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THE RELATIONSHIP OF THE SIX BASIC INTERESTS OF PERSONALITY AS MEASURED BY THE ALLPORT-VERNON-LINDZEY STUDY OF VALUES AND DRIVING RECORD OF MICHIGAN CIVILIAN DRIVERS AS DETERMINED BY ACCIDENT INVOLVEMENT AND TRAFFIC VIOLATIONS.

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By

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ABSTRACT

THE RELATIONSHIP OF THE SIX BASIC INTERESTS OF PERSONALITY AS MEASURED BY THE ALLPORT-VERNON-LINDZEY STUDY OF VALUES AND DRIVING RECORD OF MICHIGAN CIVILIAN DRIVERS AS DETERMINED BY ACCIDENT INVOLVEMENT AND TRAFFIC VIOLATIONS

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The purpose of this investigation was to determine the relationship between the basic interests of personality (i.e., religious, political, social, aesthetic, economic, and theoretical values) as determined by the Allport-Vernon-Lindzey Study of Values, and the driving records of a randomly selected group of Michigan drivers. The relationship was investigated with the variables of age, sex, and marital status held constant.

Also investigated was the relationship of the basic interests of personality (values) to the driving records of a randomly selected group of Michigan drivers when classified into four driving record categories: no accident/no violation, no accident/violation, accident/no violation, and accident/violation.

A total of 252 male and female drivers randomly selected from the files of the Driver Services Division of

the Michigan Department of State served as subjects for the study. Reported accidents and violation convictions for the immediate past three years were obtained from the files, while quantitative scores for each of the six basic interests of personality (values) were obtained by a mail-out form of the Allport-Vernon-Lindzey Study of Values.

The data was analyzed statistically to determine the differences among the factors being tested. Correlations between the factors of age, sex, and marital status and driving record were determined. In those cases where the obtained correlation coefficient was large enough to give an F ratio greater than the critical value of F at the .01 level of significance, a significant correlation was evident.

Partial correlations were computed to determine the relationship of each of the six basic interests of personality (values) to driving record when age, sex, and marital status were held constant. For a basic interest of personality (value) to predict driving record beyond the ability of age, sex, and marital status, an F ratio greater than the critical value of F at the .01 level of significance was necessary.

Subjects were divided into four driving record categories:

a. subjects with driving records of no violations or accidents;
b. subjects with driving records of violations, but no accidents;

c. subjects with driving records of accidents, but no violations; and
d. subjects with driving records of both accidents and violations.

The investigation of the relationship between each of the six basic interests of personality (values) of the subjects in the category no accident/no violation and of the subjects in the category accidents/violations was considered to be of interest in this study. Also of interest was the relationship between each of the six basic interests of personality (values) of the subjects in the category of no accidents/violations, and of the subjects in the category accidents/no violations.

The basic interest of personality (values) data was summarized by one-way analysis of variance. Comparisons were then made between the driving record categories of interest on the basic interest of personality (value). A computed F ratio greater than the critical value of F at the .01 level of significance was considered to indicate a significant relationship between driving record categories for each basic interests of personality (values).

Within the limitations of this study, the following conclusions were made:

1. The prediction of driving record is not significantly improved by including the basic interests of personality, religious, political, social, aesthetic, economic, and theoretical values, with the factors of age, sex, and marital status. The partial correlation

coefficient obtained was not significant at the .01 level of significance. When subjects were divided into dichotomous groups of male and female drivers, the partial correlation coefficients obtained were not significant at the .01 level of significance.

2. The subjects were grouped into the following categories:

a. no accicent/no violation
b. no accident/violation
c. accident/no violation
d. accident/violation.

The relationship of the basic interests of personality, religious, political, social, aesthetic, economic, and theoretical values, to the driving record of subjects when classified into the four driving record categories was not significant at the .01 level of significance. When subjects were divided into dichotomous groups of male and female drivers, the relationship of the basic interests of personality (values), to the driving record of male and female subjects when classified into the four driving categories was not significant at the .01 level of significance.

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TABLE OF CONTENTS

LIST OF TABLES

Table Page

CHAPTER I

THE PROBLEM

Need

Based on reasonable theory it has been hypothesized that people drive as they live,[1] the result of various observations which have led traffic safety personnel to believe a high correlation may exist between behavior on and off the highway. Furthermore, several research studies investigating characteristics of accident repeaters tend to support the theory that the accident repeater is a disturbed person whose bad driving is merely a symptom of his broader problem.[2] Keeping in mind that attitudes may be defined as a psychological set to react to certain stimuli in a predetermined direction with a predetermined force,[3] it appears that attitudes are widely assumed to be significant determinants of social behavior.

Specific attitudes toward driving are not an isolated part of the driver's personality but rather a

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[1]Ward Edwards, "We Drive as We Live," Analogy (Spring, 1968), 21-22.

[2]Richard Bishop, "A Theory of Driving Behavior," a paper, Michigan State University, 1967.

[3]Milton Rokeach, Beliefs, Attitudes, and Values (San Francisco: Jossey-Baas, Inc., 1968), p. 127.

projection of it.[4] People perceive situations in the light of their attitudes toward a situation, but they do not necessarily perceive it objectively. In turn, their behavior in a situation reflects their perception of it. Insofar as a driver's attitudes toward a given type of situation are realistic, his perception of it will be realistic; and insofar as his perception of it is realistic, his behavior in that situation will be safe. Brody and Stack state:

> The more unrealistic or biased his attitudes toward that type of situation, the more distorted will be his perception of it; and the more distorted his perception of it, the less safe will be his behavior in that driving situation.[5]

Social scientists and traffic safety experts for many years have been attempting to discover what factors cause people to act and drive in a manner which leads to becoming involved in highway crashes. Specifically they have been asking what makes drivers act the way they do. Many drivers perform driving acts which lead to accidents, are willing to pay heavy fines, and generally mistreat each other on the road. American psychologists have been studying this phenomenon very carefully for many years. It

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[4]William Mann, "Building Attitudes for Safety," a presentation at the National Safety Congress, 1960.

[5]Leon Brody and Herbert Stack, Highway Safety and Driver Education (Englewood Cliffs: Prentice-Hall, Inc., 1954), p. 87.

cannot be said that chronic violators and accident repeaters, for the most part, don't know any better, or don't have the skills required for driving; skills and knowledge they frequently have in substantial degree.[6] It is in certain psychological traits that they can be distinguished from more commendable drivers.

Eduard Spranger[7] defined six basic interests or motives in personality, labeling them as values, which determine a person's attitude; the Theoretical Value, the Economic Value, the Aesthetic Value, the Social Value, the Political Value, and the Religious Value. The measurement of these six basic values has proven highly predictive of human behavior in behavioral research.[8]

Spranger[9] claims that throughout history man has been motivated in his actions by these six values. He maintains that man's perception of his world around him, and his subsequent relationship to that world, is determined by the degree of importance he places on each of these six values. The theoretical value places truth

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[6]Leon Brody, "The Psychology of Problem Drivers," a paper, Michigan State University, 1965.

[7]Eduard Spranger, Types of Men, trans. by Paul J. W. Pigors (New York: Stechert-Hafner, 1928), p. 105.

[8]H. Cantril and G. W. Allport, "Recent Applications of the Study of Values," Journal of Abnormal and Social Psychology, XXVIII (1933), 261.

[9]Spranger, Types of Men, pp. 109-246.

above all else, the economic value places self-preservation as all important, the aesthetic value has self-fulfillment as its primary consideration, the social value places other human beings above all else, the political value is concerned only with power, while the religious value is defined as being concerned with the highest total value of man's existence.

To understand an individual driver's personality interests (values) might possibly give an indication of his driving success in avoiding highway crashes and his involvement in traffic law violations. In 1957 a study was made by Conger, et al.[10] in which they investigated the possible relationship between each of the six values advanced by Spranger and the driving records of selected Air Force personnel in Denver, Colorado. The instrument used to determine the influence of values for these men on their driving record was the Allport-Vernon-Lindzey Study of Values. This instrument measures the relative importance of Spranger's six values; viz, religious, economic, political, social, aesthetic, and theoretical. This group of drivers was restricted in age, all being in their twenties; consisted only of males, with all living on or near Lowry Air Force base. These men were divided into two categories

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[10]John J. Conger, et al., "Psychological and Psychophysiological Factors in Motor Vehicle Accidents," Journal of the American Medical Association, CLXIX (April, 1959), 1581.

of drivers; fifteen Airmen with no accidents or hazardous violations within the immediately preceding 54 month period, and a second group of fifteen with two or more responsible accidents in a like period. This study showed a significant relationship between three of the six values in the Allport-Vernon-Lindzey Study of Values and driving record. However, to date the relationship of the influence of the six values with driving record has not been investigated with a randomly selected civilian population of both sexes and a wide range of ages. Neither has such a relationship been investigated with a statistically controlled consideration of drivers' age, sex, and marital status.

Conger and Rainey[11] have conducted three studies in which individuals' values as determined by the Allport-Vernon-Lindzey Study of Values were compared with driving records. In these studies drivers had been placed into dichotomous groups of no accident or no hazardous violation drivers, and drivers with two or more responsible traffic accidents; the two or more traffic accidents group showing a significant difference from the no accident or no violation group on three (religious, economic, and aesthetic) of the six basic interests of personality

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[11] Ibid.; John J. Conger, et al., "Personal and Interpersonal Factors in Motor Vehicle Accidents," American Journal of Psychiatry, CXIII (June, 1957), 1072; R. V. Rainey, et al., "Personality Characteristics as a Selective Factor in Driver Education," Highway Research Bulletin, No. 285 (1961), 16.

(values). No studies have yet attempted to investigate this relationship when drivers are categorized into the various combinations of accident and violation experience; e.g. (1) drivers with no reported accidents or violation convictions within a specified period of time, (2) drivers with reported accidents but no violation convictions within the same period of time, (3) drivers with no reported accidents but with violation convictions in the same period, and (4) drivers with both reported accidents and violation convictions in the same span of time.

Purpose of the Study

Studies by Levonian,[12] Heath,[13] and Coppin[14] have shown that age, sex, and marital status are reliable predictors of driving record.

One purpose of this study was to discover if any of the six values as determined by the Allport-Vernon-Lindzey Study of Values can improve the prediction of driving record beyond the ability of the factors of age,

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[12] Edward Levonian, "Prediction of Accidents and Convictions," Traffic Safety Research Review, XI (September, 1967), 75.

[13] Earl D. Heath, "The Relationship Between Driving Records, Selected Personality Characteristics, and Biographical Data of Traffic Offenders and Non-offenders" (unpublished Ph.D. dissertation, New York University, 1958).

[14] Ronald Coppin, et al., "The 1964 California Driver Record Study: Part 5, Driving Record by Age, Sex, and Marital Status," Report 20 (June, 1965).

sex, and marital status for the population selected. These six values (aesthetic, economic, social, political, theoretical, and religious) are derived directly from Spranger's six basic interests or values of personality.

A second purpose of this study was to determine if there were significant differences between the four categories of drivers, classified according to accident and violation experience. These categories are:

a. no accident/no violation (no violation convictions or accidents within the last three years),

b. no accidents/violation (two or more violation convictions within last three years),

c. accident/no violation (one or more accidents within last three years),

d. accident/violation (one or more accidents within last three years, one or more violations within last three years),

for each of the six values as measured by the Allport-Vernon-Lindzey Study of Values.

Hypotheses

Major Hypotheses

This study had six major hypotheses, all of which deal with the prediction of driving record when any of the six basic interests of personality (values) are included with the factors of age, sex, and marital status.

> Hypothesis 1: The prediction of driving record is not significantly improved by including religious values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

Hypothesis 2: The prediction of driving record is not significantly improved by including economic values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

Hypothesis 3: The prediction of driving record is not significantly improved by including political values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

Hypothesis 4: The prediction of driving record is not significantly improved by including social values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

Hypothesis 5: The prediction of driving record is not significantly improved by including aesthetic values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

Hypothesis 6: The prediction of driving record is not significantly improved by including theoretical values as measured by the Allport-Vernon-Lindzey Study of Values with the factors of age, sex, and marital status.

A significant relationship between driving record and any of the six basic interests in personality (values) when age, sex, and marital status are "held constant" indicates that the particular value can be a predictor of an individual's driving record.

Subhypotheses

For the six subhypotheses, subjects were classified into the following four categories of accident and violation experience:

a. no accident/no violation (no violation convictions or accidents within last three years).

b. no accident/violation (two or more violation convictions within last three years).

c. accident/no violation (one or more accidents within last three years).

d. accident/violation (one or more accidents within last three years, one or more violation convictions within last three years).

Subhypothesis 1: There is no significant difference between drivers with respect to religious values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Subhypothesis 2: There is no significant difference between drivers with respect to political values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Subhypothesis 3: There is no significant difference between drivers with respect to social values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Subhypothesis 4: There is no significant difference between drivers with respect to aesthetic values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Subhypothesis 5: There is no significant difference between drivers with respect to economic values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Subhypothesis 6: There is no significant difference between drivers with respect to theoretical values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

Definition of Terms

Six basic interests of personality: The Study of Values aims to measure the relative prominence of six basic interests or motives in personality, referred hereafter as values: theoretical, economic, aesthetic, social, political, and religious. The classification is based directly upon Eduard Spranger's Types of Men,[15] which defends the view that the personalities of men are best known through a study of their values or evaluative attitudes.

Driving record: The number of accidents and violation convictions the driver had accumulated within the past three years, as found in the driver record files of the Michigan Department of State, Driver Services Department.

Age: The drivers' actual ages on August 31, 1970.

Marital status: Single, married.

Sex: Male, female.

Accident: The Michigan State Police daily submit accident data to the Department of State. These data are taken from accident reports submitted to the Michigan State Police by all reporting agencies in Michigan, viz. vehicle collisions investigated and reported by a law enforcement agency.

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[15] Spranger, Types of Men, pp. 2-25, 28.

Violation conviction: Each convicting court sends a record of motor vehicle offense convictions to the Department of State. Only convictions of moving violations of the Michigan Vehicle Code and local ordinances as determined by a duly authorized court of law are recorded in the driver record files.

Driver category:

a. no accident/no violation (one or no violation convictions, and no accidents within last three years).

b. no accident/violation (two or more violation convictions, and no accidents within the last three years).

c. accident/no violation (one or more accidents, and no violation convictions within last three years).

d. accident/violation (one of more accidents, and one or more violation convictions within last three years).

Delimitations

This study was limited in the following manner:

1. The population from which the subjects for this study were extracted were the approximately 5,500,000 licensed drivers recorded in the office of the Michigan Department of State, Driver Services Division in July, 1970.

2. The Allport-Vernon-Lindzey Study of Values is an ipsative forced-choice test. The essential characteristic of an ipsative test is that when a person makes a

choice in favor of one item, he is at the same time rejecting or giving lower priority to other choices. However, many psychometrists contend that the ipsative forced-choice technique parallels real life in that one is always forced to choose between items.[16]

3. Only the driving records for the immediately past three years were evaluated. Drivers licensed less than three were not included in this study.

Overview of the Dissertation

In Chapter II a review of literature is found relating to the Allport-Vernon Lindzey Study of Values, the relationship of personality and attitude with driving record, the relationship of individual values to personality, and the relationship of sex, marital status, and age to driving record.

Chapter III includes the design of the study, including sampling technique, procedure for collection of data, and the method of analysis. In addition, the validity and reliability of the Allport-Vernon-Lindzey Study of Values will be discussed.

Analysis of the data and the degree of relationships between the driving record, the six personality

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[16]William A. Mehrens and Irwin J. Lehman, Standardized Tests in Education (New York: Holt, Rinehart and Winston, Inc., 1969), pp. 212-213.

interests (values), and the factors of age, sex, and marital status is found in Chapter IV.

In Chapter V the study is summarized, conclusions stated, and recommendations for further research are given. A discussion section is also found in this chapter.

Possible Applications

The results of this study could suggest a further experimental study to determine if traffic safety education, including driver education, general safety education, and pedestrian safety should emphasize the encouragement of those attitudes and behavioral objectives associated with spiritual, moral, and other values which are related to driving behavior.

If the results of this study indicate there is a significant relationship between any of the six personality interests (values) and driving record, it would seem worthwhile to investigate this relationship further to determine if any of the values showing a significant relationship could be considered another behavioral objective directed toward improving driving performance.

