two regions, the high achievers were those with average sten scores for factor 16 (Phlegmatic-Tense). The other personality factors that were significant in two regions had those with above average sten scores making the lowest grades on the

attitude post-test in Region 3, and in Region 1 those with low sten scores made the highest scores on the attitude post-test.

Subhypothesis 2 asserted no significant relationship between personality factors and total attitude scores. The statistically significant chi-square values were so inconsistently grouped among the sixteen personality factors for the two groups that no statistically significant personality factor was evident for both Group A and Group B on the pre- and post-tests.

Personality factor 2 (Dull-Bright) indicated a possible relationship with three statistically significant chi-square values on the post-tests; one in Group A and two in Group B. Bright, intelligent students had the best attitudes toward safe driving practices. Another possible relationship was personality factor 6 (Casual-Conscientious) where poor driving attitudes were attributed to the casual, undependable students. Also, an indication of possible relationship was personality factor 8 (Tough-Sensitive). The students who were neither tough nor sensitive had a more favorable attitude toward safe driving. This attitude was found, too, in students who were neither phlegmatic nor excitable but with average ergic tension, factor 16 (Phlegmatic-Tense).

These findings provided insufficient evidence to relate personality factors with total attitudes scores; however, there were statistical tendencies that indicated relationships might be found between certain personality factors and attitude through additional research.

The Relationship of Personality Factors to Sex

Approximately as many girls were enrolled in the driver education courses as were boys; therefore, this phase of the study was concerned with the relationship of personality factors to sex. This relationship

was not statistically analyzed as previous findings have shown little significant evidence of relationship between sex and other aspects of this study.

Sten scores for the remaining part of the chapter are the total sten scores of the sixteen personality factors measured; therefore, no one personality factor was considered in relationship to sex. Sten scores are used synonomously with personality factors in relationship to sex for this part of the chapter and for the other variables as they are examined.

Table 33 shows the number of each sex and the total sten scores for each group by region. Each group had a total of 55 males and 49 females. The largest number for one sex was in Region 1 with 29 females. Also, the females had the smallest number with only one in Region 3. Within Group A the males had most of the higher sten scores (above 90), but the females had the highest sten scores. Approximately the same number for each sex fell within the average sten score range of 80 to 90.

For Group B the distribution of scores was similar to Group A but with a wider range. The females of this group had the highest total sten score but were below the males in the number of sten scores above 90. The totals for males and females for each group revealed about the same pattern of score distribution as each group had separately. Any difference of sten scores between the two sexes could be contributed to the smaller number of females.

The observations failed to reveal any relationship between personality factors and sex which might be significant; nor did there appear any differences between the sexes in personality factors as determined by the total sten scores.

TABLE XXXIII

PERSONALITY FACTORS AS RELATED TO SEX

Group A, Males
Sten Scores

Region	N	0	60	65	70	75	80	85	90	95	100	105
1	16			0	1	2	3	5	4	1		
2	11			0	1	3	4	2	1			
3	16	1		0	1	0	4	5	4	2		
4	12			0	1	0	4	3	2	2		
Total	55	-		0	4	5	15	15	11	5		

Group A, Females
Sten Scores

Region	N	0	60	65	70	75	80	85	90	95	100	105
1	29				1	3	13	5	4	2	1	
2	6				1	3	1	1				
3	1							1				
4	13			1	1	0	6	3	0	2	0	
Total	49			1	3	6	20	10	4	4	1	

Group B, Males
Sten Scores

Region	N	0	60	65	70	75	80	85	90	95	100	105
1	16		0	0	1	3	1	4	4	1	1	1
2	11		1	0	1	0	4	3	2	0	0	0
3	16	1	0	0	0	4	4	6	0	2	0	
4	12						3	4	4	0	1	
Total	55	-	1	0	2	7	12	17	10	3	2	1

Group B, Females
Sten Scores

Region	N	0	60	65	70	75	80	85	90	95	100	105
1	29		1	0	2	3	10	9	3	0	1	0
2	6			1	0	1	1	2	0	0	1	0
3	1							1				
4	13			1	2	3	2	2	2		1	
Total	49		1	2	4	7	13	14	5		3	

The Relationship of Personality Factors to Parent's Occupation

There was no statistically significant difference between the personality factors of the students who were enrolled in a standard course in driver education (Group B) and students who were not enrolled in a course (Group A); therefore, the personality factors were not statistically analyzed to determine their relationship with the parent's occupation. Instead, an attempt was made to determine the sten scores of the students within each parent's occupation of both Group A and Group B and to make some non-statistical inferences.

Table 34 lists the parent's occupational classification with the corresponding total sten scores of the personality factors for the students within each parent's occupation for both Group A and Group B. This table shows the majority of students within each parent's occupation had total sten scores between 80 and 90. Computation revealed these total sten scores to be an individual score between 5 and 6 which is the average score.

Group A had one parent's occupation with a total sten score of over 100. This was occupation 1 (Professional) which was the highest score for this group. Also in Group A, students whose parents had professional (1), clerical (2), or skilled (5) occupations had over 25 per cent of the sten scores of 90 and above. Students of skilled workers exceeded the other students with 39 per cent with sten scores 90 and above. As a group, Group A had 57 per cent with average sten scores of 80 to 90, 38 per cent with above average, and 9 per cent with below average.

Group B was similar to Group A in the distribution of total sten scores with 53 per cent average sten scores, 23 per cent above average,

TABLE XXXIV

PERSONALITY FACTORS AS RELATED TO PARENT'S OCCUPATION

Group A

Total Sten Scores

Parent's Occupation	N	0	60	65	70	75	80	85	90	95	100	105
1	30			1	2	5	8	6	3	4	1	
2	16				2		7	3	3	1		
3	2						1	1				
4	1						1					
5	23	1			2		5	6	7	2		
6	17				1	3	5	6	1	1		
7	4					2	2					
8	12					1	6	3	1	1		
Total	105	1	0	1	7	11	35	25	15	9	1	0

Group B

Total Sten Scores

Parent's Occupation	N	0	60	65	70	75	80	85	90	95	100	105
1	32				1	6	7	9	7		1	1
2	14				1	3	3	3	2	1	1	
3	2			1				1				
4	1						1					
5	24	1	1		1	1	7	6	4	1	2	
6	15			1		3	1	8	1	1		
7	4				1	1	2					
8	13		1		2		4	4	1		1	
Total	105	1	2	2	6	14	25	31	15	3	5	1

and 24 per cent below average. Students with professional parents (1), as in Group A, had the highest total sten score of 105. Over 25 per cent of the students with parents in professional (1), clerical (2), or skilled (5) occupations had sten scores of 90 or better, with 38 per cent for the clerical occupations as the highest percentage.

