Personality Characteristics as a Selective Factor in Driver Education

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Research was undertaken to examine the crucial question: "Are students who elect to take driver education different in significant ways from students who do not elect to take such training?"

The driver education study was carried out as an integral phase of a long-term "pre-driver study" previously reported, in which 6906, 15½-year-old high school sophomores were administered a selected battery of personality and attitude tests prior to the onset of their legal driving experience, which in the research locale begins at age 16.

Through arrangement with local driver education instructors, those male subjects subsequently electing driver education were identified and matched proportionally in schools with a non-driver education control group. Both groups were then compared with regard to the personality tests administered before either group had the opportunity to elect or decline driver education.

Statistical analysis of the pre-driver education personality data revealed that the driver education and non-driver education groups differed significantly in the following:

1. General activity. The driver education group appears less active; more deliberate and restrained; less prone to rapid and hurried action ($p = 0.001$).
2. Ascendance. The driver education group appears significantly less concerned with dominating or persuading others; less concerned with being conspicuous; and more likely to be serious and subdued ($p = 0.005$).
3. Sociability. The driver education group displays significantly more shyness and avoidance of social contacts, is more inner-directed, and in general is more reserved and less spontaneous in social participation ($p = 0.005$).

These findings strongly suggest that those students who elect to take driver education are, in essence, a selected group, and that the nature and significance of these selective characteristics must be considered in weighing the total contribution driver education makes to traffic safety.

DRIVER EDUCATION programs in recent years have expanded to the point where ey now involve a very substantial annual investment of time and money. The justi- cation for this expansion rests, of course, on the premise that driver education is fective in reducing motor vehicle accidents and violations.

In the early stages of the development of these programs, this premise appears to ve been primarily the product of enthusiastic, if uncritical, faith, stemming from e need to "do something" about the growing accident problem. Most efforts during

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this period were directed toward getting programs accepted and adopted, rather than toward establishing their scientific validity.

More recently, as increasing information on the driving records of trained drivers became available, this early enthusiasm appeared to have been vindicated by a number of actuarial comparisons indicating that trained drivers sustained a significantly fewer number of accidents and violations than untrained drivers (1, 4). These studies have been widely interpreted as demonstrating that driver education "works," that it does, in fact, produce safer drivers.

Currently, however, serious students of the accident reduction value of driver education are beginning to question whether such a conclusion is the only one possible from the available data. Is it not possible, for example, that students who elect drive education may be significantly different in their personal characteristics from those who do not elect such training; and, if so, that these differences may be a contributing if not the primary factor, associated with subsequent differences in accident and violation records? In other words, is it not possible that one characteristic of the kind of person who is likely to become a safe driver is that he will be more likely than his peers to elect driver training? At the very least, it would appear that such a possibility deserves serious investigation.

As a contribution to this problem, the present research was designed to examine the question, "Are students who elect to take driver education significantly different in important personal characteristics from students who do not elect to take such training?"

PROCEDURE

The investigation of the relationship of personal characteristics to election of drive education was undertaken as one phase of a large scale continuing study of 6,906 15-year-old "pre-drivers," initiated in 1956 at the University of Colorado School of Medicine. The general plan of this project has been described in previous reports (2, 3). In brief, its over-all aim is to study the relationship of pre-driver attitudes and personality characteristics to subsequent driving records.

For purposes of the present study, a driver education group was selected, consisting of all male students in the described population who, in the period 1957 to 1959, had taken formal driver education (N = 52). A control group of male non-driver education students (N = 104) was then selected from the same population, and matched with the driver education group on the following variables:

1. Socio-economic status (residence area).
2. Proportion of driver education and non-driver education subjects within each school.
3. Proportion of graduates to non-graduates within schools and within driver education conditions, in order to control for equivalence of opportunity to take driver education (Table 1).
4. Proportion of students within each group owning or having ready access to cars in order to control for the possibility that students may elect driver education because of the lack of a family car on which to practice. (In addition, while not used as a selection criterion, individual estimates of miles driven per year were independently obtained for both the driver education and non-driver education groups. No significant differences were found between the distributions of the two groups.)

Within the limits of these requirements, the selection of these male non-driver education students from the total population was random.

Driver education and non-driver education groups were then compared on a number of personality, attitude, and temperament measures. It is important to emphasize that all measures were obtained at an average age of 15½ years, and before the students had the opportunity to either elect or reject driver education. The method of data analysis selected was a double classification analysis of variance design which permits the following comparisons:

1. Over-all personality differences between the driver education and the non-driver education groups.

2. Specific between-school personality differences in either the driver education or non-driver education groups.
3. Interaction effects between schools and driver education conditions.