CHAPTER II

A REVIEW OF RELATED LITERATURE

A review of the literature revealed several studies indicating a significant relationship of personality and attitude with driving record. Additional studies indicated a relationship of individual values with personality. Further studies reviewed pointed out the relationship of age, sex, and marital status with driving record.

Because the Allport-Vernon-Lindzey Study of Values was used as the instrument to measure basic personality interests (values), several studies were reviewed to ascertain the feasibility, validity, and reliability of the test as an instrument for the study.

McFarland[1] stated that automobile accidents result from "an action of the agent or vehicle because of some characteristic of the host or driver, and as a function of the environment, therefore the host or driver is of greatest concern." He further stated "most of the causes of motor vehicle accidents are ultimately related to the driver."

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[1]Ross A. McFarland, "Health and Safety in Transportation," Public Health Reports, LXXIII, No. 8 (August, 1958), 70.

Beamish and Malfetti[2] conducted a study in Cleveland, Ohio, to determine if there existed any significant differences between 16 to 19 year old traffic violators and non-violators. The most apparent discriminating factor between the youthful traffic violators and non-violators was found to be in certain personality traits. Although there were other differences, personality stood out prominently in their results. McFarland and Mosely[3] found that most of the accidents in a study of commercial drivers was attributable to human error. Even when environmental and vehicle defects were indicated, their study concluded that the driver was the primary cause of accidents which they investigated.

Relationship of Personality and Attitude with Driving Record

Shaw,[4] in a study dealing with commercial drivers, concluded that among drivers with adequate skills and good physical fitness, the liability to accidents is primarily a manifestation of personality, attitudes, and beliefs.

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[2]J. J. Beamish and J. L. Malfetti, "A Psychological Comparison of Violator and Non-violator Automobile Drivers in the 16 to 19 Year Age Group," Traffic Safety Research Review (1962), 12-15.

[3]Ross A. McFarland and Alfred L. Mosely, Human Factors in Highway Transportation Safety (Boston: Harvard School of Public Health, 1954), p. 19.

[4]L. Shaw, "The Practical Use of Projective Personality Tests as Accident Predictors," Traffic Safety Research Review, IX (June, 1965), 70.

Personality factors showed a high relationship to driving safety, according to a study examining the effects of emotions on driving by Dubin,[5] with accident-repeater drivers as a group actually classified as having borderline psychopathic personalities.

Conger[6] pointed out that the major contributing factor to safe or dangerous driving is the individual himself, and that attitudes are of greater importance than physical or intellectual capabilities. At the University of Colorado School of Medicine, he was engaged for several years in studying large numbers of safe and unsafe drivers. Individual drivers were given extensive examinations involving a wide variety of techniques; ranging from psychological tests of personality functioning, intelligence and aptitude tests, and psychiatric interviews; to measures of reaction time, depth perception, hand-eye coordination, and psychophysiological reactions to emotional stress. The traditional sorts of measures often assumed to make the biggest difference between safe and unsafe drivers--such things as the reaction time, depth perception, and eye-hand coordination, as well as psychophysiological functioning

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[5]Samuel S. Dubin, "Emotions and Traffic Accidents--A Psychologist Looks at the Problem of Highway Safety," Traffic Satety Research Review, V (June, 1961), 7.

[6]John J. Conger, "Personality Factors in Motor Vehicle Accidents," Medical Times (March, 1960), 281.

and intelligence--seemed to make little difference in most cases.

McGuire,[7] in a study of U.S. Marine personnel at Camp Lejeune, North Carolina, stated that the largest single cause of accidents is personality related; and that personality tests[8] are capable of differentiating between drivers frequently involved in accidents and those accident free.

Schuster[9] agreed, from his investigations with California drivers with high accident and moving violation records, that attitudes provided the best predictors for accidents and violations. His study attempted to predict drivers who would be involved in an accident or who would have two or more moving violations in the three year period after the date of testing in 1959. Attitude and personality scales were found to predict follow-up accidents and moving violations significantly.

Driving is an activity which expresses one's personality and attitudes, claimed social psychiatrist

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[7]Fredrick L. McGuire, "An Outline for a New Approach to the Problem of Highway Accidents," U.S. Armed Forces Medical Journal, VII, 8 (August, 1956), 1158.

[8]Fredrick L. McGuire, "Psychological Comparison of Automobile Drivers," U.S. Armed Forces Medical Journal, VII, 8 (December, 1956), 1743.

[9]D. H. Schuster, "Prediction of Follow-up Driving Accidents and Violations," Traffic Safety Research Review, XII (March, 1968), 21.

Turfboer.[10] Driving is a form of expressive behavior, and it often expresses the driver's attitude toward the world and his fellow citizens.

The study by Conger, et al.[11] with Airmen at Lowry Air Force Base in Denver suggested that accident repeaters differ from other drivers primarily in their personality characteristics. In comparison with nonaccident subjects, the accident subjects showed a statistically significant tendency to have less capacity for managing or controlling hostility, to be either excessively self-centered and indifferent to the rights of others or excessively sociocentric, and to be generally less able to tolerate tension without discharging it immediately. The accident subjects tended to be categorized more frequently as consistently or occasionally belligerent or covertly hostile.

Edwards[12] made the assumption that driving is not fundamentally different from other kinds of human activity. He stated that human information processing and decision making in a car on the road should not be too much different from human information processing and

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[10]Robert Turfboer, "Do People Really Drive as They Live?" Traffic Quarterly, XXI (January, 1967), 102.

[11]Conger, et al., "Psychological and Psychophysiological Factors," p. 1581.

[12]Ward Edwards, "Information Processing, Decision Making, and Highway Safety," Driver Behavior, Insurance Institute for Highway Safety, 1968, p. 166.

decision making in the office, the home, or the laboratory. The same attitudes and personality the individual exhibits in these surroundings are manifested on the road in his or her car.

Dubin[13] further pointed out that recent developments in social psychology have brought into the area of caused phenomena many events which were previously considered to be chance determined. Preventable automobile accidents stem from unsafe behavior. An individual's driving decisions depend on his own norms, values, emotions, ability, personality and culture. McGuire[14] further added that the largest single factor operating in the production of motor vehicle accidents is the personality of the drivers. It is believed that our present knowledge has advanced to the point where we begin to develop a program that will diagnose and treat drivers on the basis of their particular personality patterns.

An individual's personality, which may be manifested in his driving record, appears to be closely related to his perceptual style. In a symposium conducted at Duke University,[15] several observations were presented concerning perception and personality.

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[13]Dubin, "Emotions and Traffic Accidents," p. 5.

[14]McGuire, "An Outline," p. 1165.

[15]Perception and Personality: A Symposium, Duke University, 1950.

Bruner and Postman[16] stated in one series of experiments that perceptual recognition is more rapid and correct the more stimuli used are "familiar, probable, or congruous with prevailing attitudes, values or needs." Brunswick[17] added that while all people establish values, they establish the need of these values as a factor in perception. McGinnies and Bowles[18] concluded that since individuals tend to perceive selectively in accordance with their basic values, or interests, it seems reasonable to suppose that they will also acquire new perceptual habits in a manner consistent with their particular value orientation.

Le Bren-Francis,[19] a behavioral psychologist, maintained that behavioral patterns start with perception. He stated that perception is individual, that when we look at an object each of us sees something different. Further, he maintained that whatever our perceptions may be, they are shaped and moulded by our state of being and our background.

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[16]Jerome Bruner and Leo Postman, "Perception, Cognition, and Behavior," Perception and Personality: A Symposium, Duke University, 1950.

[17]Leo Brunswick, "Remarks on Functionalism in Perception," Perception and Personality: A Symposium, Duke University, 1950.

[18]Warren Bowles and Elliott McGinnies, "Personal Values as Determinants of Perceptual Fixation," Perception and Personality: A Symposium, Duke University, 1950.

[19]Brian Le Bren-Francis, Do You See What I See? (New York: Vantage Press, 1966), pp. 7, 8.

Reiley, et al.,[20] investigated driver actions in vehicle control as a result of visual information. The subjects in their study were instructed to follow specified cars at various speeds and various following distances. The vehicles being followed were instructed before-hand to brake, accelerate, and turn at predetermined intervals and locations. The subjects' actions resulting from perceiving the various stimuli were recorded and analyzed, with the conclusions being that most individuals apparently operate in accordance with the entirety of the visual environment around them rather than on the basis of specific and isolated cues. A set of expectancies is learned concerning the manner in which the visual world behaves. All of their data indicated that visual information available to a driver is used in a highly systematic manner in effecting control actions. It is difficult, they concluded, to derive simple functional relationships describing this use because of the adaptability of the driver.

Barrett and Thornton[21] found that perceptual differences accounted for 79 - 90 percent of the variance in

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[20]Raymond E. Reiley, et al., "The Translation of Visual Information into Vehicular Control Actions," in Biotechnology, Inc. (Arlington, Virginia, October, 1965), pp. 46-47.

[21]Gerald V. Barrett and Carl L. Thornton, "Relationship between Perceptual Style and Driver Reaction to an Emergency Situation," Journal of Applied Psychology, LII (1968), 169-176.

subjects' reaction to emergency situations. In their study, 20 drivers were subjected to a controlled emergency situation in an unprogrammed automobile simulator, where a pedestrian (dummy) emerged from a shed into the path of the vehicle. Subsequent measurements of individual perceptual style, using the Rod and Frame Test (RFT), were found to correlate from .85 to .95 with effectiveness of appropriate reaction to the emergency situation.

Perception is the connecting link between the driving situation and ultimate driving behavior. If drivers fail to see the driving situation for what it is, a dangerous, ambiguous, unpredictable arena of human behavior, they will cause an accident or be involved in one. Brody[22] pointed out that "no matter how organically perfect a person's sensory equipment may be, it does not necessarily follow that he will perceive the world around him accurately and realistically." He adds that studies have shown that accident and violation-free drivers do not have better vision than accident repeaters and chronic violators, but apparently they see the driving situation for what it is. Perception, then, is more than sheer vision; it also involves interpreting the importance of what is seen, thus providing a sound basis for coping with seen situations. Such interpretation is based not only upon the physical

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[22]Brody and Stack, Highway Safety and Driver Education, pp. 86-87.

functioning of the sensory apparatus, but also upon what has been learned from past experiences, in fact, upon the whole personality of the driver.[23]

Relationship of Individual Values with Personality and Attitude

An individual's personality is not completely described until due consideration is given to his values, according to Stagner,[24] with values generally designating generalized attitudes. He further stated that additional research is needed before it is known to what extent values guide behavior.

Guilford, Christensen, et al.[25] defined a value and an interest as a generalized behavior tendency which attracts an individual to a certain class of activities or incentives. Rokeach,[26] in his studies of the relationship of values and attitudes at Michigan State University, stated that value seems to be a more dynamic concept than attitude since it has strong motivational, cognitive, affective, and behavioral components. While attitude and

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[23] D. J. Van Lennep, "Psychological Factors in Driving," Traffic Quarterly, VI (October, 1952), 483-498.

[24] Ross Stagner, Psychology of Personality (New York: McGraw-Hill Book Company, 1948), p. 237.

[25] J. P. Guilford, et al., "A Factor Analysis Study of Human Interests," Psychological Monograph, LXVIII, No. 375 (1954), 68.

[26] Rokeach, Beliefs, Attitudes and Values, pp. 124-160.

value are both widely assumed to be determinants of social behavior, value is a determinant of attitude as well as of behavior. He further pointed out that values have to do with modes of conduct, while an attitude represents several beliefs focused on a specific object or situation. A value is a single belief that guides actions and judgments across specific objects and situations.

Uhlaner,[27] in his work with military personnel, stressed the interaction of values with other personality factors in determining behavior and work performance.

Spranger[28] maintained an individual shapes his life by his values. He insisted that the mental character of man is primarily determined through the value category by means of which he lives and shapes his own life. Spranger defined individuals by the following designations, according to their prominent value standard. The theorist sets truth above everything else in human relations. The purely economic man is egotistical, seeing everything as a means of self-preservation. The aesthetic individual has self-fulfillment as his principal aim in life, with little regard for other people. The social man considers other human beings as his principal interest, exhibiting an

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[27]Julius E. Uhlaner, "Human Performance, Jobs, and Systems Psychology," address to the Division of Military Psychology, American Psychology Association, Miami, Florida, September 6, 1970.

[28]Spranger, Types of Men, pp. 2-25, 28.

altruistic view toward the world. The political individual, independent of any specific form of appearance, aims for the satisfaction of his own vital or mental drive for existence, even at the cost of others. A religious man is he whose mental structure is permanently directed to the creation of the highest and absolutely satisfying value experience; religiosity being that condition, instinctively or rationally, in which his experiences are either positively or negatively related to the total value of life.

Morality is derived from personal values, and attitude toward law and society is set by morals, and where one's values lie determine his respect and actions toward society stated Rabbi Frankel.[29] Moynihan[30] added that the ultimate realization of individual development relies on a consistency with moral values, religious, and spiritual ideals.

In their previously reported study of driving records among selected Air Force personnel, Conger, et al.[31] found that marked differences existed between

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[29]Rabbi Phillip Frankel, speech delivered during Law and Morality Week at Central Methodist Church, Lansing, Michigan, August 11, 1970.

[30]James F. Moynihan, "The Philosophical Aspects of Guidance," Review of Educational Research, XXVII (April, 1957), 187.

[31]Conger, et al., "Personal and Interpersonal Factors," p. 1072.

accident and non-accident groups on a measure of values. Several psychological tests were administered to these men, as well as clinical psychological interviews. However, the most significant differences between the accident and non-accident groups were three values of the Allport-Vernon-Lindzey Study of Values test. Conger,[32] in another study, pointed out that the individual with a poor driving record is likely to be unconventional in his opinions and values.

Edwards[33] recommended that a study be made of the kinds of values that seem most important in controlling driver decisions, and an effort be made to change value judgments within poor driver groups. Schulzinger[34] in his case studies of thousands of varied types of general accident cases admitted to his hospital said that many accidents represent a problem in defective moral and religious values. He stated that accidents in some respects share common ground with such other problems as juvenile delinquency, major crime, alcoholism, drug addiction, and social and economic adjustment.

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[32]Conger, "Personality Factors," p. 283.

[33]Edwards, "We Drive As We Live," p. 22.

[34]Morris S. Schulzinger, The Accident Syndrome (Springfield: Charles C. Thomas, 1956), p. 188.

Cantril and Allport[35] pointed out that several experiments demonstrated a clear relationship between values and conduct. They claimed the evidence from recent applications of the Study of Values must be interpreted as establishing these values as self-consistent, generalized traits of personality. They showed that a person's activity is not determined exclusively by the stimulus of the moment, nor by a merely transient interest, nor by a specific attitude peculiar to each situation which he encounters. On the contrary, general evaluation attitudes enter into various common activities of everyday life, and in so doing help to account for the consistencies of personality.

Elizabeth Duffy,[36] in her study of several value or evaluative attitudes scales, found definite correlation with measures of attitude and personality. Her conclusions were that value measurement is a stable predictor of personality. Duffy further explained that investigations employing the Study of Values, and other values, indicated that the investigation of evaluative attitudes is an approach of far-reaching significance in the study of personality.

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[35]Cantril and Allport, "Recent Applications," p. 272.

[36]Elizabeth Duffy, "A Critical Review of Investigations Employing the Allport-Vernon-Lindzey Study of Values and Other Tests of Evaluative Attitude, Psychological Bulletin, XXXVII (1940), 609.

Kelly[37] stated in his twenty year study of personality change of selected college graduates, that in the estimated long-term consistency of five domains of personality variables, value interests are the most stable, with an index of approximately .50.

The literature has shown a definite link between personality of drivers and their driving behavior, particularly in regard to traffic accidents and traffic violations. Additional literature indicates high correlation between individuals' value ratings and their subsequent attitude and personality ratings on many significant scales. It would seem from this source of information that the relationship between values and driving record suggests further investigation.

Relationship of Sex, Marital Status, and Age Factors with Driving Record

Several studies have shown a significant relationship exists between the three variables of sex, marital status, and age with an individual's driving record of accident involvement and traffic-law violation convictions. Levonian,[38] in a study of 7,430 California drivers, reported that negligent vehicle operators could be identified

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[37]E. L. Kelly, "Consistency of the Adult Personality," American Psychologist, X (1955), 675.