The findings showed little difference between the two groups in the relationship of personality factors to the parent's occupation. The average total sten score for Group A was 83.5, and the average total sten score for Group B was 82.9, a difference of .6.

Students whose parents were engaged in a professional occupation tended to have the highest sten scores. Students whose parents worked at skilled occupations exceeded all others with a greater percentage of sten scores above average, and the students with unskilled parents tended to have average, and below, total sten scores.

Approximately 50 per cent of the total sten scores for both groups fell within the average sten score range of 80 to 90 with an equal percentage of the scores above and below average. There was no apparent relationship between personality factors as measured by total sten scores and parent's occupation as found in this study.

The Relationship of Personality Factors to Grade Point Average

Since this study did not reveal any statistically significant relationship between personality factors and knowledge, this part of the study examined the possibilities of relationship between the total personality factors and grade point average. As has been previously stated, the grade point averages were computed on the basis of 4.0 grade point for a grade of A.

Table 35 reveals a very close correlation in the distribution of total sten scores and grade point averages between Group A and Group B. In Group A, 38 per cent of the students with a grade point average of 3.1 to 3.5 (5) had total sten scores of 90 or above. The student with the highest total sten score had a grade point average below 1.0 (7). Fifty per cent of those students with grade point averages of 2.6 to 3.0 (4) had total sten scores below 80. Fifty-seven per cent of Group A had average sten scores, 24 per cent had above average, and 19 per cent had below average. Over fifty per cent of the students in each grade point bracket with the exception of 5 and 7, had average total sten scores.

In Group B most of the grade point average brackets had over 30 per cent with above average total sten scores and fifty per cent with average total sten scores. The student with the highest total sten score (108) had a grade point average of 3.1 to 3.5 (5). The most outstanding exception in this group was that students with a grade point average of 2.1 to 2.5 (3) had less than ten per cent with above average total sten scores and seventy-one per cent with average total sten scores. The distribution of total sten scores for Group B was very similar to Group A. Group B had 23 per cent with above average sten scores, fifty-three per cent with average sten scores, and twenty-four per cent with below average sten scores.

The only outstanding consistency of relationship between total sten scores and grade point average of the two groups was that those students with a grade point average of 3.1 to 3.5 (5) had approximately the same percentage with above average, average, and below average total sten scores. There was insufficient evidence to establish a relationship between personality factors in terms of total sten scores and grade point average.

TABLE XXXV

PERSONALITY FACTORS AS RELATED TO GRADE POINT AVERAGE

Group A

Total Sten Scores

Grade Point Average	N	0	60	65	70	75	80	85	90	95	100	105
0	0											
1	9	1				1	5	1	1			
2	27			1	1	3	8	8	4	2		
3	28				2	2	12	5	4	3		
4	14				1	2	4	5	2			
5	13				1	2	1	4	3	2		
6	13				2	1	5	2	1	1	1	
7	1									1		
Total	105	1	0	1	7	11	35	25	15	9	1	

Group B

Total Sten Scores

Grade Point Average	N	0	60	65	70	75	80	85	90	95	100	105
0	10				2	1	1	2	3	1		
1	8			1	2		2	2	1			
2	17	1	1		1	3	5	4	1	1		
3	24		1			4	4	13	1		1	
4	30				1	4	9	7	6		3	
5	13			1		2	3	2	2	1	1	1
6	2						1	1				
7	1								1			
Total	105	1	2	2	6	14	25	31	15	3	5	1

The Relationship of Personality Factors to Age

Age in this study was divided into three brackets with the older students (1) consisting of those whose sixteenth birthdate was prior to the semester and the younger students (3) whose sixteenth birthdate was after the semester ended. The prime age bracket (2) was considered as those students who could become sixteen years of age during the semester of the study. This phase of the study was to examine the probability of any relationship between personality in terms of total sten scores and age as defined.

Table 36 separates the age brackets into the ages of the males and females to enable a more refined study of the groups. There was a total of 27 students over age and 16 students under age in each of the groups with the remaining number considered in the prime age bracket. There was a consistent pattern of higher total sten scores for both the males and females in Group A. The older students had lower total sten scores, the younger students were a few points higher, and the prime age students had the highest total sten scores.

In Group B the prime age students had the highest sten scores, the older students with the next highest, and the younger males and older females had the lowest total sten scores.

For both groups a larger percentage of older students had lower total sten scores (below 80), and a larger percentage of the prime age students had higher total sten scores (above 90).

In conclusion there was not ample evidence to support a relationship between personality factors and age, although there appeared to be a tendency for the older males in driver education to have higher total sten scores than the older males not enrolled in the class.

TABLE XXXVI

PERSONALITY FACTORS AS RELATED TO AGE

Group A

Males
Total Sten Scores

Age	N	0	60	65	70	75	80	85	90	95	100	105
1	13				1	2	5	3	2			
2	32				3	3	6	10	7	3		
3	10	1					4	2	2	2		
Total	55				4	5	15	15	11	5		

Females
Total Sten Scores

Age	N	0	60	65	70	75	80	85	90	95	100	105
1	14				1	3	7	2		1		
2	29			1	2	3	11	5	3	3	1	
3	6						2	3	1			
Total	49			1	3	6	20	10	4	4	1	

Group B

Males
Total Sten Scores

Age	N	0	60	65	70	75	80	85	90	95	100	105
1	13				2	1	1	5	2	1	1	
2	32					5	10	6	7	2	1	1
3	10	1	1			1	1	6	1			
Total	55		1		2	7	12	17	10	3	2	1

Females
Total Sten Scores

Age	N	0	60	65	70	75	80	85	90	95	100	105
1	14		1	1	2		5	3	1		1	
2	29			1	2	5	6	9	4		2	
3	6					2	2	2				
Total	49		1	2	4	7	13	14	5		3	

Summary and Conclusion of Findings Related to the Variables

Only two of the six variables were statistically treated, these were: subhypothesis 1 which stated there will be no significant relationship between personality factors and knowledge test scores and subhypothesis 2 which stated there will be no significant relationship between personality factors and total attitude test scores. Neither of these subhypotheses were rejected by the evidence obtained. Data for subhypothesis 1 showed a tendency for students with high total sten scores on Personality Factor 3 (Emotional-Mature) to have higher knowledge test scores and that the highest knowledge test scores were made by students with average sten scores for Personality Factor 8 (Tough-Sensitive).