Essentially, this design permits an answer to the following relevant questions:

1. In general, does the student who elects driver education have personality characteristics different from those of the student who does not elect such formal training?
2. If so, are these differences consistent across all schools (with their varied socio-economic composition and possible differences in the appeal of driver education programs), or does the picture vary from school to school?

Guilford-Zimmerman Temperament Survey

This is an objective paper and pencil test designed to measure a number of significant aspects of the total personality of the student. It is divided into ten scales: Gen-

TABLE 1

DISTRIBUTION OF GRADUATES AND NON-GRADUATES WITHIN SCHOOLS AND DRIVER EDUCATION CONDITIONS

Subjects	Status	Schools A	B	C	D	E	N
river education	Graduates	7	1	11	16	6	41
	Non-graduates	0	2	5	4	0	11
on-driver education	Graduates	14	2	22	32	12	82
	Non-graduates	0	4	10	8	0	22

ral activity, restraint, ascendency, social interest, emotional stability, objectivity, iendliness, thoughtfulness, personal relations, and masculinity. A high score on y scale presumably indicates that an individual possesses the trait involved to a gnificant degree, while a low score is indicative of the polar opposite of that trait.

llport-Vernon-Lindzey Study of Values (Levy Modification)

This test represents a modification (for a lower reading level) of the 1951 version the Study of Values, and was devised by Jerome Levy, formerly of the project staff. ssentially, this test aims to measure the relative prominence of six basic interests motives in personality: The theoretical (characterized by a "cognitive" attitude ward the discovery of truth), the economic (characterized by an interest in what is eful and "practical"), the esthetic (characterized by an interest in what is beautiful pleasing for its own sake, rather than primarily because it is "true" or "practi-l"), the social (characterized by an interest in the welfare of others), the political haracterized by an interest in competition, power, and prestige), and the religious haracterized by an interest in man's relation to the cosmos; "his highest value... ay be called unity"). The Study of Values yields a profile showing the relative rengths of the individual's preferences for each of these interests.

lifornia Mental Health Analysis

This test is intended as an objective method of assessing mental health. Two general sorts of measures may be derived from administration of the survey: Mental alth liabilities (subdivided into five specific types of liabilities) and mental health sets (divided into five specific types of assets). The five liability scales include: havioral immaturity, emotional instability, feelings of inadequacy, physical defects, d nervous manifestations. The five asset scales include: Close personal relationips, interpersonal skills, social participation, satisfying work and recreation, and

adequate outlooks and goals. A high score for both the asset scales and the liability scales is indicative of better mental health, that is, a high asset score suggests that an individual has many assets, while a high liability score indicates freedom from liabilities.

RESULTS

Results of all analyses are summarized in Tables 2 and 3. Four of the ten scales of the Guilford-Zimmerman Temperament Survey significantly discriminated driver

TABLE 2

PERSONALITY TEST MEASURES SIGNIFICANTLY DISCRIMINATING DRIVER EDUCATION AND NON-DRIVER EDUCATION GROUPS[1]

Test	Driver Education (N = 52) M	SD	Non-Driver Education (N = 104) M	SD	Level of Significanc (below 0.05
Guilford-Zimmerman Temperament Survey					
General activity	16.25	4.40	18.72	5.00	$p < 0.005$
Ascendance	13.88	4.32	16.78	4.93	$p < 0.001$
Social interest	18.12	5.58	21.03	5.95	$p < 0.005$
Masculinity	19.88	4.20	21.34	3.95	$p < 0.05$
Allport-Vernon-Lindzey Study of Values (Mod.)					
Esthetic	35.50	6.27	32.33	6.22	$p < 0.005$
California Mental Health Analysis					
Feelings of inadequacy	13.33	4.77	15.38	3.30	$p < 0.005$
Physical defects	18.02	2.96	19.17	1.45	$p < 0.005$
Nervous manifestations	15.56	3.56	17.06	2.27	$p < 0.005$

[1]All comparisons made by analyses of variance techniques with 1 and 146 degrees of freedom used to determine the level of significance.

education from non-driver education subjects at the 0.05 level of significance or below. Non-driver education subjects revealed a higher general activity level, more a cendent leadership (as opposed to submissive, or follower) behavior, more interest in social participation, and stronger masculine interests. For the remaining six va iables, no differences significant below the 0.05 level were found, although there we suggestive trends ($p < 0.10$) on two of these variables. In addition, no significant be tween-school differences or interaction effects were found on any of the ten scales.

Of the five scales of the Levy modification of the Allport-Vernon-Lindzey Study o Values, only the esthetic scale proved discriminating, with driver education subject showing significantly higher esthetic values than their non-driver education peers. However, there was a suggestive trend ($p < 0.10$) on the religious scale, with the no driver education group scoring slightly higher. As with the Guilford-Zimmerman, n significant between-school differences or interaction effects were found on any of the five scales.