[38]Levonian, "Prediction of Accidents and Convictions," p. 75.

at a statistically significant level on the basis of four variables, three of which are age, sex, and marital status.

Marital Status

Many studies have shown a significant difference in driving records of married and unmarried individuals, especially in the younger ages. Consequently a review of the literature leads one to believe that marital status is a predictor of driving record. In a massive study of California drivers using driving records for 1962, differences were noted between the records of 97,000 males and 68,000 females. Males under 25 who were married had less accidents than those who were single. After age 25, however, married persons, both male and female, were safer than single persons. A similar trend appeared for violations; married males under 20 had less violations than single males up to age 20.[39]

Heath,[40] in his investigation of 958 New Jersey drivers, pointed out that traffic offenders can be distinguished from non-offenders by marital status. The group of traffic offenders was characterized by unmarried

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[39] R. C. Peck, R. S. Coppin, and W. C. Marsh, "Driver Record by Age, Sex, and Marital Status," Highway Research Review, XI (September, 1967), 65.

[40] Heath, "The Relationship Between Driving Records," p. 78.

individuals. However, he found no statistical significance among individuals who reported themselves to be widowed, separated, or divorced. Rainey and Conger[41] found in a different study of selected Airmen that single men were involved in accidents to a much higher degree than married men. They concluded that single status could contribute more directly to accidents than other correlates by virtue of social factors, namely spending more leisure time drinking and bar and party hopping. Single men become more vulnerable to accidents as a consequence.

Coppin, et al.[42] found in another California study indications that married female and male driving records were superior to the single drivers of their respective sexes, with single females having approximately twice the accident and violation incidence of their married counterparts. Similar findings were observed concerning the male drivers. For both sexes, marital status was found to have exerted a significant effect upon driving record, both accidents and violation convictions. Generally, single drivers had a higher accident and violation frequency than married drivers.

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[41]Rainey, et al., "Personality Characteristics," p. 16.

[42]Coppin, et al., "The 1964 California Driver Record Study," p. 4.

Age

Heath,[43] again in his investigations of 958 New Jersey drivers, pointed out that traffic offenders can be distinguished from non-offenders by age, stating that the traffic offender group was characterized by younger individuals.

Coppin[44] indicated in his California study that accidents and citations tended to decrease with age, except at extremely old ages where there was a tendency for accidents to increase slightly. For either sex he found age to be a significant factor upon driving record, with accidents and citations both occurring with less frequency as age increased.

DeSilva[45] pointed out that accidents are closely correlated with age, with the fatality rate decreasing with advancing age up to 60, but thereafter rising slightly. A profile of 1,084 Michigan drivers in 1967[46] showed the younger drivers to have poorer driving records than the older drivers, which included the categories of

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[43]Heath, "The Relationship Between Driving Records."

[44]Coppin, et al., "The 1964 California Driver Record Study."

[45]Harry DeSilva, Why We Have Automobile Accidents (New York: John Wiley and Sons, 1953), p. 28.

[46]Joseph W. Little, Michigan Driver Profile (Ann Arbor: University of Michigan, 1968), p. 5.

accidents, convictions, and license suspensions. The younger age groups were not only overrepresented in accidents, but were also overrepresented in almost any description of a poor driver one might choose.

A study of 720 truck drivers in California by Levonian, Case, and Gregory[47] demonstrated that age correlated with recorded accidents; the younger men tended to have more accidents than older drivers.

Lauer,[48] in a study of 7,692 Iowa drivers sampled from the drivers license files, pointed out that there is a preponderance of evidence that male drivers 30 years of age and under contribute very heavily to the accident total; the difference from 18 years to 23 years being highly significant. McFarland[49] likewise maintained that in ordinary pleasure vehicle driving the age group under 30 years of age has been found to produce the most accidents.

The results of a 1968 American Medical Association Automotive Safety Symposium[50] revealed that

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[47]Edward Levonian, Harry W. Case, and Raymond Gregory, "Prediction of Recorded Accidents and Violations Using Non-Driving Predictors," Highway Research Record, IV (1963), 58.

[48]A. R. Lauer, "Age and Sex in Relation to Accidents," Highway Research Board Bulletin 60 (1952), 137.

[49]McFarland and Mosely, Human Factors in Highway Transportation Safety, p. 145.

[50]American Medical Association Automotive Safety Symposium, Washington, D.C., September 13 and 14, 1968, p. 1.

youthful drivers constitute approximately 20 percent of the total driving population, but are responsible for slightly more than 33 percent of all fatal crashes. On the other hand, drivers 65 years of age or over constitute 8 percent of all drivers, and account for approximately 8 percent of the fatalities. Their statistics showed that after age 25 the accident rate declines steadily until age 65, and then rises sharply.

Sex

Burg,[51] in a California study to determine if driving records are more stable over a longer (six year) period of time, found that males were involved in a greater number of accidents than females. He also pointed out that males have more violation convictions than females, stating that accidents are a very stable predictor of future driving performance.

Coppin,[52] in his study of the California driver revealed that both married and single female drivers had driving records that were markedly superior to those of their respective male counterparts. Similarly, single and married males had over twice as many driver record

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[51] Albert Burg, "The Stability of Driving Record Over Time," Accident Analysis and Prevention, II (1970), 57-65.

[52] Coppin, et al., "The 1964 California Driver Record Study," p. 4.

incidents, accidents and citations, as their respective female counterparts.

DeSilva[53] has shown, in a study of Connecticut and South Carolina drivers, that men are involved in a greater number of accidents than are women. Even though women comprised approximately 20 percent of the licensed drivers at the time of his study, they were involved in only 8 to 10 percent of all reported accidents.

In the profile of Michigan drivers,[54] male drivers experienced twice as many accidents as female drivers. Of 715 male drivers surveyed, 7.6 percent had one or more accidents during the previous year, while of 348 female drivers investigated, only 3.7 percent experienced one or more accidents in the same period.

It is usually recognized that men drive more miles than women drivers, consequently they experience more exposure to traffic and the highway than their female counterparts. However, a two-year study in Iowa by Swanson, Schwenk, and Lauer[55] showed that there are more fatalities among male drivers proportionately and on a mileage basis than there are for female drivers.

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[53]DeSilva, Why We Have Automobile Accidents, p. 28.

[54]Little, Michigan Driver Profile, p. 5.

[55]Clifford Swanson, Lillian Schwenk, and A. R. Lauer, "Age and Fatal Motor Vehicle Accidents," Highway Research Board Bulletin 212 (1959), 26.

Campbell[56] stated there were more accidents involving men than women drivers in his investigation of 32,387 drivers, somewhat due to the fact there are more men drivers (in actual numbers) than women. He pointed out females show relatively less involvement in single-car accidents, and more in two car accidents. However, in two car accidents, they also show a relatively higher frequency of being struck than do men. In spite of the many theories as to why, the fact is still borne out that men are involved in more accidents than women, regardless of age or marital status, and likewise have more violation convictions on their driving records than women.

The Allport-Vernon-Lindzey Study of Values as an Instrument

The Allport-Vernon-Lindzey Study of Values was chosen as the instrument for this study because of its ability to discriminate between certain interest values with a high degree of reliability and validity. Duffy[57] pointed out that this scale demonstrates an individual's relative interest in the discovery of truth (theoretical), interest in the useful (economic), interest in form and harmony (aesthetic), interest in and love of people (social), interest in power (political), and the desire

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[56]Campbell, "Driver Age and Sex, p. 37.

[57]Duffy, "Critical Review," pp. 597-612.

for comprehension of and unity with the cosmos as a whole (religious). The authors of the scale, Allport and Vernon,[58] explained that the Study of Values was designed to determine the relative prominence of each of these six values in a given personality.

Cantrill and Allport[59] stated that evidence accumulated since the publication of this scale indicates that the reliability and validity claimed for it are approximately correct, if anything too low. Coefficients determined by split-half and repeat reliability[60] indicate respectively; theoretical, .62 and .66; economic, .72 and .71; aesthetic, .84 and .84; social, .49 and .39; political, .53 and .55; and religious, .84 and .80. Validity obtained by means of correlations between scores obtained on five external tests and one self-rating test as a criterion, with the Study of Values were; theoretical, +.41; political, +.44; economic, +.57; aesthetic, +.57; social, +.14; and religious, +.69.

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[58]G. W. Allport and P. E. Vernon, "A Test for Personal Values," The Journal of Abnormal and Social Psychology, XXVI (October-December, 1931), 236.

[59]Cantrill and Allport, "Recent Applications," p. 272.

[60]Allport and Vernon, "A Test for Personal Values," p. 243.

Whitely,[61] in his various experiments with the scale, was impressed by the relatively high degree of constancy of the means scores for the successive administration of the test.

Pintner[62] used the Study of Values and Thurstone's Scale for measuring attitudes toward the church by a group of 53 students. Between the scores for the religious values in the Study of Values and the attitudes favorable to the church measured in the Thurstone Scale, he found an r of +.78. This result obtained with two entirely different independent and individually reliable scales Pintner felt was significant.

In an investigation of methods to measure interests, Guilford, et al.[63] concluded that at present there appears no means of assessing interests that is more dependable, more sensitive to individual differences, and more economical of time and effort than a verbal inventory such as the Study of Values.

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[61] P. L. Whitely, "The Constancy of Personal Values," The Journal of Abnormal and Social Psychology, XXXIII (1938), 406.

[62] A. R. Pintner, "A Comparison of Interests, Abilities, and Attitudes," The Journal of Abnormal and Social Psychology, XXVII (1933), 351-357.

[63] Guilford, et al., "A Factor Analysis Study," p. 68.

Stanley,[64] in his work with value systems, has found the Study of Values to be useful in many fields, particularly for comparing groups. In a Denver, Colorado, study of high school age drivers, Conger[65] found the scales of this test proved highly discriminating between accident repeaters and accident-free subjects. Conger, et al.,[66] in their previously reported study of the driving records of 264 Airmen, considered the Study of Values to be an extremely stable predictor of accident susceptibility in their population.

Summary

The literature indicates the possibility of a relationship between basic personality interests (values) and driving record. Other factors, such as age, sex, and marital status have shown to be rather reliable and consistent predictors of driving record. Therefore, these studies seem to indicate that exploration of the relationship of values and driving record, with due consideration of age, sex, and marital status, might prove worthwhile.

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[64] J. C. Stanley, "Insight Into One's Own Values," Journal of Educational Psychology, XXXXII (1951), 399.

[65] John L. Conger and Wilbur Miller, Personality, Social Class, and Delinquency (New York: John Wiley and Sons, 1966), p. 55.

[66] Conger, et al., "Personal and Interpersonal Factors," p. 1072.

Rainey, et al.,[67] found the Study of Values to be highly discriminating in a study of 30 U.S. Air Force personnel when separated into dichotomous groups of accident-repeater and accident free drivers. He concluded a further study should be performed with a general civilian sampling of drivers. It was further recommended the drivers consist of a larger range of age than his sample, should include both sexes, and that driving record be a continuous rather than a dichotomous variable.

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[67] R. V. Rainey, et al., "An Investigation of the Role of Psychological Factors in Motor Vehicle Accidents," Highway Research Board Bulletin 212 (1959), 12.

CHAPTER III

DESIGN OF THE STUDY

The purpose of this study was twofold: (1) to discover if any of the six basic interests of personality (values) as determined by the Allport-Vernon-Lindzey Study of Values could improve the prediction of driving record beyond the factors of age, sex, and marital status; and (2) if significant differences for any of the six values existed between drivers categorized as follows:

a. no accident/no violation
b. no accident/violation
c. accident/no violation
d. accident/violation

Hypotheses

Major Hypotheses

This study has six primary hypotheses, with an additional six subhypotheses, all of which are stated in the null form.

> Hypothesis 1: The prediction of driving record is not significantly improved by including religious values with the factors of age, sex, and marital status.
>
> $$R_{d \cdot amsv_1} = R_{d \cdot ams}$$[1]

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[1] Correlation coefficients are subscripted as follows: d-driving record, a-age, m-marital status, s-sex,

Hypothesis 2: The prediction of driving record is not significantly improved by including economic values with the factors of age, sex, and marital status.

$$R_{d \cdot amsv_2} = R_{d \cdot ams}$$

Hypothesis 3: The prediction of driving record is not significantly improved by including political values with the factors of age, sex, and marital status.

$$R_{d \cdot amsv_3} = R_{d \cdot ams}$$

Hypothesis 4: The prediction of driving record is not significantly improved by including social values with the factors of age, sex, and marital status.

$$R_{d \cdot amsv_4} = R_{d \cdot ams}$$

Hypothesis 5: The prediction of driving record is not significantly improved by including aesthetic values with the factors of age, sex, and marital status.

$$R_{d \cdot amsv_5} = R_{d \cdot ams}$$

Hypothesis 6: The prediction of driving record is not significantly improved by including theoretical values with the factors of age, sex, and marital status.

$$R_{d \cdot amsv_6} = R_{d \cdot ams}$$

Subhypotheses

For the six subhypotheses, subjects were classified into the following four categories of accident and violation experience:

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v_1-religious value, v_2-economic value, v_3-political value, v_4-social value, v_5-aesthetic value, and v_6-theoretical value.

a. no accident/no violation
b. no accident/violation
c. accident/no violation
d. accident/violation

Subhypothesis 1: There is no significant difference between drivers with respect to religious values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$$H:_{\text{religious values}} \; M_a = M_b = M_c = M_d$$

Subhypothesis 2: There is no significant difference between drivers with respect to political values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$$H:_{\text{political values}} \; M_a = M_b = M_c = M_d$$

Subhypothesis 3: There is no significant difference between drivers with respect to social values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$$H:_{\text{social values}} \; M_a = M_b = M_c = M_d$$

Subhypothesis 4: There is no significant difference between drivers with respect to aesthetic values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$$H:_{\text{aesthetic values}} \; M_a = M_b = M_c = M_d$$

Subhypothesis 5: There is no significant difference between drivers with respect to economic values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$$H:_{\text{economic values}} \; M_a = M_b = M_c = M_d$$

Subhypothesis 6: There is no significant difference between drivers with respect to theoretical values as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped according to the four accident and violation experience categories.

$H:_{\text{theoretical values}} M_a = M_b = M_c = M_d$

Sample

The population from which the subjects for this study were extracted were the approximately 5,500,000 licensed drivers recorded in the office of the Michigan Department of State, Driver Services Division in July, 1970. It was determined that a systematic randomly selected sample of .01 percent of the Michigan drivers, resulting in 550 drivers, would be contacted to participate in the study.

Selection Procedure

Driver records are filed numerically by license number in the offices of the Michigan Department of State in Lansing. Each license number is twelve digits and is preceded by the first letter in the last name. Because the license number is generated by a soundex code from the name and birth date, the filing sequence is effectively alphabetical.

The Driver Services Division was in the process of transferring their driver records to a computer system at the time of this study. As this record process was not

completed as the study began, it was necessary to use the card file records for the driver selection phase of the study. The files are arranged in 90 bins containing sixteen trays each. The records are filed sequentially by number in the trays. Each tray from the first to the last in the files contains approximately the same number as every other bin.

To give each driver on file an equal opportunity to be selected in the study, the first record in each third row of the trays was removed. Drivers licensed less than three years were rejected and the next record in the tray was used.

Collection of Data

The name, address, and age of each selected driver was taken from the individual's file, along with the number of accidents and violation convictions each individual had accumulated during the last three years. Each subject was mailed a copy of the Allport-Vernon-Lindzey Study of Values booklet to complete and return. In addition, each subject was asked to enter his marital status. A letter[2] explaining the booklet along with a gift pen was enclosed with each questionnaire.

Thirty-nine percent (215) were returned as a result of the first mailing. A subsequent follow-up

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[2]Appendix A

mailing resulted in an additional 12 percent return, a total of 51.8 percent or 286 responses. Of that total, 34 booklets were not usable due to improper responses, death, refusals, and change of address. A total of 252 subjects were analyzed in this study. Of this total, 106 were men and 146 women. Ages ranged from 19 to 76, and marital status responses indicated 50 single and 202 married.

A preliminary study of 59 subjects was conducted to determine the feasibility of the Study of Values as a test instrument. Procedures for analysis were also tested to decide their appropriateness for this study. As the instrument and procedures appeared sufficiently capable of offering the information needed to carry out the proposed study, the random sampling procedures were continued for a total of 550 subjects. The test instrument, subject contact techniques, and analysis procedures were identical for both the preliminary and expanded studies.