Subhypothesis 2, asserting relationship between personality factors and attitude test scores was only partially supported by the evidence obtained. Students with average sten scores on Personality Factor 8 (Tough-Sensitive) and Personality Factor 16 (Phlegmatic-Tense) had favorable attitudes toward safe driving practices. There were tendencies for the bright, intelligent students (Personality Factor 2) to have the best attitude toward safe driving practices.

The other four variables were not statistically treated but were examined to determine if there were any prevalent indications of relationship. There appeared to be no relationship between personality factors and sex as the distribution of total sten scores for the sex of both groups were very similar.

The examination of the relationship between personality factors and parent's occupation revealed some evidence indicating that the students with professional parents tended to have the highest total sten scores.

Also, students whose parents were engaged in skilled occupations had above average sten scores.

There was insufficient evidence found by the examination of the relationship between personality factors and grade point average and between personality factors and age. There appeared to be a normal distribution of total sten scores for each grade point average with the highest percentage of sten scores between 80 and 90, or average. In regard to personality factors and age there was some tendency for the older male to have higher sten scores than the older female, but in general there appeared no significant difference between the scores of the three age groups either by male or female.

A final conclusion was made that there was no relationship between personality factors and sex, parent's occupation, grade point average, or age as determined by the data presented in this study. From the observations presented there seems to be ample justification for further research in this part of the study.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The upward trend of traffic fatalities in Oklahoma and in the Nation has been cause for alarm for those individuals and organizations engaged in accident prevention. Driver education is one of the activities provided to educate the high school youth as a means to the reduction of these traffic fatalities.

The field of driver education, being relatively new in our educational systems, is lacking in research. Most of the studies which have been done involved checking the driving records of the populace and determining how many had had a course in driver education. The review of the literature revealed other studies concerned with related areas applicable to safety in general. One controversy was noted in the review of the literature: contention concerning the place of driver education in our educational system. Those interested in the promotion of driver education definitely thought it should be a part of the high school curriculum, while there were some of the laity who believed that driver education should be taught outside of school time and without school credit.

This study, in view of the literature reviewed, was an attempt to discover if a standard course in driver education increased a student's knowledge of safe driving and developed an attitude conducive to safe

driving practices. Furthermore, the study attempted to determine if there were any personality factors or personal data which might influence the acquisition of these driving knowledges and attitudes.

In order to make this study, two groups of students were chosen. One group consisted of students enrolled in a standard course in driver education (Group B), and the other group consisted of students who were not enrolled in and had not taken a standard course (Group A). Each student of Group B, the experimental group, was matched with a student in Group A as to sex, age, and parent's occupation.

At the beginning of the semester in which the study was conducted, the Driving Knowledge Test, the Siebrecht Attitude Scale, the Sixteen Personality Factor Questionnaire, and a biographical questionnaire were administered to each group. At the end of the same semester the Driving Knowledge Test and the Siebrecht Attitude Scale were administered again to each group.

The two groups were compared to determine any differences between them in driving knowledge, driving attitudes, and personality factors. The personality factors and certain personal data were examined to determine the influence they may have had upon the acquisition of driving knowledge and attitudes. Altogether, this study tested three hypotheses and eleven subhypotheses.

The analysis of the findings of this study provided support for only one of the hypotheses tested. Those students completing a course in driver education had significantly higher scores on the driving knowledge test than did students who had not completed a course.

Of the eleven subhypotheses tested, only one had sufficient evidence to support it. This subhypothesis revealed that the students with high driving knowledge test scores had better attitudes toward safe driving practices than other students.

There were, however, some interesting tendencies noted in the analyses of the other subhypotheses. A course in driver education improved the driving knowledge of the female more than the male although the males were more knowledgeable about the subject. The students with professional parents knew more about driving than other students and had a more favorable attitude toward safe driving. Also, the older students made higher scores on the knowledge test than did their juniors, and students in the prime age bracket possessed more favorable attitudes towards safe driving practices than either their senior or junior school mates.

Only two personality factors, 3 (Emotional-Mature) and 8 (Tough-Sensitive), indicated any tendencies toward a relationship to knowledge of safe driving. The more mature students and the students who were neither tough nor sensitive appeared to be more knowledgeable about driving.

As to attitudes, the students who were neither tough nor sensitive (personality factor 8), and the students with average ergic tension, (personality factor 16) tended to have more favorable attitudes toward safe driving practices. There was also a tendency for students with professional parents to have the highest total sten scores, but there were more students whose parents pursued skilled occupations who had above average sten scores.

Conclusions

This study was to determine the immediate value of a standard course in driver education as measured over a span of one semester in terms of making possible the acquisition of driving knowledge and attitudes toward safe driving practices by students enrolled in the course. The findings

seemed to provide evidence that a standard course in driver education was beneficial in developing a better understanding of driving practices and principles. The scores on the driving knowledge pre-test revealed that students in driver education courses possessed more driving knowledge at the time of enrollment in the course than did students who did not enroll in the course.

From the findings in this study the conclusion was made that a standard course in driver education did not improve the students' attitudes toward safe driving practices nor were their attitudes better than students who did not complete the course. The findings did indicate that students with a better knowledge of driving also possessed a favorable attitude toward safe driving.

Further conclusions indicate no differences between the two groups in personality factors as measured by total sten scores. The findings relating the variables of sex, parent's occupation, grade point average, and age to knowledge, attitude, and personality factors presented insufficient evidence to conclude that there was a relationship between them. Also, there were tendencies for a relationship between some personality factors and attitudes and knowledge.

There was no consistent pattern of statistical significance pertaining to the other variables although there were some tendencies toward significance in certain areas. The findings in this study lacked sufficient support to establish relationships between the variables and knowledge, attitude, and personality factors other than those relationships previously stated.