On the California Mental Health Analysis, three of the five liability scales, but n of the five asset scales, proved discriminating below the 0.05 level of significance. In general, driver education subjects, in comparison to their non-driver education peers, tended to report greater personal feelings of inadequacy, greater concern wi or presence of physical defects, and a higher incidence of nervous manifestations.

TABLE 3

PERSONALITY TEST MEASURES FAILING TO DISCRIMINATE SIGNIFICANTLY DRIVER EDUCATION AND NON-DRIVER EDUCATION GROUPS BELOW 0.05 LEVEL OF SIGNIFICANCE[1]

Test	Driver Education (N = 52) M	SD	Non-Driver Education (N = 104) M	SD	Level of Significance (below 0.10)[2]
Guilford-Zimmerman Temperament Survey					
Restraint	15.62	4.35	14.87	4.36	-
Emotional stability	18.08	5.31	19.56	5.01	$p < 0.10$
Objectivity	17.60	6.19	19.52	5.47	$p < 0.10$
Friendliness	15.62	6.34	16.18	5.61	-
Thoughtfulness	16.56	4.89	16.66	4.61	-
Personal relations	18.73	4.82	19.56	4.80	-
Allport-Vernon-Lindzey Study of Values (modified)					
Theoretical	45.12	7.26	45.09	6.56	-
Economical	42.10	6.06	42.79	6.01	-
Social	39.12	5.76	37.65	7.46	-
Political	39.58	5.16	40.82	5.55	-
Religious	38.62	9.32	41.32	7.19	$p < 0.10$
California Mental Health Analysis					
Close personal relationship	17.37	2.07	17.61	2.87	-
Inter-personal skills	14.83	2.49	15.07	2.74	-
Social participation	14.67	2.98	15.36	3.55	-
Satisfying work and recreation	15.25	2.87	14.46	3.29	-
Outlook and goals	17.58	1.93	17.76	1.74	-
Behavioral immaturity	15.04	3.79	15.56	3.07	-
Emotional instability	13.90	4.47	14.86	3.53	-

[1] All comparisons made by analyses of variance techniques with 1 and 146 degrees of freedom used to determine the level of significance.
[2] All others fail to meet, or fall below the 0.10 level.

should be emphasized, however, that while the differences between the two groups were clear cut, that the liability scores of the driver education group did not tend to be extreme. Again, as in previous analyses, no significant between-school differences, or interaction effects were found on any of the ten scales of this test.

SUMMARY AND CONCLUSIONS

Male driver education students and a matched control group of non-driver education students were found to differ significantly ($p < 0.05$) on eight of a total of 26 personality measures. In general, as compared with their non-driver education peers, driver education subjects appeared to be somewhat more introspective, more sensitive and more esthetic in their interests, and to feel somewhat more inadequate and concerned with their physical and mental health. In contrast, non-driver education subjects tended to be more active generally, more ascendent and interested in leadership, and more oriented toward gregarious, outgoing, masculine social interests. Furthermore, despite differences in the socio-economic and cultural areas served by the var-

ious schools involved in this study, the above picture emerges consistently, and does not change significantly from school to school. However, it should be emphasized tha while the personality differences reported above are clear cut, in neither group were the particular traits which characterized it present in extreme form.

Although it is possible that on cross-validation, one or more of the discriminating personality measures may prove insignificant. Nevertheless, in view of the proportion of significant to insignificant differences, the consistency of the picture they paint and the levels of confidence of the significant differences obtained, it appears extreme ly unlikely that the over-all picture would change radically on cross-validation with additional samples from this general population. Thus, it would appear that initial personality differences between students electing and taking driver education training, on the one hand, and those not taking it, on the other hand, may be a contributing (in fact, could conceivably be a primary) factor in accounting for obtained differences in accident and violation rates between students electing driver education and those not electing it.

Further investigation of this possibility will be undertaken in future research on this project. The accident and violation rates over a three year period of students e- lecting and taking driver education training will be compared with those of students electing, but not taking driver education, and those of students not electing and not taking driver education. If it should be true that personality differences between driv education and non-driver education groups, such as those found in the present study, constitute a primary reason for the safer records generally reported for students hav ing had driver education, then it might be anticipated that the safety records of studen electing but unable to take driver education training will prove more similar to those of students electing and taking driver education training than they will to those of students not electing and not taking driver education.

Of course, it may prove that both "selective bias" in the formation of driver and non-driver education groups and the effects of driver training itself may contribute jointly to the apparently safer driving records of driver education groups. At any rate, it would appear that the possibility cannot be safely ignored that factors other than driver training itself may be contributing significantly to reported differences in accident and violation rates between driver education and non-driver education groups

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