Sources of Data

Driving Record

The accident/violation experience for each subject was taken from the manual driver record file of the Michigan Department of State, Driver Services Division. The records contained the date of each reported accident in which a driver was involved. The date and type of each

violation conviction was also recorded in the driver records. This information for the three year period prior to August 31, 1970 was extracted for each subject selected for inclusion in the study.

The Michigan State Police daily submit accident data to the Department of State. This data is taken from accident reports submitted to the State Police by all reporting agencies in the state. The convicting court sends a record of motor vehicle offense convictions to the Department of State. Arrests not resulting in convictions are not recorded in the driver record files.

Because the issuance of a violation citation is commonplace when an accident has taken place, the convictions recorded with accidents were rejected for purposes of this study.

Allport-Vernon-Lindzey Study of Values

The Study of Values is designed to measure the relative prominence in adult personalities of six basic interests or motives in personality: the theoretical, economic, aesthetic, social, political, and religious. The classification is based directly upon Eduard Spranger's Types of Men,[3] which defends the view that the

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[3]Spranger, Types of Men, pp. 2-25, 28.

personalities of men are best known through a study of their values or evaluative attitudes.

The test consists of a number of questions, based upon a variety of familiar situations to which two alternative answers in Part I and four alternative answers in Part II are provided. In all there are 120 answers, twenty of which refer to each of the six values. The subject records his preferences numerically by the side of each alternative answer. His scores on each page are then added and the totals transcribed onto the score sheet. The page totals belonging to each of the six values are then summed.

Reliability coefficients for the questions used in this test were determined by both the split-half and test-retest procedures.[4] The split-half coefficients were theoretical, .62; economic, .72; aesthetic, .84; social, .49; political, .53; and religious, .84. The repeat coefficients were theoretical, .66; economic, .71; aesthetic, .84; social, .39; political, .55; and religious, .80.

Validity coefficients were obtained by means of correlations between scores obtained on five external tests and one self-rating test as a criterion with the Study of Values questions.[5] The validity coefficients were

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[4]Allport and Vernon, "A Test for Personal Values," p. 243.

[5]Ibid.

theoretical, +.40; economic, +.57; aesthetic, +.57; social, +.14; political, +.44; and religious, +.69.

Cantrill and Allport,[6] in a later test of reliability and validity, state that the coefficients for both are approximately correct, and if anything, they are too low. Whitely,[7] in his various experiments with the Study of Values, was impressed by the relatively high degree of constancy of the means scores for the successive administrations of the test.

Methods of Analysis of Data

The computer was used to determine the predictive possibilities of each of the six values of interest toward driving success. Each subject's driving record of accidents and violation convictions was entered on punch cards along with their age, sex, and marital status. Because the age variable in respect to driving record is of a curvilinear nature, age was squared and also entered for each subject. By forming a quadratic equation, the age variable was transformed to a linear quantity, allowing it to be analyzed simultaneously with the other independent variables in the study.

The subjects' scores for each of the six values were also placed on their punch cards. By means of

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[6]Cantrill and Allport, "Recent Applications, p. 272.

[7]Whitely, "The Constancy of Personal Values," p. 243.

partial correlation it was possible to determine if any of the six values of interest significantly improved the predictive ability of age, sex, and marital status for the complete group of subjects.

In addition, subjects were grouped into dichotomous categories of male and female. By means of partial correlation holding age and marital status constant, it was possible to determine if any of the six values of interest significantly improved the predictive ability of age and marital status for driving record of either sex.

The .01 level of significance was used in this study. Each subject was scored on six tests; i.e. religious, economic, political, social, aesthetic, and theoretical values. As the alpha level is additive when a series of tests are administered, it was necessary to use the .01 level of significance for each test (value) to keep the overall alpha at the .06 level of significance.

The distribution of the sample population for this study is shown in Table 1. The subjects were placed into four categories of driving record. Category A, no accident/no violation, was comprised of 64 subjects; 22 men and 42 women, of which 57 were married and seven were single. Category B, no accident/violation, was comprised of 54 subjects; 25 men and 29 women, of which 47 were married and seven were single. Category C, accident/no violation, was comprised of 77 subjects; 36 men and 41

TABLE 1.--Distribution of sample population.

Variable	Driving Record Category				Total
	A	B	C	D	
Sex:					
Male	22	25	36	22	106
Female	42	29	41	35	146
Marital Status:					
Married	57	47	51	47	202
Single	7	7	26	10	50
Age:					
19-24	7	2	18	12	39
25-29	7	9	17	11	44
30-34	11	5	8	9	33
35-39	5	7	6	7	25
40-45	6	5	8	4	23
45-49	12	8	8	5	33
50-54	8	4	5	3	20
55-59	3	9	3	3	18
60-64	4	2	3	1	10
65-69	1	3	1	1	6
70-74	-	1	-	-	1
75-over	-	-	-	1	1
Total	64	54	77	57	252

Driving Record Category:

A - no accident/no violation
B - no accident/violation
C - accident/no violation
D - accident/violation

women, of which 51 were married and 26 were single. In Category D, accident/violation, there were 57 subjects; 22 men and 35 women, of which 47 men were married and ten were single.

The planned comparison method for analysis of variance was performed to determine if there were significant differences between the four categories for each of the six values of interest. This technique made it possible to determine if significant differences for each of the six values exist specifically between the category of no accident/no violation and the category of accident/violation. Also, the category of no accident/violation and the category accident/no violation could be compared. The comparison consisting of the combination of categories no accident/no violation plus accident/violation and the combination of categories no accident/violation plus accident/no violation could also be compared. These were the only comparisons possible, as they were orthogonal,[8] an assumption required for this method of analysis referring to statistical independence of variables.

Of the three analyses of variance comparisons which were statistically possible to perform, two were meaningful and interpretive in light of the stated subhypotheses. The comparison between the category of

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[8]William L. Hayes, Statistics (New York: Holt, Rinehart, and Winston, 1963), p. 473.

no accident/no violation and the category of accident/violation was orthogonal, and gave a comparison of two extreme driving record categories, viz. those subjects with both accidents and violation convictions, and those subjects with neither accidents or violation convictions. Also, the comparison between the category of no accident/violation and the category of accident/no violation was orthogonal; and gave a comparison of two different driving record categories, viz. those subjects who had been involved in accidents but had not received any violation convictions on their driving record, and those subjects with violation convictions on their driving record but having not been involved in any recorded accidents.

The third orthogonal comparison consisted of two combined categories and the other two combined categories. The combinations were the categories of no accident/no violation plus accident/violation and the categories of no accident/violation plus accident/no violation. It was concluded that the comparison of the extreme driving record categories combined and the two categories of accident/no violation and no accident/violation could not be interpreted in light of the six subhypotheses. It was decided to use the first two comparisons only, because these two comparisons constituted the questions which were of particular interest in this study, while the third

comparison gave information which would be meaningless and uninterpretive.

In further analysis, subjects in each category were placed into dichotomous groups of male and female. The planned comparison method for analysis of variance was performed to determine if there were significant differences between the four categories for each of the six values of interest for each sex.

CHAPTER IV

ANALYSIS OF DATA

This study was designed to discover if any of the six basic interests of personality (values) as determined by the Allport-Vernon-Lindzey Study of Values could improve the prediction of driving record beyond the factors of age, sex, and marital status for a randomly selected group of Michigan drivers.

A review of literature has shown that the factors of age, sex, and marital status have the ability to predict driving record. Correlations developed from the data collected are shown in Table 2, supporting the contention that age and sex do in fact predict driving record. The correlation coefficients derived form the data for the 252 subjects indicated the degree of variance in the sample's driving record which could be explained by each of the three known predictors; age, sex, and marital status. Although previous reports showed marital status to be a significant factor, the marital status of the subjects in this study did not indicate a significant correlation able to predict driving record. However, knowing the sex of the subjects in this study proved significantly capable of predicting driving record. Also, knowing the age of the

TABLE 2.--Correlations between driving record and the known factors of marital status, sex, and age for all subjects (n = 252).

Known Factors	Correlation Coefficient[a]	F ratio[b]
Marital Status	.11338	3.2568
Sex	.22347	13.1412[c]
Age	.23121	7.0305[c]

[a]Correlation coefficient--degree of variance for driving record which can be explained by each of the factors.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

[c]Significantly different from zero at the .01 level.

subjects in this study proved significantly capable of predicting record, viz. accidents and violation convictions.

This study was also designed to show if significant differences for any of the six basic interests of personality (values) existed between drivers when categorized as follows:

a. no accident/no violation
b. no accident/violation
c. accident/no violation
d. accident/violation

The data collected from the 252 subjects in the study included age, sex, and marital status; and the scores as determined by the Allport-Vernon-Lindzey Study of Values for each of the six basic interests of personality (values), i.e., aesthetic, theoretical, economic, political, social, and religious. The dependent variable of driving record, accident and violation convictions, was tabulated from the driver record files of the Department of State. The data was analyzed statistically to determine if there were significant relationships. A summary of the data collected for the study appears in Appendix E.

Preparation of Data for Statistical Analysis

A total of 252 computer data cards were punched for simple correlation and partial correlation regression analyses, along with the analysis of variance computations to provide information for the planned comparisons. The

Michigan State University Control Data Corporation 3600 computer was used for these computations, while the planned comparisons were computed by means of rotary calculator. All tests of significance were computed on the rotary calculator.

Results of the Statistical Analysis

A simple correlation between the predictor variables of age, sex, and marital status was made with driving record (Table 1). Simple correlations were then computed between each of the six interests of personality (values) and driving record.

In Table 3 are shown the computations across the 252 subjects that gave the degree of variance in driving record which could be explained by each of the six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values, without regard to age, sex, or marital status. Positive correlation coefficients indicated that higher value scores corresponded to higher accident and violation conviction incidence in driving record. The negative correlation coefficients (religious, social, and economic) indicated that higher basic interests of personality (value) scores corresponded to lower accident and violation conviction incidence in driving record. The correlation coefficients between driving record and the six basic interests of personality (religious, economic, political, aesthetic, social, and theoretical

TABLE 3.--Correlation coefficients for each of the basic interests of personality (values) and driving record for all subjects without consideration of the factors of age, sex, and marital status (n = 252).

Basic Interests of Personality (Values)[a]	Correlation Coefficient[b]	F ratio[d]
Religious	-.05712[c]	.752
Political	.07736	1.509
Social	-.01447[c]	.050
Aesthetic	.1097	.025
Economic	-.02460[c]	.150
Theoretical	.04789	.501

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]Degree of variance for driving record which can be explained by each of the basic interests of personality (values).

[c]Negative correlation: indicates subjects with higher basic interests of personality (values) scores have correspondingly lower accident and violation conviction incidence on their driving records.

[d]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

values) as determined by the Allport-Vernon-Lindzey Study of Values were not significantly different from zero at the .01 level of significance. As age, sex, and marital status were not held constant, further analysis was indicated with these three variables partialed out.

The 252 subjects were then divided by sex, forming two groups of 146 women drivers and 106 men drivers. In Tables 4 and 5 are shown the computations for each group that gave the degree of variance in driving record which could be explained by each of the six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values, without regard to age or marital status. Positive correlation coefficients indicated that higher basic interests of personality (value) scores corresponded to higher accident and violation conviction incidence in driving record. The negative correlation coefficients (theoretical, aesthetic, social, and religious for women; and economic, political, and religious for men) indicated higher basic interests of personality (value) scores corresponded to lower accident and violation conviction incidence in driving record. The correlation coefficients between the driving records of male and female subjects, and the six basic interests of personality (religious, economic, political, aesthetic, social, and theoretical values) as determined by the Allport-Vernon-Lindzey Study of Values were not significantly different from zero at

TABLE 4.--Correlation coefficients for each of the basic interests of personality (values) and driving record for male subjects without consideration of the factors of age and marital status (n = 106).

Basic Interests of Personality (Values)[a]	Correlation Coefficient	*F* ratio[b]
Religious	-.01135	.104
Political	-.06597	.418
Social	.10885	1.263
Aesthetic	.14658	2.339
Economic	-.18110	3.549
Theoretical	.01604	.031

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the *F* ratio must be 6.8 or larger.

TABLE 5.--Correlation coefficients for each of the basic interests of personality (values) and driving record for female subjects without consideration of the factors of age and marital status (n = 146).

Basic Interests of Personality (Values)[a]	Correlation Coefficient	F ratio[b]
Religious	-.03514	.142
Political	.10051	1.434
Social	-.00020	.0000057
Aesthetic	-.00709	.007
Economic	.01538	.028
Theoretical	-.03335	.142

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

the .01 level of significance. As age, sex, and marital status were not held constant, further analysis was indicated with these three variables partialed out.

Hypotheses

The correlation coefficient of the variables of age, sex, and marital status was partialed out to eliminate its influence on the correlation between the six basic interests of personality (values) and driving record. The partial correlation coefficient indicated the degree of variance for driving record which could be explained by each of the six basic interests of personality (values) when the factors of age, sex, and marital status were held constant. The partial correlation coefficient of any basic interest of personality (value) had to be significant at the .01 level of significance in order for that basic interest of personality (value) to improve the prediction of driving record by the factors age, sex, and marital status.

To determine whether a partial correlation coefficient is significantly different from zero, the quantity $F_{1,N-5} = \frac{r^2}{1 - r^2} 2\ (N-5)$ is compared to the tabled value $F_{1,N-5} = 6.8$ (at alpha = .01).[1]

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[1] Hubert M. Blalock, Social Statistics (New York: McGraw-Hill Book Company, 1960), p. 355.

Hypothesis 1: The prediction of driving record is not significantly improved by including the basic interest of personality, religious values, with the factors of age, sex, and marital status.

Table 6 shows the partial correlation coefficient between driving record and the basic interest of personality, religious value, as determined by the Allport-Vernon-Lindzey Study of Values, with age, marital status, and sex partialed out for the 252 subjects. The partial correlation coefficient was not significantly different from zero at the .01 level of significance.

Tables 7 and 8 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic interest of personality, religious value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

Hypothesis 2: The prediction of driving record is not significantly improved by including the basic interest of personality, economic value, with the factors of age, sex, and marital status.

Table 6, p. 64 shows the partial correlation coefficient between driving record and the basic interest of personality, economic value, as determined by the Allport-Vernon-Lindzey Study of Values, with age, sex, and marital status partialed out for the 252 subjects was not

TABLE 6.--Partial correlations coefficients between each of the basic interests of personality (values) and driving record of all subjects when age, marital status and sex are partialed out.

Basic Interests of Personality (Values)[a]	Partial Correlation Coefficient[b]	F ratio[c]
Religious	.01944	.09389
Political	.02219	.12356
Social	.05597	.77553
Aesthetic	.44044	.04220
Economic	.07961	1.57000
Theoretical	.00638	.00988

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]The degree of variance for driving record which can be explained by each of the basic interests of personality (values) when age, marital status, and sex are held constant.

[c]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 7.--Partial correlation coefficients between each of the basic interests of personality (values) and driving records of female subjects when age and marital status are partialed out (n = 146).

Basic Interests of Personality (Values)[a]	Partial Correlation Coefficient[b]	F ratio[c]
Religious	.00109	.000
Political	.07301	.761
Social	-.03367	.161
Aesthetic	-.02112	.063
Economic	.04192	.250
Theoretical	-.03767	.202

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]The degree of variance for driving record which can be explained by each of the six basic interests of personality (values) when age and marital status are held constant.

[c]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 8.--Partial correlation coefficients between each of the basic interests of personality (values) and driving record of male subjects when age and marital status are partialed out (n = 106).

Basic Interests of Personality (Values)[a]	Partial Correlation Coefficient	F ratio[b]
Religious	.00882	.008
Political	-.11941	1.475
Social	.14280	2.123
Aesthetic	.11286	1.316
Economic	-.16877	2.990
Theoretical	.02318	.055

[a]The six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

significantly different from zero at the .01 level of significance.

Tables 7 and 8, pages 65 and 66 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic interest of personality, economic value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

> Hypothesis 3: The prediction of driving record is not significantly improved by including the basic interest of personality, political value, with the factors of age, sex, and marital status.

Table 6, page 64 shows the partial correlation coefficient between driving record and the basic interest of personality, political value, as determined by the Allport-Vernon-Lindzey Study of Values, with age, marital status, and sex partialed out for the 252 subjects, was not significantly different from zero at the .01 level of significance.