Recommendations

The findings in this study seem to substantiate one of the objectives of driver education which is to develop an understanding of the principles

and practices of safe and efficient driving. The findings also could have some important implications to those who are teaching courses in driver education. From the findings in this study, the following recommendations are offered:

1. A study should be made to determine the best methods of teaching attitudes to students enrolled in driver education.
2. A study should be made to determine why trained drivers are more knowledgeable about driving prior to enrolling in a standard course in driver education than students who do not take the course.
3. A more detailed study should be made to determine the effect of sex, parent's occupation, grade point average, and age on the acquisition of driving knowledge and attitudes.
4. A study should be made to determine the effect of separate personality factors on the acquisition of driving knowledge and attitude.
5. A study should be made to determine the effect of personality factors upon whether or not a student enrolls in a course in driver education.
6. A study of the driving records of the two groups should be made at intervals of from three to five years to further determine the value of a standard course in driver education.
7. A study should be made to determine if there are other environmental or social factors that influence the acquisition of driving knowledge and attitudes.
8. Driver education courses should be periodically evaluated to determine if the students are receiving adequate instruction or just enough to meet the driver's license requirement.

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APPENDIX A

THE DRIVING KNOWLEDGE TEST

The Driving Knowledge Test, which follows, was administered to both Group A and Group B at the beginning of the semester as the pre-test and again at the end of the semester as the post-test. This is a 100 question multiple-choice test with a separate answer sheet which is not included in this appendix.

A TEST IN DRIVER EDUCATION

STUDENT'S NAME _____ SCORE _____

DIRECTIONS: Read each question carefully. Choose the best answer and place the letter preceding your answer in the blank space before the number of the question.

_____ 1. MOST TRAFFIC ACCIDENTS ARE THE RESULT OF
a. mechanical defects in automobiles
b. defects in the road
c. errors in judgment of drivers
d. adverse weather conditions

_____ 2. GENERALLY THE SAFEST DRIVERS ARE THOSE WHO
a. have the best vision
b. have the quickest reaction time
c. do the most driving
d. can best adjust their driving to conditions that exist

_____ 3. SPEED AT NIGHT SHOULD BE LOWER THAN DURING THE DAY BECAUSE
a. visibility distances are reduced
b. brakes are less efficient
c. reaction time is increased
d. traction is reduced

_____ 4. WHEN MEETING APPROACHING VEHICLES AT NIGHT, THE COURTEOUS DRIVER USES
a. the lower headlight beam
b. the upper headlight beam
c. the parking lights
d. the upper and lower beams alternately

_____ 5. WHICH OF THE FOLLOWING IS NOT CHARACTERISTIC OF THE EXPERT DRIVER?
a. drives by habit
b. knows the rules of driving
c. controls his speed and power
d. shows courtesy and sportsmanship

_____ 6. THE FORCE WITH WHICH A CAR TRAVELING AT 60 MILES PER HOUR WOULD CRASH INTO A FIXED OBJECT IS THE SAME AS THAT WITH WHICH IT HITS THE GROUND WHEN DRIVEN OFF THE ROOF OF A BUILDING
a. one story high
b. five stories high
c. seven stories high
d. nine stories high

_____ 7. IF A STANDARD ROAD SIGN IS TO BE INSTALLED, ITS SHAPE DEPENDS ON
a. its cost
b. the material used
c. its meaning
d. the designer's ability

_____ 8. THE BEST TIME TO TEACH PEDESTRIANS GOOD TRAFFIC HABITS IS WHEN THEY ARE
a. arrested for pedestrian violation
b. familiar with a bad pedestrian accident reported in the papers
c. just at the age to drive cars
d. young children

_____ 9. SOUND JUDGMENT IN DRIVING CAN BEST BE DEVELOPED BY
a. reading books on driving
b. watching what others do
c. taking a lecture course on driving
d. a background of sound Driver Education

_____10. EMERGENCIES CAN BEST BE MET BY
a. a car that is the "last word" in automotive design
b. readiness to act after quickly sizing up the situation
c. firmly fixed motor habits
d. the habit of driving in the right lane

_____11. THE FACTOR CONTRIBUTING MOST FREQUENTLY TO FATAL AUTOMOBILE ACCIDENTS IS
a. skidding
b. excessive speed for conditions
c. defective brakes
d. driving under the influence of alcohol

_____12. OF THE FOLLOWING, MAN'S GREATEST NEED IS
a. better control of the power he has
b. more automobiles of greater speed and power
c. control over more things
d. more power at his disposal

_____13. MOST STATE VEHICLE CODES GIVE THE RIGHT-OF-WAY TO
a. truck drivers
b. pedestrians
c. bicyclists
d. motor-scooter riders

_____14. UNCORRECTABLE EYE DEFECTS CAN BEST BE COMPENSATED FOR BY
a. slower driving and constant attention to avoid known dangers
b. relying on the normal vision of a passenger in the front seat
c. driving only during the daytime
d. more driving practice

_____15. A PEDESTRIAN, WITH A WHITE CANE, CROSSING A STREET INDICATES
a. he is crippled
b. he is blind
c. he is deaf
d. he is old

_____16. GENERALLY, WHICH OF THE FOLLOWING HAVE THE SLOWEST REACTION TIME?
a. drivers with five years of experience
b. persons twenty-five years of age
c. persons who have been drinking
d. young women

_____17. COMPARED TO MIDDLE-AGED MEN, YOUNG DRIVERS GENERALLY HAVE
a. a better accident record
b. fewer traffic violations
c. more skill
d. faster reaction time

_____18. IF YOU BECOME VERY FATIGUED WHILE DRIVING, IT IS BEST TO
a. stop and rest
b. drink coffee
c. change your position frequently
d. keep plenty of fresh air in the car

_____19. THE TEMPERATURE GAUGE INDICATES THE TEMPERATURE OF THE
a. air surrounding the engine
b. water surrounding the cylinders
c. oil in the crankcase
d. pistons

_____20. WHICH OF THE FOLLOWING IS LEAST LIKELY TO CAUSE EXCESSIVE ENGINE TEMPERATURES?
a. broken fan belt
b. excessively heavy pulling
c. insufficient water in radiator
d. dragging clutch

_____21. WHICH IS MOST IMPORTANT IN PROLONGING BATTERY LIFE?
a. keeping water level above the battery plates
b. keeping the battery terminals clean
c. keeping the charging rate under 10 amps
d. replacing battery cable at frequent intervals

_____22. A DRIVER WHO HAS DIFFICULTY IN NOTICING CARS ON EITHER SIDE OF HIM IS PROBABLY HANDICAPPED BY
a. a limited field of vision
b. a lack of depth perception
c. color blindness
d. subnormal visual acuity

_____23. MANY PEOPLE WHO HAVE DEFECTIVE VISION DO NOT REALIZE IT BECAUSE THEY
a. can work as well as others
b. can drive as well as others
c. have not had an accident
d. have never had their vision tested

_____24. REACTION TIME IS AFFECTED LEAST BY
a. carbon monoxide
b. sex difference
c. sedative drugs
d. sorrow

_____25. ATTENTION IS CRITICAL IN DRIVING; IT IS THE BEST BASIS FOR
a. easy steering
b. readiness to act
c. familiarity with your instrument panel
d. steady use of the accelerator

_____26. WHEN A PERSON "OVERDRIVES HIS HEADLIGHTS" HE
a. Cannot stop in the distance he can see ahead
b. has his headlights aimed too high
c. has poor headlights
d. is using the lower beam

_____27. THE OIL GAUGE IS PRIMARILY FOR INDICATING
a. pressure at which the pump is pumping oil
b. amount of oil in the crankcase
c. the oil level
d. when oil needs to be changed

_____28. WHAT IS THE MAIN PURPOSE OF A HORN ON AN AUTOMOBILE?
a. attract attention of your friends
b. for warning pedestrians
c. for warning traffic at intersections
d. for signaling to pass and warning other drivers in emergencies

_____29. WHEN MEETING OR PASSING A CAR WITH GLARING HEADLIGHTS, A DRIVER SHOULD
a. watch the center of the highway
b. turn on your bright lights
c. shield his eyes with hand or sunvisor
d. watch the right side of the road

_____30. AN OCTAGONAL-SHAPED ROAD SIGN MEANS
a. stop
b. reduce speed
c. cross crossing cautiously
d. resume speed

_____31. A RED SIGNAL THAT FLASHES INTERMITTENLY MEANS
a. stop
b. slow down
c. blow your horn
d. continue at regular speed

_____32. IF A BLOWOUT OCCURS THE DRIVER SHOULD
a. increase speed
b. jam on the brakes
c. steer sharply to the right
d. steer straight ahead

_____33. WHEN APPROACHING A DIAMOND-SHAPED SIGN THE DRIVER SHOULD
a. stop
b. resume speed
c. reduce speed
d. cross crossing cautiously

_____34. TO BRING A CAR OUT OF A SKID THE DRIVER SHOULD
a. pump the brake pedal lightly
b. turn the steering wheel in the direction in which the rear end is skidding
c. race the motor
d. push the clutch pedal down

_____35. SPINNING OF THE REAR WHEELS OR LOSS OF TRACTION WHEN STARTING ON ICY ROADS IS LESSENED BY
a. starting the car in second gear
b. starting abruptly in any gear
c. starting the car in first gear
d. engaging the clutch quickly

_____36. IN BRINGING A CAR TO A COMPLETE NON-EMERGENCY STOP FROM A SPEED IN EXCESS OF 30 MILES PER HOUR, YOU SHOULD
a. depress the clutch and brake pedals at the same time
b. depress the clutch pedal first and then depress the brake pedal
c. depress the clutch and brake pedals together and then place the gear shift lever in neutral
d. depress the brake pedal first and then depress the clutch pedal later

_____37. YOU ARE DRIVING A PASSENGER CAR (IN PERFECT MECHANICAL CONDITION ON DRY PAVEMENT) AT 60 MILES PER HOUR AND A CHILD RUNS OUT IN FRONT OF YOU NECESSITATING AN EMERGENCY STOP. HOW FAR WILL YOUR CAR TRAVEL FROM THE TIME YOU SEE THE CHILD UNTIL YOU CAN BRING YOUR CAR TO A COMPLETE STOP?
a. 64 feet
b. 164 feet
c. 264 feet
d. 362 feet

_____38. WHEN DRIVING IN FOG AT NIGHT, YOU CAN INCREASE VISIBILITY BY USING
a. the upper headlight beams
b. the lower headlight beams
c. the parking lights
d. no lights at all

_____39. YOU ARE DRIVING ON A SNOW-COVERED ROAD AND HAVE TO MAKE A STOP QUICKLY. THE BEST WAY TO DO THIS IS TO
a. slam the brakes on hard
b. put the car in low gear
c. turn off the ignition and apply the handbrake
d. pump the brake pedal

_____40. THE CLUTCH WOULD NOT BE USED WHEN
a. shifting gears
b. coming to a stop
c. slowing from 20 to 10 miles per hour
d. starting the engine

_____41. MOST OF THE TIME, THE CHIEF FUNCTION OF THE EYES IS TO
a. give a clear picture of traffic at the sides
b. give a clear picture of what is in front
c. identify the various colors seen in traffic
d. judge the speed of the vehicles

_____42. THE UNIFORM VEHICLE CODE SPECIFIES THESE HAND AND ARM SIGNALS
a. right - down; left - up; stop - straight out
b. right, left, or stop - straight out
c. right - up; left - straight out; stop - down
d. right - straight out; left - up; stop - down

_____43. WHAT IS THE SPEED LIMIT FOR PASSENGER CARS AT NIGHT?
a. 50 miles per hour
b. 55 miles per hour
c. 60 miles per hour
d. 65 miles per hour

_____44. WHAT MUST YOU DO IF YOU SEE OR HEAR AN EMERGENCY VEHICLE APPROACHING?
a. increase speed to get out of the way
b. continue at the same speed
c. pull to extreme right and stop
d. stop immediately wherever you are

_____45. WHEN MAY RED LIGHTS BE PLACED ON THE FRONT OF A MOTOR VEHICLE?
a. if they don't interfere with other lights
b. not on the front of any vehicle
c. on mechanical turn indicators only
d. on emergency vehicles only

_____46. WHAT MUST YOU DO WHEN APPROACHING A STOP SIGN AT AN INTERSECTION?
a. slow down and proceed with caution
b. come to a complete stop
c. stop if other traffic is near
d. sound your horn and shift to second gear