Tables 7 and 8, pages 65 and 66 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic interest of personality, political value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and

marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

> Hypothesis 4: The prediction of driving record is not significantly improved by including the basic interest of personality, social value, with the factors of age, sex, and marital status.

Table 6, page 64 shows the partial correlation coefficient between driving record and the basic interest of personality, social value, as determined by the Allport-Vernon-Lindzey Study of Values, with age, sex, and marital status partialed out for the 252 subjects, was not significantly different from zero at the .01 level of significance.

Tables 7 and 8, pages 65 and 66 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic interest of personality, social value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

> Hypothesis 5: The prediction of driving record is not significantly improved by including the basic interest of personality, aesthetic value, with the factors of age, sex, and marital status.

Tables 6, page 64 shows the partial correlation coefficient between driving record and the basic interest of personality, aesthetic value, as determined by the

Allport-Vernon-Lindzey Study of Values, with age, sex, and marital status partialed out for the 252 subjects was not significantly different from zero at the .01 level of significance.

Tables 7 and 8, pages 65 and 66 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic interest of personality, aesthetic value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

> Hypothesis 6: The prediction of driving record is not significantly improved by including the basic interest of personality, theoretical value, with the factors of age, sex, and marital status.

Table 6, page 64 shows the partial correlation coefficient between driving record and the basic interest of personality, theoretical value, as determined by the Allport-Vernon-Lindzey Study of Values, with age, sex, and marital status partialed out for the 252 subjects was not significantly different from zero at the .01 level of significance.

Tables 7 and 8, pages 65 and 66 show the results when the subjects were divided by sex into groups of 146 women drivers and 106 men drivers. The partial correlation coefficient between driving record and the basic

interest of personality, theoretical value, as determined by the Allport-Vernon-Lindzey Study of Values, with age and marital status partialed out, was not significantly different from zero at the .01 level of significance, therefore the null hypothesis was not rejected.

Subhypotheses

The planned comparisons method for analysis of variance was performed for each of the six interests of personality (values) to determine if there were significant differences between categories of drivers when grouped as follows: no accident/no violation, violation/no accident, no violation/accident, and accident/violation. The total number of comparisons that may be tested by means of planned comparisons within the framework of an analysis of variance design is restricted to the number of degrees of freedom between groups. In this design three comparisons could be made, the appropriate comparisons being restricted to orthogonal contrasts. The driving record categories analyzed by planned comparisons were:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation
3. no accident/no violation, accident/violation and no accident/violation, accident/no violation.

Of the three analysis of variance comparisons which were statistically possible to perform, two were meaningful and interpretive in light of the stated subhypotheses. The comparison between the category of no accident/no violation

and the category of accident/violation was orthogonal, and gave a comparison of two extreme driving record categories; viz., those subjects with both accidents and violation convictions, and those subjects with neither accidents or violation convictions. Also, the comparison between the category of no accident/violation and the category of accident/no violation was orthogonal, and gave a comparison of two different driving record categories; viz., those subjects having been involved in accidents but had not received any violation convictions on their driving record, and those subjects with violation convictions on their driving record but having not been involved in any recorded accidents.

The third orthogonal comparison consisted of two combined categories and the other two categories combined. The combinations were the categories of no accident/no violation plus accident/violation and the categories of no accident/violation plus accident/no violation. It was concluded that the comparison of the extreme driving record categories combined with the two categories of accident/no violation and no accident/violation combined could not be interpreted in light of the six subhypotheses.

For the six subhypotheses, the 252 subjects were grouped into the following categories:

a. no accident/no violation, with 64 subjects
b. no accident/violation, with 54 subjects
c. accident/no violation, with 77 subjects
d. accident/violation, with 57 subjects.

In addition, the 252 subjects were divided into dichotomous groups of male and female drivers, with the male subjects grouped into the following categories:

a. no accident/no violation, with 22 subjects
b. no accident/violation, with 25 subjects
c. accident/no violation, with 36 subjects
d. accident/violation, with 22 subjects

and the female subjects grouped into the following categories:

a. no accident/no violation, with 42 subjects
b. no accident/violation, with 29 subjects
c. accident/no violation, with 21 subjects
d. accident/violation, with 35 subjects.

Subhypothesis 1: There is no significant difference between drivers with respect to the basic interest of personality, religious values, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, religious value, and the driving record of the 252 subjects classified into the four driving categories appear in Table 9. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, religious value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, religious value. Although no significance was indicated at the chosen .01 level of significance, the comparison of no accident/violation and

TABLE 9.--The relationship of religious values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	*F* ratio[b]
Between Categories	476.163	3		
Comparison				
1.	1.290	1	1.290	.014
2.	397.791	1	397.791	4.440
3.	77.082	1	77.082	
Within Categories	22395.082	248	90.3037	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accicent/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the *F* ratio must be 6.8 or larger.

accident/no violation categories of driving record was significant at the .05 level of significance. This coincides with Conger and Rainey's findings that religious values were a predictive factor of driving record.

The results of the relationship of the basic interest of personality, religious value, and the driving record of the male subjects classified into the four driving categories appear in Table 10. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, religious value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, religious value.

The results of the relationship of the basic interest of personality, religious value, and the driving record of the female subjects classified into the four driving categories appear in Table 11. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, religious value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for

TABLE 10.--The relationship of religious values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	195.0739	3	65.0246	
Comparison				
1.	3.842	1	3.842	.039
2.	188.062	1	188.062	1.925
3.	7.425	1	7.425	
Within Categories	9967.1902	102	97.7176	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 11.--The relationship of religious values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	352.4179	3	117.4726	
Comparison				
1.	1.611	1	1.611	.019
2.	20.238	1	20.238	.243
3.	112.873	1	112.873	
Within Categories	11827.8629	142	83.295	

1 - Comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

the basic interest of personality, religious value, therefore the null hypothesis was not rejected.

> Subhypothesis 2: There is no significant difference between drivers with respect to the basic interest of personality, political value, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, political value, and the driving record of the 252 subjects classified into the four driving categories appear in Table 12. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, political value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, political value.

The results of the relationship of the basic interest of personality, political value, and the driving record of the male subjects classified into the four driving categories appear in Table 13. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, political value. Also, there was no significant difference between the categories of no accident/violation and

TABLE 12.--The relationship of political values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	476.163	3		
Comparison				
1.	51.562	1	51.562	1.13
2.	61.476	1	61.476	1.35
3.	416.388	1	416.388	
Within Categories	11272.605	248	45.454	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of Personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 13.--The relationship of political values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	162.5759	3	54.1920	
Comparison				
1.	121.120	1	121.120	2.381
2.	30.034	1	30.034	.590
3.	6.764	1	6.764	
Within Categories	5189.0184	102	50.8727	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

accident/no violation at the .01 level of significance for the basic interest of personality, political value.

The results of the relationship of the basic interest of personality, political value, and the driving record of the female subjects classified into the four driving record categories appear in Table 14. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, political value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, political value, therefore the null hypothesis was not rejected.

> Subhypothesis 3: There is no significant difference between drivers with respect to the basic interest of personality, social value, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, social value, and the driving record of the 252 subjects classified into the four driving categories appear in Table 15. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, social value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation

TABLE 14.--The relationship of political values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	441.8206	3	147.2735	
Comparison				
1.	5.143	1	5.143	.149
2.	27.355	1	27.355	.790
3.	386.206	1	386.206	
Within Categories	4917.6383	142	34.631	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 15.--The relationship of social values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driver Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	365.995	3	122.000	
Comparison				
1.	66.645	1	66.645	1.09
2.	28.150	1	28.150	.46
3.	271.200	1	271.200	
Within Categories	15124.500	248	60.986	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

at the .01 level of significance for the basic interest of personality, the social value.

The results of the relationship of the basic interest of personality, social value, and the driving record of the male subjects classified into the four driving record categories appear in Table 16. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, social value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, social value.

The results of the relationship of the basic interest of personality, social value, and the driving record of the female subjects classified into the four driving record categories appear in Table 17. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, social value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, social value, therefore the null hypothesis was not rejected.

TABLE 16.--The relationship of social values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	137.1755	3	45.7252	
Comparison				
1.	121.120	1	121.120	1.729
2.	10.434	1	10.434	.149
3.	23.449	1	23.449	
Within Categories	7147.3622	102	70.0722	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 17.--The relationship of social values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	320.7702	3	106.9234	
Comparison				
1.	13.108	1	13.108	.293
2.	97.353	1	97.353	2.176
3.	183.092	1	183.092	
Within Categories	6353.8942	142	44.746	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation and accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

Subhypothesis 4: There is no significane difference between drivers with respect to the basic interest of personality, aesthetic value, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, aesthetic value, and the driving record of the 252 subjects classified into the four driving categories appear in Table 18. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance on the basic interest of personality, aesthetic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, aesthetic value.

The results of the relationship of the basic interest of personality, aesthetic value, and the driving record of the male subjects classified into the four driving record categories appear in Table 19. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, aesthetic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, aesthetic value.

TABLE 18.--The relationship of aesthetic values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	243.270	3	81.090	
Comparison				
1.	147.645	1	147.645	2.270
2.	95.500	1	95.500	1.470
3.	.125	1	.125	
Within Categories	16098.620	248	64.910	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 19.--The relationship of aesthetic values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	*F* ratio[b]
Between Categories	354.8420	3	118.2807	
Comparison				
1.	250.591	1	250.591	4.720
2.	80.575	1	80.575	1.518
3.	34.314	1	34.314	
Within Categories	5415.2806	102	53.0910	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the *F* ratio must be 6.8 or larger.

Although no significance was indicated at the chosen .01 level of significance, the comparison of no accident/no violation and accident/violation driving record categories for male subjects was significant at the .05 level of significance. This coincides also with Conger and Rainey's findings that aesthetic values were a predictive factor of driving record.

The results of the relationship of the basic interest of personality, aesthetic value, and the driving record of the female subjects classified into the four driving record categories appear in Table 20. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, aesthetic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, aesthetic value, therefore the null hypothesis was not rejected.

> Subhypothesis 5: There is no significant difference between drivers with respect to the basic interest of personality, economic value, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, economic value, and the driving record of the 252 subjects classified into the four driving record categories appear in Table 21. There was no

TABLE 20.--The relationship of aesthetic values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	168.3316	3	56.1105	
Comparison				
1.	15.464	1	15.464	.230
2.	31.874	1	31.874	.474
3.	100.973	1	100.973	
Within Categories	9548.1410	142	67.240	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 21.--The relationship of economic values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	119.20	3	39.73	
Comparison				
1.	107.38	1	107.38	1.53
2.	8.34	1	8.34	.12
3.	3.49	1	3.49	
Within Categories	117404.86	248	70.18	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, economic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, economic value.

The results of the relationship of the basic interest of personality, economic value, and the driving record of the male subjects classified into the four driving record categories appear in Table 22. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, economic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, economic value. Although no significance was indicated at the chosen .01 level of significance, the comparison of no accident/no violation and accident/violation driving record categories for male subjects was significant at the .05 level of significance. This coincides also with Conger and Rainey's findings that economic values were a predictive factor of driving record.

The results of the relationship of the basic interest of personality, economic value, and the driving

TABLE 22.--The relationship of economic values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	452.1647	3	150.7216	
Comparison				
1.	378.240	1	378.240	6.115
2.	22.760	1	22.760	.368
3.	58.778	1	58.778	
Within Categories	6309.4579	102	61.8574	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accicent/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

record of the female subjects classified into the four driving record categories appear in Table 23. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, economic value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, economic value, therefore the null hypothesis was not rejected.

> Subhypothesis 6: There is no significant difference between drivers with respect to the basic interest of personality, theoretical value, as measured by the Allport-Vernon-Lindzey Study of Values when individuals are grouped into the four driving record categories.

The results of the relationship of the basic interest of personality, theoretical value, and the driving record of the 252 subjects classified into the four driving categories appear in Table 24. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, theoretical value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, theoretical value.

The results of the relationship of the basic interest of personality, theoretical value, and the driving

TABLE 23.--The relationship of economic values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	128.6719	3	42.8906	
Comparison				
1.	.998	1	.998	.015
2.	65.521	1	65.521	.964
3.	83.289	1	83.289	
Within Categories	9646.9514	142	67.936	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 24.--The relationship of theoretical values[a] to the driving record of 252 subjects classified into four driving record categories (n = 252).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	20.281	3	6.760	
Comparison				
1.	.131	1	.1305	.003
2.	16.042	1	16.042	.330
3.	4.109	1	4.109	
Within Categories	12129.630	248	48.910	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

record of the male subjects classified into the four driving record categories appear in Table 25. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, theoretical value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, theoretical value.

The results of the relationship of the basic interest of personality, theoretical value, and the driving record of the female subjects classified into the four driving record categories appear in Table 26. There was no significant difference between the categories of no accident/no violation and accident/violation at the .01 level of significance for the basic interest of personality, theoretical value. Also, there was no significant difference between the categories of no accident/violation and accident/no violation at the .01 level of significance for the basic interest of personality, theoretical value, therefore the null hypothesis was not rejected.

Summary of Findings

The following results are summarized from the statistical analysis.

Age and sex showed a significant correlation with driving record, i.e. accidents and violation convictions.

TABLE 25.--The relationship of theoretical values[a] to the driving record of 106 male subjects classified into four driving record categories (n = 106).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	67.0492	3	22.3497	
Comparison				
1.	48.096	1	48.096	.977
2.	.022	1	.022	.000
3.	18.382	1	18.382	
Within Categories	5021.2149	102	49.2276	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

TABLE 26.--The relationship of theoretical values[a] to the driving record of 146 female subjects classified into four driving record categories (n = 146).

Driving Record Categories	Sum of Squares	Degrees of Freedom	Mean Squares	F ratio[b]
Between Categories	73.4470	3	24.4823	
Comparison				
1.	36.411	1	36.411	.827
2.	27.953	1	27.953	.635
3.	7.879	1	7.879	
Within Categories	6255.546	142	44.052	

1 - comparison of no accident/no violation and accident/violation

2 - comparison of no accident/violation and accident/no violation

3 - comparison of no accident/no violation, accident/violation and no accident/violation, accident/no violation

[a]Basic interest of personality as determined by the Allport-Vernon-Lindzey Study of Values.

[b]To be significant at the .01 level of significance, the F ratio must be 6.8 or larger.

Because the age variable in respect to driving record is of a curvilinear nature, age was squared and also entered for each subject. By forming a quadratic equation, the age variable was transformed to a linear quantity. Accidents and violation convictions decreased as age increased. As expected, accidents and violation convictions were higher for males than females. However, in this study marital status did not show a significant correlation with driving record.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, religious value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not significantly improved by the addition of the basic interest of personality, religious value, to the factors of age and marital status.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, political value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not significantly improved by the addition of the basic

interest of personality, political value, to the factors of age and marital status.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, social value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not significantly improved by the addition of the basic interest of personality, social value, to the factors of age and marital status.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, aesthetic value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not significantly improved by the addition of the basic interest of personality, aesthetic value, to the factors of age and marital status.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, economic value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not

significantly improved by the addition of the basic interest of personality, economic value, to the factors of age and marital status.

The prediction of driving record for the 252 subjects was not significantly improved by the addition of the basic interest of personality, theoretical value, to the factors of age, sex, and marital status. When the subjects were divided by sex into dichotomous groups of men and women drivers, the prediction of driving record was not significantly improved by the addition of the basic interest of personality, theoretical value, to the factors of age and marital status.

When the 252 subjects were grouped into categories of no accident/no violation, no accident/violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, religious value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, religious value. Similar comparisons with female subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, religious value.

When the 252 subjects were grouped into categories of no accident/no violation, no accident/violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, political value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, political value. Similar comparisons with female subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, political value.

When the 252 subjects were grouped into categories of no accident/no violation, no accident/violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, social value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, social value. Similar comparisons with female subjects indicated

no significant difference at the .01 level of significance for the basic interest of personality, social value.

When the 252 subjects were grouped into categories of no accident/no violation, no accident/violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, aesthetic value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, aesthetic value. Similar comparisons with female subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, aesthetic value.

When the 252 subjects were grouped into categories of no accident/no violation, no accident/violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, economic value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of

significance for the basic interest of personality, economic value. Similar comparisons with female subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, economic value.