_____47. WHAT IS THE SPEED LIMIT FOR PASSENGER VEHICLES IN DAYLIGHT?
a. 50 miles per hour
b. 55 miles per hour
c. 60 miles per hour
d. 65 miles per hour

_____48. IN CHANGING LANES OF TRAFFIC YOU SHOULD
a. change as quickly as possible
b. check traffic and give correct signal
c. drive around the block and get in the proper lane
d. pull to the right until traffic is clear

_____49. WHAT SHOULD YOU DO IF A CAR ATTEMPTS TO PASS FROM THE REAR?
a. increase your speed
b. pull to the left
c. keep to the right
d. give right-of-way only if he blows his horn

_____50. IF THE SIGNAL TURNS AMBER AS YOU ENTER THE INTERSECTION YOU SHOULD
a. stop quickly as possible
b. continue through cautiously
c. stop and back across the sidewalk
d. turn to the right to clear intersection

_____51. WHAT LANE OF TRAFFIC SHOULD YOU BE IN TO MAKE A RIGHT TURN?
a. either lane if correct signals are used
b. the left lane near the center
c. the right lane near the curb
d. either lane depending on other traffic

_____52. ON WHICH SIDE OF THE HIGHWAY SHOULD PEDESTRIANS WALK?
a. the side offering the best pathway
b. the left side facing traffic
c. the right side unless traffic is heavy
d. on either side to be away from traffic

_____53. IF YOU HAVE TO STOP IMMEDIATELY ALONG THE HIGHWAY
a. drive till you reach a side road
b. pull off of the pavement
c. stop where your jack will not sink in
d. turn on your parking lights

_____54. MOST RURAL ACCIDENTS OCCUR ON
a. hills
b. wet roads
c. winding roads
d. straight roads

_____55. WHICH OF THE FOLLOWING IS THE MOST FREQUENT CAUSE OF PEDESTRIAN ACCIDENTS?
a. crossing not at a crosswalk
b. crossing against signals
c. coming from between parked cars
d. intoxication

_____56. A BICYCLIST COMES TO AN INTERSECTION AS THE LIGHT TURNS RED: HE SHOULD
a. come to a stop, dismount, look both ways, and then go on through
b. dismount and wait until the light turns green
c. proceed very cautiously
d. hurry through before cars start across the intersection

_____57. IF LIGHTS CHANGE TO GREEN BEFORE PEDESTRIANS ARE ALL THE WAY ACROSS THE STREET, THE DRIVER SHOULD
a. blow his horn and proceed cautiously
b. edge the car very slowly through pedestrians
c. go on being careful not to hit the pedestrians
d. wait until the pedestrians have crossed beyond his path

_____58. THE UNDERLYING PRINCIPLE OF TRAFFIC LAW IS TO
a. assist an officer to make arrests
b. protest the public
c. detect violators
d. secure revenue

_____59. IN LEAVING YOUR CAR PARKED ON AN UPGRADE
a. turn the front wheels toward the curb
b. leave the hand brake in full release position and car in gear
c. set right rear wheel hard against the curb
d. turn the front wheels away from the curb

_____60. IN COMING OUT OF A "HEAD IN" PARKING SPACE, THE DRIVER SHOULD
a. give a left-turn signal
b. look into the rear-view mirror
c. sound the horn
d. stop after backing about four feet and look before proceeding

_____61. WHILE BACKING STRAIGHT, WHICH OF THE FOLLOWING SHOULD NEVER BE DONE?
a. open the door and lean out
b. lean your head slightly out the side window
c. look over your right shoulder and through rear window
d. look into the rear-view mirror

_____62. TO STRAIGHTEN THE FRONT WHEELS AFTER A TURN
a. let go of the wheel momentarily
b. reverse the position of your hands on the wheel
c. let the wheel slip through your hands
d. unwind the wheel the same way you wound it up

_____63. BEFORE LEAVING YOUR CAR IN A PARKING SPACE, BE SURE TO
a. adjust the rear view mirror
b. check the front wheels
c. lock it
d. leave gear-shift lever in neutral

_____64. YOU ARE APPROACHING A SCHOOL BUS THAT IS LOADING OR UNLOADING PASSENGERS. YOU MUST
a. slow down to ten miles per hour
b. sound your horn before passing
c. stop, then proceed with caution not to exceed ten miles per hour
d. pass slowly on the left side of the highway

_____65. WHAT IS THE MEANING OF A SOLID LINE IN YOUR LANE OF TRAFFIC?
a. you are nearing the intersection
b. you may pass on the right
c. you are nearing a bridge
d. it is a no passing zone

_____66. WHAT IS THE MEANING OF A FLASHING AMBER LIGHT?
a. slow down and proceed with caution
b. you may pass on the right
c. go ahead at same speed if no cars are near
d. come to a complete stop

_____67. THE SHAPE OF THE TRAFFIC SIGN TO INDICATE A RAILROAD GRADE CROSSING IS
a. hexagonal
b. round
c. oblong
d. square

_____68. BEFORE YOU ARE NEAR ENOUGH TO READ A TRAFFIC SIGN, YOU CAN TELL ITS GENERAL MEANING BY
a. color intensity
b. style of lettering
c. size
d. shape

_____69. WHAT MUST YOU DO IF YOU INTEND TO TURN LEFT AT THE NEXT CORNER?
a. pull to the right side until traffic is clear
b. signal and get in lane near right curb
c. signal and get in lane nearest center of the street
d. give a hand signal before turning

_____70. WHAT IS THE SHORTEST DISTANCE A HAND SIGNAL, ACCORDING TO STATE LAW, SHOULD BE GIVEN BEFORE STOPPING OR TURNING?
a. 25 feet
b. 50 feet
c. 75 feet
d. 100 feet

_____71. WHICH OF THE FOLLOWING CANNOT BE A FIXED DRIVING HABIT?
a. controlling speed to meet conditions
b. keeping alcohol out of one's driving
c. sizing up changing traffic conditions far ahead
d. meeting an emergency

_____72. A GOOD DRIVING PERSONALITY IS DUE CHIEFLY TO A DRIVER'S
a. age
b. education
c. occupation
d. attitudes

_____73. RESPONSIBILITY FOR TRAFFIC SAFETY RESTS HEAVILY ON ALL BUT
a. civic leaders
b. automobiles
c. pedestrians
d. schools