When the 252 subjects were grouped into categories of no accident/no violation, accident/no violation, and accident/violation there was no significant difference at the .01 level of significance for the basic interest of personality, theoretical value, when compared as follows:

1. no accident/no violation and accident/violation
2. no accident/violation and accident/no violation.

Comparison of the same categories with only male subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, theoretical value. Similar comparisons with female subjects indicated no significant difference at the .01 level of significance for the basic interest of personality, theoretical value.

The mean scores in each of the driving record categories for the six basic interests of personality (values) for all subjects is found in Appendix B. The mean scores for each of the driving record categories for the six basic interests of personality (values) for male subjects is found in Appendix C and for female subjects in Appendix D.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study investigated the relationship between the basic interests of personality (i.e., religious, political, social, aesthetic, economic, and theoretical values) as determined by the Allport-Vernon-Lindzey Study of Values, and the driving records of a randomly selected group of Michigan drivers. The relationship was investigated with the variables of age, sex, and marital status held constant.

Also investigated was the relationship of the basic interests of personality (values) to the driving records of a randomly selected group of Michigan drivers when classified into four driving record categories; no accident/no violation, no accident/violation, accident/no violation, and accident/violation.

A total of 252 male and female drivers randomly selected from the files of the Driver Services Division of the Michigan Department of State served as subjects for the study. Reported accidents and violation convictions for the immediate past three years were obtained from the

files, while quantitative scores for each of the six basic interests of personality (values) were obtained by a mail-out form of the Allport-Vernon-Lindzey Study of Values.

The data was analyzed statistically to determine the differences among the factors being tested. Correlations between the factors of age, sex, and marital status and driving record were determined. In those cases where the obtained correlation coefficient was large enough to give an F ratio greater than the critical value of F at the .01 level of significance, a significant correlation was evident.

Partial correlations were computed to determine the relationship of each of the six basic interests of personality (values) to driving record when age, sex, and marital status are held constant. For a basic interest of personality (value) to predict driving record beyond the ability of age, sex, and marital status, an F ratio greater than the critical value of F at the .01 level of significance was necessary.

The subjects were divided into dichotomous groups of 106 male and 146 female drivers, and partial correlations were computed to determine the relationship of each of the six basic interests of personality (values) to driving record when age and marital status are held constant. For a basic interest of personality (value) to predict driving record beyond the ability of age and

marital status, an F ratio greater than the critical value of F at the .01 level of significance was needed.

Subjects were divided into four driving record categories:

a. subjects with driving records of no violations or accidents;
b. subjects with driving records of violations, but no accidents;
c. subjects with driving records of accidents, but no violations; and
d. subjects with driving records of both accidents and violations.

The investigation of the relationship between each of the six basic interests of personality (values) of the subjects in the category no accident/no violation and of the subjects in the category accidents/violations was considered to be of interest in this study. Also of interest was the relationship between each of the six basic interests of personality (values) of the subjects in the category of no accidents/violations, and of the subjects in the category accidents/no violations.

The basic interest of personality (value) data was summarized by one-way analysis of variance. Comparisons were then made between the driving record categories of interest on the basic interest of personality (value). A computed F ratio greater than the critical value of F at the .01 level of significance was considered to indicate a significant relationship between driving record categories for each basic interests of personality (values).

Subjects in each driving category were then divided into dichotomous groups of male and female drivers. An investigation of the same relationship was made to determine if a significant relationship was indicated between male subjects in the category accident/violation and the male subjects in the category no accident/no violation for each of the basic interests of personality (values). Also, if a significant relationship existed between male subjects in the category no accident/violation and the category no violation/accident for each of the basic interests of personality (values). The same investigations were performed for female subjects. A computed F ratio greater than the critical value of F at the .01 level of significance was considered to indicate a significant relationship between the driving record categories.

The subjects in this study showed a close resemblance to the national norms of the six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values as established by the publisher, Houghton Mifflin Company, Boston. These results are shown in Appendix F.

The Major Findings

Within the limitations of this study, the following conclusions were made. It was hypothesized that:

1. The prediction of driving record is not significantly improved by including the basic interests of personality; religious, economic, political, aesthetic,

social, and theoretical values with the factors of age, sex, and marital status. The partial correlation coefficients obtained were not significant at the .01 level of significance. When subjects were divided into dichotomous groups of male and female drivers, the partial correlation coefficients obtained were not significant at the .01 level of significance, therefore the null hypothesis was not rejected.

2. There is no significant difference between drivers with respect to the basic interests of personality; religious, economic, political, aesthetic, social, and theoretical values as measured by the Allport-Vernon-Lindzey Study of Values when subjects are grouped as follows:

a. no accident/no violation
b. no accident/violation
c. accident/no violation
d. accident/violation.

The relationship of the basic interests of personality; religious, economic, political, aesthetic, social, and theoretical values to the driving record of subjects when classified into the four driving record categories was not significant at the .01 level of significance. When subjects were divided into dichotomous groups of male and female drivers, the relationship of the basic interests of personality; religious, economic, political, aesthetic, social, and theoretical values to the driving record of male and female subjects when classified into

the four driving categories was not significant at the .01 level of significance, therefore the null hypothesis was not rejected.

Although no significance was indicated at the chosen .01 level of significance, the comparison of driving record categories no accident/violation and accident/no violation was significant for religious values at the .05 level of significance; the comparison of no accident/no violation and accident/violation driving categories of male drivers for the aesthetic value; and the comparison of no accident/no violation and accident/violation driving record categories of male drivers for the economic value. This coincides with Conger and Rainey's findings that these three values were predictive factors of driving record.

Conclusions

Correlations

Correlations were computed and indicated a significant relationship between the factors of age and sex with driving record. Accidents and violation conviction incidence was significantly higher in this study for male subjects than for the female subjects. Because the age factor in respect to driving record is of a curvilinear nature, subjects' ages were squared to form a quadratic, transforming the factor to a linear quantity. For this study,

accident and violation conviction incidence decreased significantly as age increased.

Correlations were computed between marital status and driving record. For this study, there was no significant relationship between marital status and driving record.

Partial Correlations

Partial correlations computed between each of the six basic interests of personality (values) and driving record with the factors of age, sex, and marital status held constant indicated there was no significant relationship for this study. The prediction of driving record by the factors of age, sex, and marital status was not significantly improved by the addition of any of the six basic interests of personality (values).

The subjects were divided into dichotomous groups of male and female subjects. Partial correlations computed between each of the six basic interests of personality (values) and driving record with the factors of age and marital status held constant indicated there was no significant relationship for this study. With subjects divided into male and female groups, the prediction of driving record by the factors of age and marital status was not significantly improved by the addition of any of the six basic interests of personality (values).

Planned Comparisons

The relationship of each of the six basic interests of personality (values) to the driving record of subjects in this study when classified into four driving record categories indicated no significance.

Subjects were divided into dichotomous groups of male and female drivers within the four driving record categories. The relationship of each of the six basic interests of personality (values) to the driving record of subjects indicated no significance.

Previous studies[1] have reported three of the basic interests of personality (i.e., economic, aesthetic, religious values) were able to significantly predict driving record. However, in these studies the Allport-Vernon-Lindzey Study of Values was only one of several instruments used with the same group of subjects and driving record data. When several measures are employed, the possibility of significance appearing in the analysis is increased by chance factors alone. The present study was conducted with a single instrument composed of six measures of basic interests of personality (values). The tests of significance were made at the .01 level of significance, or a combined level of significance for the entire instrument of .06, whereas previous studies had used .05 and .10

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[1] Conger, et al., "Personal and Interpersonal Factors," p. 1072.

levels of significance. This study by design attempted to eliminate chance factors as much as statistically possible, consequently no relationship could be found between any of the basic interests of personality (values) and driving record.

Recommendations for Further Research

On the basis of the findings from this study, it is recommended that:

1. A similar study be conducted, using the instrument under a more controlled situation. With the mail-out form there is no assurance that instructions are being followed and that responses are strictly those of the subject.

2. A similar study be conducted using an instrument other than the Allport-Vernon-Lindzey Study of Values. A paper and pencil test obtains only what people say they value, as Raths[2] points out, not necessarily what they actually value. Rokeach[3] recommends a more extensive measurement of value than what the Allport-Vernon-Lindzey Study of Values is capable of measuring.

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[2]Louis E. Raths, et al., Values and Teaching: Working with Values in the Classroom (Columbus: Charles E. Merrill Books, Inc., 1966), p. 205.

[3]Rokeach, Beliefs, Attitudes, and Values, pp. 124-150.

3. A more extensive study be conducted over a period of time. Values have a tendency to change,[4] and this change with its relationship to differences in driving record might be more revealing.

4. A study be conducted correlating attitude, motivation, and personality factors testing procedures with the Allport-Vernon-Lindzey Study of Values and the Sixteen P. F. Test for personality factors, or the Mann Inventory, which has proven highly reliable in predicting violation incidence.

Discussion

Three of the six basic interests of personality (values) of the Allport-Vernon-Lindzey Study of Values are closely allied with several of the attitudes which many traffic safety experts consider conducive to safe and efficient driving. Specifically, the religious, social, and theoretical values indicate a tendency of an individual to be concerned with matters above and beyond his own immediate needs. Such an individual places concern for truth, honesty, and the welfare of his fellowman above his own personal concerns. It seems feasible that these same values would influence an individual's attitudes and subsequent actions as a driver, a driver who is conscious of

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[4] I. E. Bender, "Changes in Religious Interest: A Retest after Fifteen Years," Journal of Abnormal and Social Psychology, LVII (1958), 41-46.

and concerned with the welfare of others on the public highways and streets. By contrast the remaining three basic interests of personality (values); political, economic, and aesthetic values indicate a tendency to be egotistical, concerned with self-fulfillment, and interested in personal power, even at the expense of others. A fair assumption might be that an individual with such value systems would have very little concern for other highway users, and consequently he could be involved in traffic law violations and motor vehicle accidents. Driving behavior is simply an extension of one's attitude toward others, and value standards determine this attitude.

Much of the literature reviewed in this study stressed the point that values are responsible for attitudes, and ultimately for individual behavior. Bishop submits that there is strong support for the notion that values must be added to the list of possible explanations for people driving differently in similar circumstances.[5]

There was no significant relationship between basic interests of personality (values) and driving record as measured by the Allport-Vernon-Lindzey Study of Values in this study. However, this does not necessarily mean that

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[5]Automotive Safety Foundation, A Resource Curriculum in Driver and Traffic Safety Education (Washington: 1970), p. 149.

values and driving behavior are not related. Rokeach[6] states that values are a very subtle element in an individual's personality. Raths[7] adds that attitudes are difficult to discover, and more difficult yet to quanitate. A paper and pencil test such as the Allport-Vernon-Lindzey Study of Values may not accurately discover an individual's value system. Such obtained data does not prove that people live by the value systems they designate. Actually, they give only verbal reports of what people say they believe; it is indeed probable that many individuals behave in ways quite in conflict with their verbal reports. As values determine attitude, an individual's value system, though difficult to determine, seems to have much to do with his attitudes and subsequent behavior.

The other measurement used in this study was the state driving records of the various subjects. These records served as a criterion of driving ability. Evidence is being accumulated showing that such records are not a valid indicator of driving ability. If and when a more valid and reliable measure of driving ability is developed, a comparison with drivers' value systems and such a criterion may show some significant results.

Most of the literature on values supports the fact that values are not constant, that they change with age.

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[6]Rokeach, Beliefs, Attitudes, and Values, p. 160.

[7]Raths, Values and Teaching, p. 27.

It might prove worthwhile for traffic safety personnel, and particularly educators, to consider the value system of the particular age group with which they are currently working. The value systems of adolescence is in a constant state of flux. In education, the opportunity is present to help youngsters develop values that are conducive to safe driving. If such values are accepted by the youngster, it would seem that proper attitudes and acceptable driving behavior will follow.

The emphasis on values appears to be a worthwhile concentration. Research has shown that values seem to be a more dynamic concept than are attitudes. Both attitudes and values are recognized as determinants of social behavior, but values are determinants of attitudes as well as of behavior. As Rokeach[8] points out, values have to do with modes of conduct. Driving behavior is simply a "mode of conduct," an extension of one's attitudes, and values determine this attitude.

In this study marital status was not found to be a predictive factor of driving record at the .01 level of significance. This finding appears contrary to the several studies reviewed which showed marital status to be significantly related to driving record. However, though

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[8]Rokeach, Beliefs, Attitudes, and Values, p. 164.

not at the chosen level of .01, marital status in this study was significant at the .10 level of significance.

A possible explanation why marital status was not significant at the .01 level of significance for this study may be the age factor. The studies reporting marital status as a significant factor in driving record stated that the predicting ability of marital status becomes progressively less significant after age 25 for accident involvement, and after age 20 for violation incidence. The average age of the single drivers in this study was 32.2 years, only slightly less than the over-all study average age of 38.7 years. The fact that the average age for single drivers in this study was greater than the subjects in the reported literature may be the reason for the difference in the significance levels for marital status.

Although no significance was indicated at the chosen .01 level of significance, the comparison of driving record categories no accident/violation and accident/no violation was significant for religious values at the .05 level of significance, the comparison of no accident/no violation and accident/violation driving record categories of male drivers for the aesthetic value, and the comparison of no accident/no violation and accident/violation driving record categories of male drivers for the economic value. This coincides with Conger and Rainey's

findings that these three values were predictive factors of driving record.

The fact that this study did not indicate any significant relationship between basic interests of personality (values) and driving record might be an indication that drivers fail to recognize a relationship between their driving style and their value system. We find the phenomenon existing where individuals in an outstanding profession, and claiming to be altruistically concerned about society, have very poor driving records. Studies have indicated that protestant ministers as a group have a poor driving record, yet their calling as a profession tends to be associated with social, theoretical, and religious values. Other similar inconsistencies would lead to speculation that many drivers do not recognize the connection between their avowed values and their conduct on the highway. It might be that traffic safety people have failed to inform drivers of this relationship, and have not utilized the values people have to improve driving behavior.

Perhaps a more positive approach relating driving to values, as opposed to the negative approach of consequences as the result of improper driving habits, could be utilized.

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APPENDICES

APPENDIX A

COVER LETTER

Basic Personality Interests Study

c/o MICHIGAN STATE UNIVERSITY
ROOM 70, KELLOGG CENTER
EAST LANSING, MICHIGAN 48823

We need your help.

We would like to know, very simply, how you might react to certain situations.

I'm sure you will find the situations challenging and interesting. Actually, those contained in the enclosed booklet should not take over 20 minutes to complete; yet your individual reactions are important to us.

Why have we selected you?

Our sample has been carefully selected; yet, when all returns are analyzed anonymously, we feel you can help us develop a complete and accurate picture of basic personality interests for all the people of Michigan.

You will not be required to sign your name on the return form. All responses must and will be kept completely confidential. The study is completely academic in nature and has no commercial implications.

To make your few minutes more pleasant, the enclosed pen can be used to fill in the return booklet. Please accept it as a momento; perhaps, later, it can also help to make other personal tasks equally enjoyable.

You will find the enclosed response booklet rather easy to fill out if you keep the following in mind:

- Responses do not call for right or wrong answers--only your personal preferences and the degree of those preferences to certain statements.
- The responses must be yours -- please do not have anyone help you.
- Instructions for Part I are given on page 2 of the booklet. Instructions for Part 2 are on page 7 when you reach that point.
- Again, do not spend too much time on the form. Your immediate reaction is the important one.
- When completed, simply return the booklet in the enclosed, postage paid envelope.

When you've completed the booklet, I'm sure you will understand why your personal contribution can be most important -- and why we need your individual reactions to make our study complete.

May I offer our sincere appreciation for helping us. As the study progresses, you will be contacted at a later date concerning your contribution to this project.

Sincerely,

Donald L. Smith
BASIC PERSONALITY INTEREST STUDY

September, 1970
Enclosure

APPENDIX B

MEAN SCORES IN EACH DRIVING CATEGORY FOR THE SIX BASIC INTERESTS OF PERSONALITY (VALUES) FOR ALL SUBJECTS

APPENDIX B.--Mean scores in each driving record category for the six basic interests of personality (values) of all subjects (n = 252).