_____74. WHEN DRIVING IN A PROGRESSIVE SIGNAL SYSTEM, TRAVEL AT THE SPEED
a. at which all other drivers are traveling
b. which keeps you ahead of all other traffic
c. for which the lights are set
d. which satisfies you

_____75. IF YOU DO NOT LIKE THE WAY AN APPROACHING DRIVER IS COMING TOWARD YOU
a. keep your speed constant
b. pull to the right and sound your horn or flash your lights
c. look for a side road on the right
d. stop in the middle of your lane

_____76. THE INTERSECTION MOST LIKELY TO BE TROUBLESOME IS THE
a. one-way intersection
b. "T" intersection
c. blind intersection
d. "Y" intersection

_____77. IN DRIVING OUT OF A PARALLEL PARKING SPACE ON A HEAVILY TRAVELED STREET
a. give hand signal and drive out
b. sound horn and drive out
c. give hand signal and nose out carefully after checking traffic
d. sound horn, give hand signal, and drive out

_____78. IN LEAVING YOUR CAR PARKED PARALLEL ON THE DOWN-GRADE
a. leave back wheel touching curb
b. leave front wheels parallel to curb
c. turn front wheels away from curb
d. turn front wheels toward curb

_____79. YOU ARE DRIVING A PASSENGER CAR AT 60 MILES PER HOUR AND A CHILD RUNS OUT IN FRONT OF YOU NECESSITATING AN EMERGENCY STOP. HOW FAR WILL YOUR CAR TRAVEL FROM THE TIME YOU SEE THE CHILD UNTIL YOUR FOOT HITS THE BRAKE PEDAL?
a. 22 feet
b. 44 feet
c. 55 feet
d. 66 feet

_____80. A DRIVER LICENSE INDICATES CHIEFLY
a. a fair knowledge of traffic laws
b. freedom from physical deficiencies
c. training under a professional instructor
d. competence

_____81. WHEN APPROACHING A RAILROAD CORSSING, THE DRIVER SHOULD
a. increase speed
b. drive slowly
c. come to a complete stop
d. reduce speed and proceed with caution

_____82. IN PUTTING THE CAR IN MOTION ON AN UP-GRADE YOU SHOULD NOT
a. feed gasoline and, at the same time, slowly release clutch to friction point
b. use the handbrake
c. release brakes and feed more gasoline
d. release clutch and shift into high gear

_____83. IN DRIVING ANY CAR FOR THE FIRST TIME YOU SHOULD
a. examine the clutch for possible wear
b. lock the door from the inside
c. back up to see if the reverse gear works
d. try the brakes to see if they work

_____84. SPEED SHOULD BE REDUCED
a. before entering a curve
b. just as the car enters the curve
c. gradually the full length of the curve
d. when on the sharpest part of the curve

_____85. BASICALLY, SOUND SPEED IS DETERMINED BY
a. maximum speed limits
b. minimum speed limits
c. existing conditions
d. prima facie regulations

_____86. WHICH OF THE FOLLOWING HAS PRECEDENCE IN CONTROLLING TRAFFIC?
a. the traffic officer on the spot
b. local municipal regulations
c. state traffic laws
d. traffic lights

_____87. IN FOLLOWING BEHIND ANOTHER CAR, YOU SHOULD STAY AT LEAST
a. 20 feet behind for each 10 miles per hour of its speed
b. as far behind as it is behind the car ahead of it
c. one car length behind for each five miles per hour of its speed
d. ten feet behind for each 20 miles per hour of its speed

_____88. THE TRAFFIC CODE SAYS YOU MUST NOT PARK CLOSER TO THE NEAREST RAIL OF A RAILROAD CROSSING THAN
a. 25 feet
b. 50 feet
c. 75 feet
d. 100 feet

_____89. THE TRAFFIC CODE SAYS YOU MUST NOT PARK CLOSER TO A FIRE HYDRANT THAN
a. 5 feet
b. 10 feet
c. 15 feet
d. 20 feet

_____90. THE TRAFFIC CODE SAYS YOU MUST NOT PARK CLOSER TO A CROSS-WALK AT AN INTERSECTION THAN
a. 5 feet
b. 10 feet
c. 15 feet
d. 20 feet

_____91. THE TRAFFIC CODE SAYS YOU MUST NOT HAVE IN THE FRONT SEAT INCLUDING THE DRIVER MORE THAN
a. 1 person
b. 2 persons
c. 3 persons
d. 4 persons

_____92. THE TRAFFIC CODE SAYS YOU MUST NOT DRIVE FASTER IN A PROPERLY MARKED SCHOOL ZONE OUTSIDE OF A MUNICIPALITY THAN
a. 10 miles per hour
b. 15 miles per hour
c. 20 miles per hour
d. 25 miles per hour

_____93. THE TRAFFIC CODE SAYS THAT YOU MUST NOT TURN AROUND ON THE HIGHWAY WHEN YOUR VEHICLE CANNOT BE SEEN BY THE DRIVER OF ANOTHER VEHICLE AT LEAST
a. 300 feet
b. 500 feet
c. 1,000 feet
d. 1,200 feet

_____94. THE TRAFFIC CODE SAYS THAT YOU MAY OVERTAKE AND PASS ANOTHER VEHICLE ON THE RIGHT SIDE WHEN
a. the vehicle overtaken is about to make a left turn
b. there is plenty of room on the shoulder
c. the other car will not move over after you have signalled
d. the other driver straddles the lane

_____95. A DRIVER RUNS OFF THE PAVED PORTION OF THE HIGHWAY ONTO THE SHOULDER: THE BEST THING TO DO IS
a. slow down, check traffic and signal before turning back onto the highway
b. cut sharply back onto pavement
c. speed up to get momentum
d. jam on the brakes and cut sharply to the left

_____96. YOUR TRAFFIC BEHAVIOR IS DETERMINED BY
a. environment
b. physical condition
c. environment, heredity, training, and physical condition
d. training

_____97. DRINKING INTOXICANTS GENERALLY RESULTS IN
a. increased attention
b. increased self-consciousness
c. increased alertness
d. increased confidence

_____98. WHEN DRIVING BEHIND A TRUCK YOU SHOULD
a. stay far enough behind the truck so that it doesn't block your view of oncoming traffic
b. stay close enough to the rear of the truck so that no other car from behind can get in between you and the truck

_____99. AN OKLAHOMA DRIVER LICENSE SHOULD BE RENEWED DURING OR BEFORE
a. birth month bi-annually
b. December 31 annually
c. December 31 every two years
d. two years from date of issuance

_____100. IF YOU ARE INVOLVED IN A PERSONAL INJURY ACCIDENT, YOUR FIRST ACT AS A GOOD DRIVER SHOULD BE TO
a. notify the police
b. assist the injured
c. get the names and addresses of witnesses
d. call an ambulance

APPENDIX B

BIOGRAPHICAL QUESTIONNAIRE

The following questionnaire was administered to students not enrolled in driver education in all of the schools providing students for this study and to students enrolled in driver education in one school, Stillwater. The word "not" was deleted from the questionnaire for students enrolled in a course in driver education.

The Oklahoma City Public Schools used a more detailed questionnaire for students enrolled in driver education courses. This questionnaire included the items of information found on the questionnaire provided for students not enrolled in driver education and is not included in this appendix.

INFORMATION ON STUDENTS NOT ENROLLED
IN DRIVER EDUCATION

School _____ Date _____

Please fill in all blanks below:

1. Name _____ Grade _____ Age _____

   Date of birth _____ Sex _____ Height _____ Weight _____

2. Driving experience: Number of months you have been driving a motor vehicle _____; approximate number of miles driven per month _____.

3. Do you expect to apply for your Driver's License within one week after you become 16 years old? Yes _____ No _____

4. Who will teach you to drive? father _____ mother _____ brother_____ sister _____ friend _____ relative _____ yourself _____ his or her age _____.

5. Do you have a permit to drive? Yes _____ No _____

6. Do you own a car? Yes _____ No _____; If no, do you expect to buy one? Yes _____ No _____; When _____ Make _____

7. What is your occupation? (other than student) _____
   Hours worked per week _____ Average weekly wage _____

8. Is your mother living? Yes _____ No _____; If so, does she drive? Yes _____ No _____

9. Is your father living? Yes _____ No _____; If so, does he drive? Yes _____ No _____

10. If father and mother are both living are they living together? Yes___ No _____

11. Father's occupation _____

12. Mother's occupation _____

13. Number of brothers _____ Number of sisters _____ How many are younger than you? brothers _____ sisters _____

15. Grades last semester: Number of A's _____ B's _____ C's _____ D's _____ F's _____

APPENDIX C

CODE

The following code indicates the numbers for each item used in punching the IBM cards. The Column Number refers to the column on the IBM card. The Information column identifies the items found in the instruments used for this study. The Code indicates the classification of the information.

CODE

COLUMN NUMBER	INFORMATION	CODE
1	School Identification	1 - Stillwater 2 - Southeast 3 - Star Spencer 4 - Classen
2-3	Respondent	01-99
4	Age	1 - Over 2 - During 3 - Under
5	Sex	1 - Male 2 - Female
6	Who will Teach	1 - Father 2 - Mother 3 - Brother 4 - Sister 5 - Friend 6 - Relative 7 - Yourself 8 - D.E. Teacher 9 - No Answer
7	Do you work part-time	1 - Yes 2 - No
8	Hours worked per week	1 - 0-10 2 - 11-15 3 - 15-20 4 - Over 20 5 - Not Apply
9	Weekly Wage	1 - $0-$5.00 2 - $6.00-$10.00 3 - $11.00-$20.00 4 - Over $20.00 5 - Other
10	Mother Living	1 - Yes 2 - No 3 - Not Apply

COLUMN NUMBER	INFORMATION	CODE
11	Mother Drive	1 - Yes 2 - No 3 - Not Apply
12	Father Living	1 - Yes 2 - No 3 - Not Apply
13	Father Drive	1 - Yes 2 - No 3 - Not Apply
14	Parents Living Together	1 - Yes 2 - No 3 - Not Apply
15	Father's Occupation	1 - 0 Pro 2 - 1 Cler 3 - 2 Serv 4 - 3 Ag 5 - 4 & 5 SK 6 - 6 & 7 S SK 7 - 8 & 9 U SK 8 - Not Apply
16	Mother Work	1 - Yes 2 - No 3 - Not Apply
17	Number of Brothers	0 - 9
18	Number of Sisters	0 - 9
19	Number Younger	0 - 9
20	Grade Point Average	1 - 1.0-1.5 2 - 1.6-2.0 3 - 2.1-2.5 4 - 2.6-3.0 5 - 3.1-3.5 6 - 3.6-4.0 7 - Below 1.0 0 - No Answer
21-36	IPAT Sten Score	1 - 10
37	Group	1 - Control 2 - Experiment
38	Time of Test	1 - Pre 2 - Post
39-40	Knowledge Test Score	0 - 99
41-80	Siebrecht Test Scores	0 - 5

VITA

James Karl Doss

Candidate for the Degree of

Doctor of Education

Thesis: A STUDY OF THE VALUE OF DRIVER EDUCATION

Major Field: Higher Education

Biographical:

Personal data: Born at Checotah, Oklahoma, August 28, 1921, the son of George W. and Mary R. Doss.

Education: Attended grade school and graduated from high school at Morris, Oklahoma in 1939; attended Centenary College, Shreveport, Louisiana from September, 1939 to February, 1940; attended Tulsa University, Tulsa, Oklahoma, from January, 1949 to May, 1949; received the Bachelor of Science degree from East Central State College, with a major in Industrial Arts in May, 1952; received the Master of Science degree with a major in Trade and Industrial Education from Oklahoma State University in August, 1954; completed requirements for the Doctor of Education degree at Oklahoma State University in August, 1964.

Professional experience: Teacher of Industrial Arts at Henryetta High School, Henryetta, Oklahoma, during the school years 1952 to 1954; Coordinator of Diversified Occupations at Seminole High School during the school years from 1954 to 1956; assistant professor of Trade and Industrial Education, Oklahoma State University, June, 1957 to September, 1961; associate director of the Southwest Center for Safety and assistant professor of Education, Oklahoma State University, from September, 1961 to February, 1964; department head and assistant professor of Trade and Industrial Education, University of Georgia since February, 1964.