Driving Record Category	Religious	Political	Social	Aesthetic	Economic	Theoretical
A - no accident/ no violation	42.17	38.92	41.25	35.73	42.20	39.25
B - no accident/ violation	42.72	40.16	40.37	36.01	41.24	39.18
C - accident/ no violation	39.18	41.55	39.42	37.75	41.75	39.89
D - accident/ violation	41.96	37.61	42.73	37.94	40.31	39.31

APPENDIX C

MEAN SCORES IN EACH DRIVING CATEGORY FOR THE SIX BASIC INTERESTS OF PERSONALITY (VALUES) FOR MALE SUBJECTS

APPENDIX C.--Mean scores in each driving record category for the six basic interests of personality (values) of male subjects (n = 106).

Driving Record Category	Religious	Political	Social	Aesthetic	Economic	Theoretical
A - no accident/ no violation	37.73	43.45	36.54	32.90	45.86	40.90
B - no accident/ violation	41.76	41.60	37.24	32.96	45.08	41.12
C - accident/ no violation	38.18	43.02	38.08	35.29	43.83	41.08
D - accident/ violation	39.13	40.13	39.86	37.68	40.00	43.00

APPENDIX D

MEAN SCORES IN EACH DRIVING CATEGORY FOR THE SIX BASIC INTERESTS OF PERSONALITY (VALUES) OF FEMALE SUBJECTS

APPENDIX D.--Mean scores in each driving record category for the six basic interests of personality (values) of female subjects (n = 146).

Driving Record Category	Religious	Political	Social	Aesthetic	Economic	Theoretical
A - no accident/ no violation	43.45	36.54	43.71	37.21	40.28	38.38
B - no accident/ violation	43.55	38.93	43.06	38.65	37.93	37.51
C - accident/ no violation	40.10	40.20	40.67	40.02	39.82	38.80
D - accident/ violation	43.74	36.02	45.54	38.11	40.51	37.00

APPENDIX E

SUMMARY OF DATA

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex[1]	Age	Marital Status[2]	Accidents and Violations	Category
1	33	36	41	42	41	47	0	36	1	00	0
2	44	48	21	37	37	53	0	36	1	00	0
3	36	48	40	49	39	28	0	22	1	00	0
4	36	39	23	47	49	45	0	23	0	00	0
5	32	41	44	39	35	49	0	47	1	00	0
6	35	30	46	50	35	44	0	34	1	00	0
7	44	41	42	55	29	29	0	59	0	00	0
8	29	43	35	44	34	55	0	52	1	00	0
9	40	51	34	33	37	43	1	44	1	00	0
10	54	51	30	29	55	21	1	30	1	00	0
11	38	33	38	54	36	40	0	48	1	00	0
12	35	45	35	49	32	43	0	33	1	00	0
13	37	24	49	52	33	45	0	49	1	00	0
14	41	33	25	47	45	48	0	28	1	00	0
15	34	44	42	47	41	31	0	30	1	00	0
16	45	37	28	44	30	56	0	32	1	00	0

[1] 0 - female, 1 - male

[2] 0 - single, 1 - married

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
17	39	44	38	43	42	34	0	45	1	00	0
18	36	38	50	43	30	42	0	25	1	00	0
19	39	52	27	34	44	44	1	58	1	00	0
20	42	41	30	48	36	43	0	45	1	00	0
21	42	40	17	59	42	40	1	62	1	00	0
22	48	49	31	35	32	45	0	51	1	00	0
23	40	46	37	39	41	37	0	35	1	00	0
24	54	52	40	31	33	30	0	25	1	00	0
25	32	41	35	53	29	48	1	54	1	00	0
26	40	48	42	20	52	38	1	31	1	00	0
27	48	49	34	34	44	31	1	33	1	00	0
28	42	43	48	41	31	35	0	36	1	00	0
29	41	45	34	42	28	50	0	49	1	00	0
30	23	45	51	48	33	39	0	26	1	00	0
31	35	44	39	38	42	42	1	20	0	00	0
32	48	57	25	33	35	42	1	52	1	00	0
33	32	45	23	41	36	61	1	61	1	00	0
34	48	55	47	22	44	24	1	32	1	00	0
35	39	35	34	38	36	58	0	50	1	00	0

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
36	35	40	33	48	39	45	0	20	0	00	0
37	39	49	29	41	38	42	1	19	0	00	0
38	44	41	38	39	38	40	0	48	1	00	0
39	46	44	35	27	50	38	1	50	1	00	0
40	51	31	40	48	35	33	1	66	1	00	0
41	44	42	41	44	47	21	0	48	1	00	0
42	45	45	42	21	52	35	1	34	1	00	0
43	42	41	26	52	36	42	0	26	1	00	0
44	42	39	34	47	40	38	0	52	1	00	0
45	38	46	23	41	48	44	1	24	0	00	0
46	33	37	45	41	42	42	0	50	1	00	0
47	34	58	27	33	42	46	1	63	1	00	0
48	36	21	41	57	30	54	0	58	0	00	0
49	32	45	25	40	41	57	0	40	0	00	0
50	40	44	35	38	39	44	0	36	1	00	0
51	49	31	37	44	35	44	0	43	1	00	0
52	36	42	38	43	32	49	0	47	1	00	0
53	44	24	46	46	33	45	0	48	1	00	0
54	35	43	39	32	39	52	0	35	1	00	0

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
55	41	41	39	35	47	37	1	48	1	00	0
56	26	34	37	42	58	43	1	25	1	00	0
57	50	44	36	38	46	25	1	40	1	00	0
58	36	42	33	37	40	51	0	34	1	00	0
59	43	40	31	40	38	48	1	41	1	00	0
60	31	46	42	36	29	54	0	48	1	00	0
61	29	44	32	42	42	49	1	41	1	00	0
62	33	44	43	36	36	48	0	60	1	00	0
63	33	45	32	48	44	38	0	23	1	00	0
64	44	45	33	44	37	35	0	26	1	00	0
65	42	37	30	40	46	45	1	33	1	04	1
66	41	52	24	31	50	42	1	45	1	01	1
67	45	39	32	30	50	44	1	29	1	02	1
68	51	44	19	42	52	31	0	44	1	01	1
69	44	35	44	35	47	35	1	19	0	01	1
70	35	48	25	40	38	54	1	35	1	02	1
71	42	48	49	44	40	17	0	25	1	01	1
72	41	50	38	36	47	28	1	26	0	01	1
73	51	48	40	34	36	30	1	64	1	02	1

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
74	49	47	31	47	42	24	1	58	1	02	1
75	36	47	35	32	52	38	1	26	1	01	1
76	35	37	49	38	40	41	0	35	1	03	1
77	39	31	41	39	35	55	1	65	1	01	1
78	41	35	32	39	43	50	1	49	1	01	1
79	30	34	43	46	36	51	0	31	0	02	1
80	40	26	38	52	38	45	0	56	1	01	1
81	34	59	28	32	40	47	1	54	1	01	1
82	43	17	50	44	35	51	0	72	0	01	1
83	47	51	26	29	44	43	1	48	1	01	1
84	45	49	30	40	48	28	1	25	0	02	1
85	36	26	36	45	35	62	1	60	1	01	1
86	49	44	34	34	31	47	0	39	1	01	1
87	29	55	28	37	45	46	1	44	1	01	1
88	46	48	30	45	32	39	0	56	1	01	1
89	38	35	47	36	32	52	0	29	0	01	1
90	43	56	33	30	26	51	1	56	1	01	1
91	44	27	51	43	40	35	0	40	1	01	1
92	49	39	29	33	47	43	0	39	1	01	1

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
93	35	23	52	48	32	50	0	47	1	01	1
94	34	17	43	52	42	52	0	28	1	01	1
95	31	39	29	45	42	54	0	28	1	01	1
96	37	30	40	47	37	49	0	34	1	01	1
97	43	32	37	52	36	40	1	26	1	01	1
98	38	31	37	48	43	43	0	49	1	01	1
99	36	50	36	34	45	38	1	40	1	01	1
100	38	47	33	32	40	50	1	54	1	01	1
101	37	38	33	40	37	55	0	53	1	01	1
102	48	47	29	31	38	47	1	35	1	01	1
103	31	45	35	45	35	47	0	32	1	01	1
104	36	45	38	39	34	48	0	52	1	01	1
105	30	39	46	47	36	41	0	56	1	01	1
106	40	47	39	35	41	38	1	40	1	01	1
107	44	53	21	42	42	36	1	65	1	01	1
108	42	39	44	41	42	32	1	57	1	01	1
109	39	40	37	28	43	53	0	37	1	01	1
110	32	36	42	40	40	50	0	38	1	01	1
111	39	47	32	48	31	41	1	55	1	01	1

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
112	42	47	46	32	47	26	0	48	1	01	1
113	29	34	48	50	32	45	0	47	1	01	1
114	37	51	22	39	61	29	0	56	1	01	1
115	28	44	34	51	31	52	0	45	1	01	1
116	23	54	29	55	38	41	0	58	1	01	1
117	43	47	31	43	40	36	0	65	1	01	1
118	38	41	40	43	36	39	0	23	0	02	1
119	41	54	31	33	48	33	0	26	1	02	2
120	42	52	25	40	38	42	1	24	1	02	2
121	38	40	58	33	33	37	1	22	0	03	2
122	36	38	40	37	34	54	1	21	1	04	2
123	35	43	51	30	43	38	0	47	1	02	2
124	44	42	34	36	37	46	1	42	1	02	2
125	49	42	31	39	38	41	1	44	1	03	2
126	40	56	37	31	47	29	1	27	1	03	2
127	42	35	38	43	43	39	1	28	1	02	2
128	41	50	27	52	52	18	1	49	1	03	2
129	41	54	42	29	41	33	1	52	1	03	2
130	38	45	29	36	54	38	1	32	1	04	2

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
131	41	31	30	46	37	55	0	25	0	04	2
132	40	48	35	36	37	43	1	29	1	03	2
133	30	43	31	37	45	54	1	30	1	04	2
134	54	41	56	28	42	19	1	25	0	03	2
135	46	43	45	34	29	43	1	60	1	03	2
136	30	33	43	49	30	55	1	30	0	03	2
137	26	31	32	50	47	49	1	64	1	04	2
138	45	47	28	36	51	33	1	46	1	03	2
139	35	54	33	39	38	40	1	47	0	04	2
140	42	34	30	50	48	34	1	21	0	03	2
141	39	48	27	40	51	34	1	28	1	03	2
142	29	37	39	55	31	49	0	23	1	03	2
143	47	40	35	29	37	52	0	54	0	02	2
144	39	42	41	42	43	32	0	22	0	02	2
145	54	42	50	37	36	21	0	29	1	03	2
146	31	54	32	43	51	29	0	26	0	02	2
147	41	45	32	45	40	37	0	47	1	03	2
148	38	29	55	32	36	50	0	48	1	02	2
149	39	39	61	32	36	33	0	53	1	02	2

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
150	50	50	33	36	46	25	0	21	1	02	2
151	29	40	45	35	47	36	0	28	1	02	2
152	38	21	58	53	34	35	0	23	0	02	2
153	31	35	40	50	49	35	0	24	1	02	2
154	40	34	43	46	46	29	0	34	0	03	2
155	33	45	38	42	42	40	0	45	1	02	2
156	29	38	36	44	34	62	0	46	1	02	2
157	53	29	41	36	38	43	0	30	1	02	2
158	58	17	47	56	20	41	0	24	0	02	2
159	39	33	52	38	43	33	0	58	1	02	2
160	38	34	51	34	44	39	0	29	0	02	2
161	23	31	39	51	47	49	0	27	0	02	2
162	36	51	39	40	38	36	0	36	0	02	2
163	41	55	43	32	52	17	0	32	1	02	2
164	30	42	46	42	36	42	0	68	0	02	2
165	49	38	39	45	36	33	0	56	1	02	2
166	43	23	26	60	33	55	1	51	1	03	2
167	44	48	27	43	60	19	1	33	1	02	2
168	49	49	33	28	56	25	1	40	1	01	2

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
169	46	32	41	47	41	33	1	44	1	01	2
170	35	38	26	32	54	54	1	41	1	01	2
171	36	51	49	18	41	45	0	37	0	01	2
172	29	54	48	38	28	43	1	38	1	01	2
173	29	26	41	40	44	51	0	23	0	03	2
174	47	38	33	28	53	41	1	42	1	01	2
175	36	40	31	44	40	49	1	24	1	03	2
176	41	54	47	26	33	39	1	25	0	05	2
177	38	30	46	42	41	43	0	27	1	04	2
178	34	37	40	45	47	37	0	22	0	02	2
179	41	37	41	44	45	32	1	21	0	04	2
180	40	44	28	41	34	52	1	24	1	03	2
181	38	47	34	36	51	34	1	55	1	03	2
182	41	44	27	48	35	44	0	61	0	02	2
183	39	49	39	31	46	37	1	39	1	04	2
184	54	47	30	25	45	38	1	43	1	03	2
185	37	48	23	38	47	47	0	33	1	02	2
186	39	38	30	41	38	54	0	39	0	02	2
187	36	48	36	27	38	55	0	27	1	04	2

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
188	32	52	36	43	41	36	0	26	1	03	2
189	38	42	39	42	46	31	1	39	1	04	2
190	42	43	28	45	40	42	0	23	1	05	2
191	39	48	39	49	29	36	0	23	1	02	2
192	55	57	36	24	51	17	1	54	1	05	2
193	45	48	32	42	37	36	0	41	1	02	2
194	52	31	27	36	40	54	0	28	0	02	2
195	47	47	26	44	41	33	1	21	0	03	2
196	51	45	38	28	38	40	1	28	1	05	3
197	54	40	48	22	43	33	1	28	1	03	3
198	40	53	39	42	35	31	1	27	1	06	3
199	35	32	42	45	36	50	0	64	1	03	3
200	46	34	24	38	52	46	1	31	1	09	3
201	42	24	41	56	38	39	0	53	1	03	3
202	49	48	39	30	45	27	1	28	0	03	3
203	32	46	38	41	30	53	0	42	1	02	3
204	58	32	44	44	45	17	1	39	1	03	3
205	36	43	34	36	31	60	1	21	1	04	3
206	34	33	37	50	33	53	0	37	1	02	3

Appendix E.--Continued.

Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
207	38	33	31	45	47	46	1	36	1	04	3
208	31	42	32	49	32	54	1	76	1	04	3
209	64	44	34	26	41	31	1	46	1	03	3
210	37	33	46	37	37	50	1	31	1	06	3
211	34	49	40	37	32	48	0	24	1	02	3
212	42	31	35	55	32	45	1	57	1	03	3
213	42	46	39	37	39	36	1	59	1	02	3
214	40	41	36	53	33	37	0	37	1	04	3
215	34	49	48	34	43	32	1	24	0	05	3
216	31	43	47	46	41	32	0	22	1	03	3
217	37	37	38	46	33	49	0	22	1	03	3
218	36	25	60	36	33	49	0	67	0	02	3
219	31	37	29	46	42	54	0	53	1	02	3
220	46	38	31	49	34	41	0	27	0	05	3
221	24	40	40	49	31	55	0	41	1	03	3
222	32	46	33	51	26	52	0	33	1	02	3
223	40	50	35	31	37	45	0	38	1	03	3
224	41	24	50	47	34	43	0	24	1	02	3
225	41	24	50	47	34	43	0	24	1	02	3

Appendix E.--Continued.

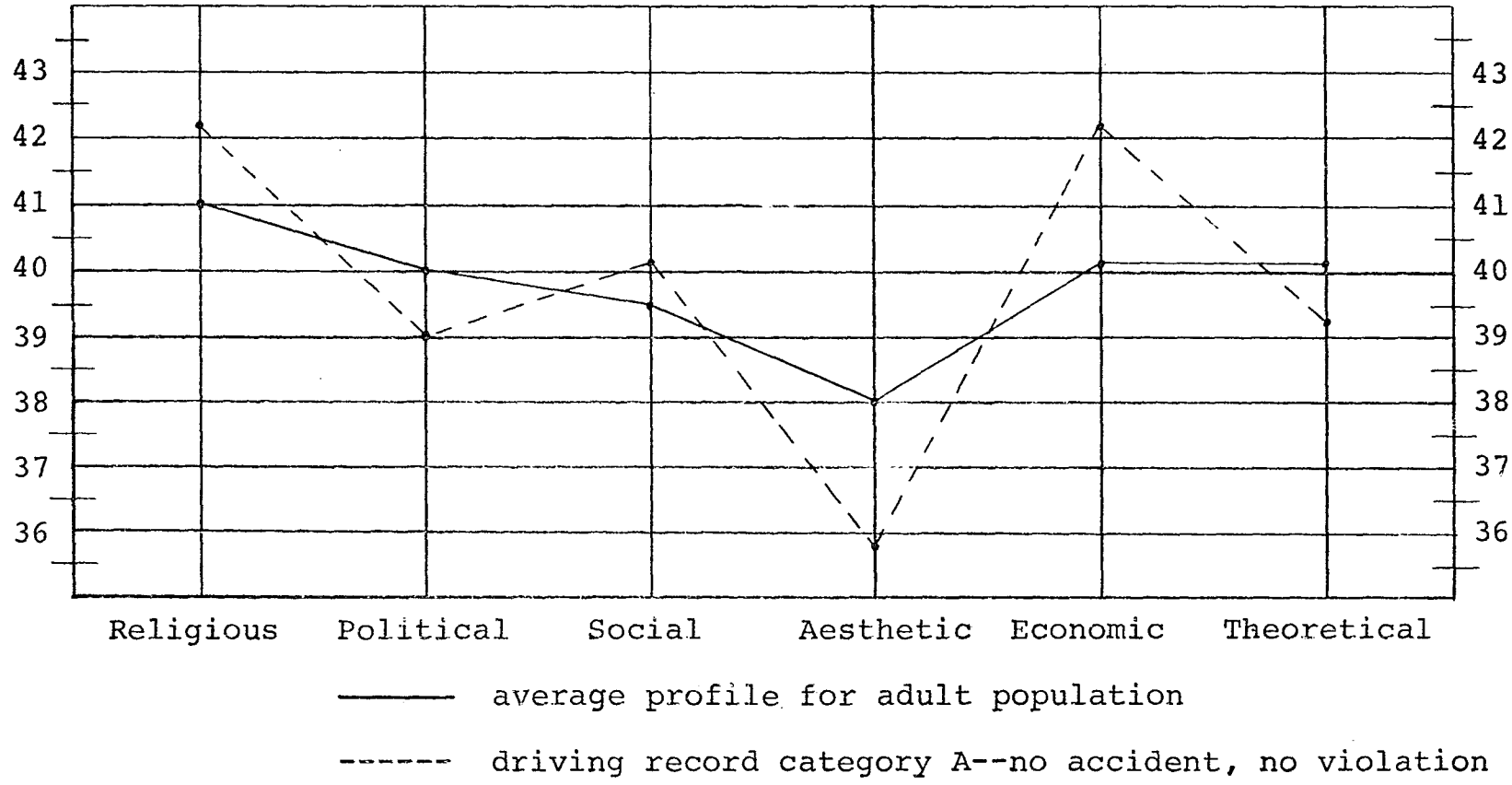
Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
226	32	44	38	41	33	52	0	25	1	02	3
227	35	42	44	41	27	51	0	56	1	03	3
228	39	48	39	43	42	29	0	25	1	02	3
229	41	38	39	46	38	38	0	25	1	03	3
230	36	48	23	30	48	46	0	48	0	04	3
231	41	47	48	45	38	30	0	26	1	04	3
232	44	42	38	40	30	46	0	54	1	02	3
233	35	33	49	40	34	51	0	21	0	02	3
234	48	33	39	52	32	36	0	22	1	02	3
235	42	51	24	50	36	37	0	36	1	02	3
236	39	45	41	36	48	31	0	33	1	02	3
237	38	54	36	41	34	37	0	23	1	03	3
238	55	39	49	42	34	19	0	32	0	02	3
239	39	37	46	42	40	36	1	41	1	03	3
240	32	38	35	53	35	47	1	31	1	06	3
241	47	33	34	41	46	38	1	19	0	05	3
242	38	47	28	50	39	38	0	29	1	03	3
243	33	37	34	40	39	57	0	49	0	02	3
244	31	22	45	53	42	47	1	45	1	05	3

Appendix E.--Continued.

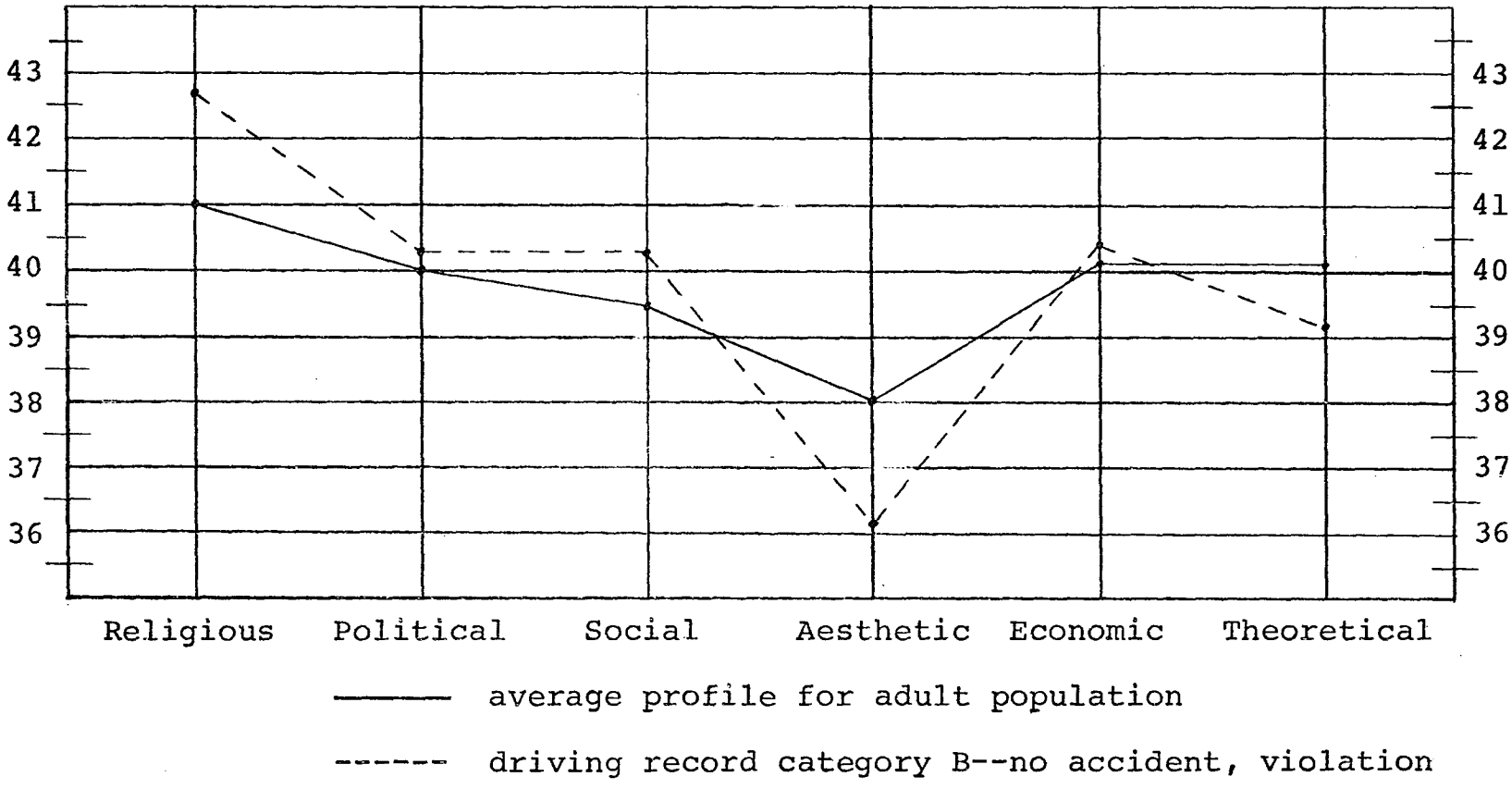
Subject	Theoretical Score	Economic Score	Aesthetic Score	Social Score	Political Score	Religious Score	Sex	Age	Marital Status	Accidents and Violations	Category
245	44	41	29	52	43	31	1	23	1	04	3
246	37	54	34	42	30	43	1	30	1	04	3
247	31	41	33	47	44	44	0	22	0	03	3
248	47	49	30	28	44	42	1	28	1	07	3
249	31	46	40	46	28	47	0	49	1	03	3
250	38	39	36	37	41	49	0	38	1	04	3
251	34	44	34	52	37	39	0	32	1	02	3
252	47	33	45	43	43	29	1	32	1	03	3

APPENDIX F

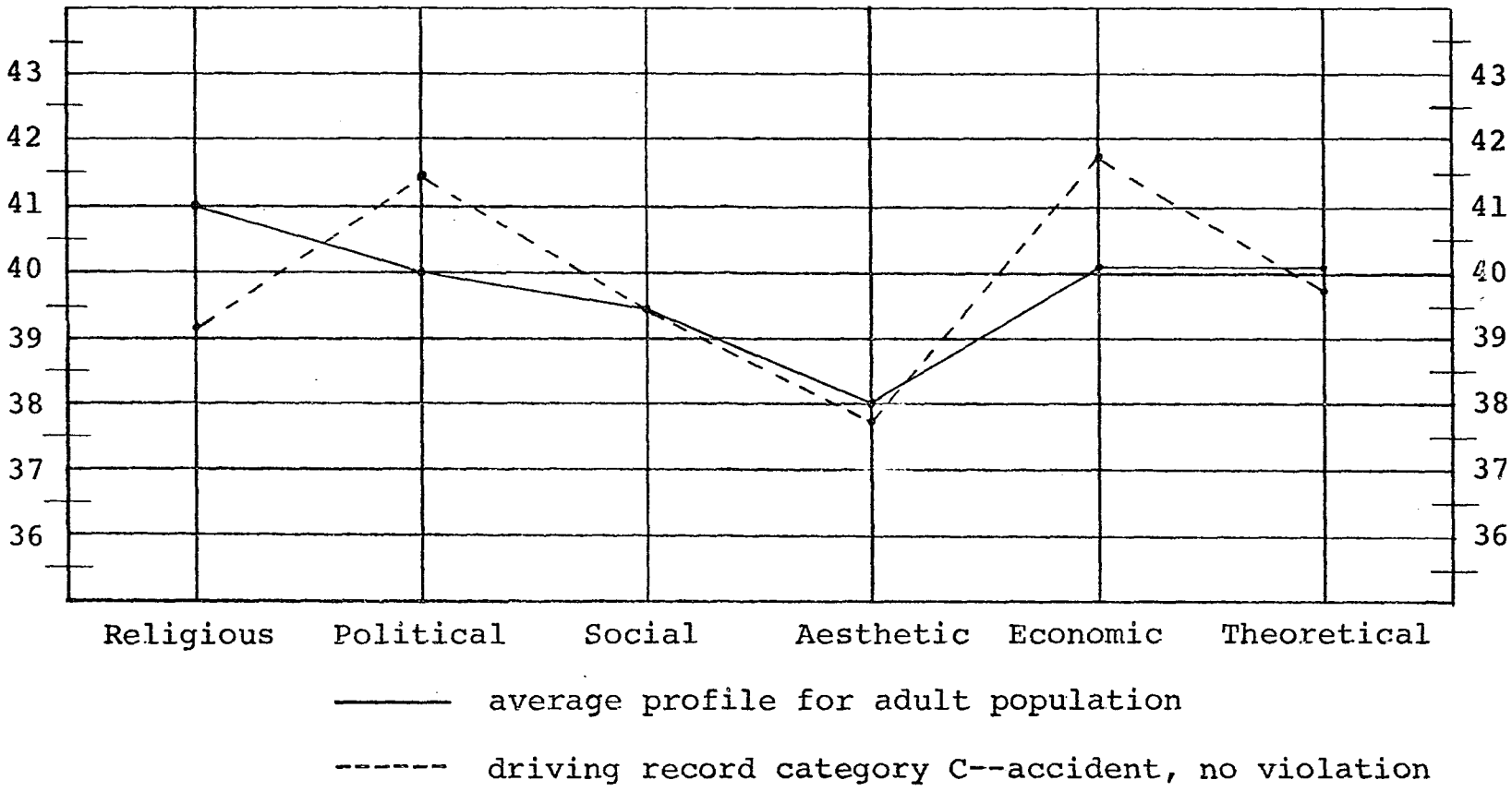
GRAPHS OF NORMS



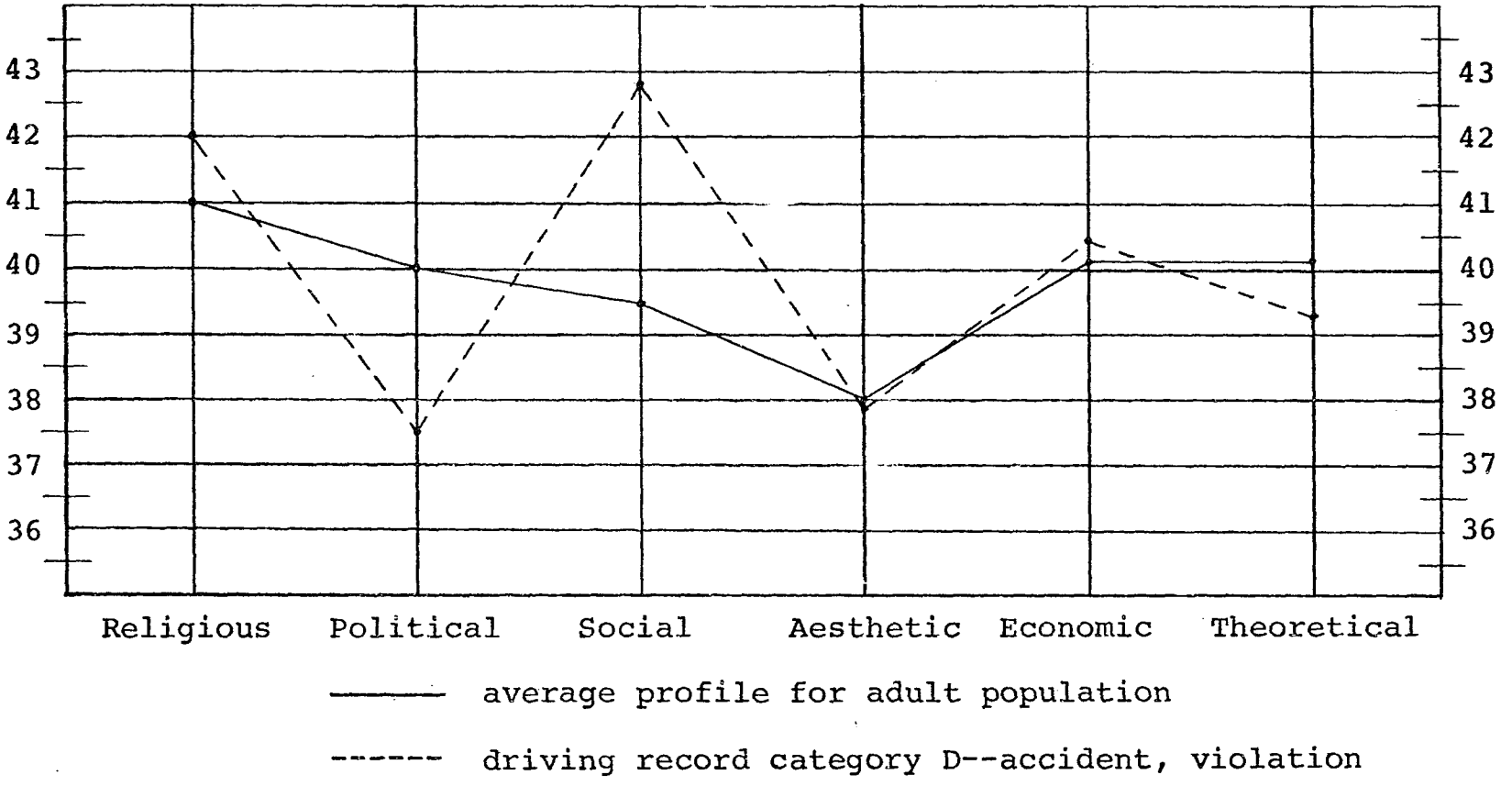
Graph 1.--Profile of Values: Driving Record Category A--No Accident, No Violation.



Graph 2.--Profile of Values: Driving Record Category B--No Accident, Violation.



Graph 3.--Profile of Values: Driving Record Category C--Accident, No Violation.



Graph 4.--Profile of Values: Driving Record Category D--Accident, Violation.