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James Crovatt Humphlett

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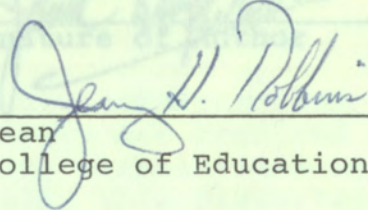
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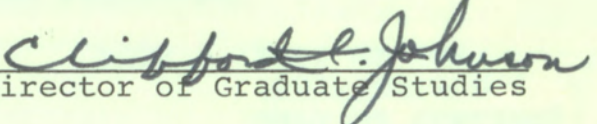


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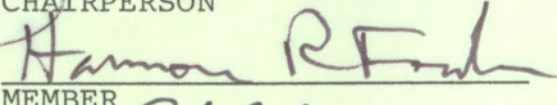
This dissertation, A STUDY TO DETERMINE IF A LOW  
SPEED DRIVER TRAINING METHODOLOGY IS AS EFFECTIVE AS A  
HIGH SPEED DRIVER TRAINING METHODOLOGY IN TRAINING LAW  
ENFORCEMENT OFFICERS TO PERFORM HIGH SPEED DRIVING by  
JAMES CROVATT HUMPHLETT, was prepared under the direction  
of the candidate's dissertation committee. It has been  
approved and accepted in partial fulfillment of the  
requirements for the degree Doctor of Philosophy in the  
College of Education, Georgia State University.

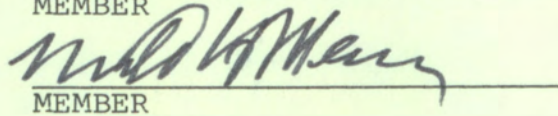
  
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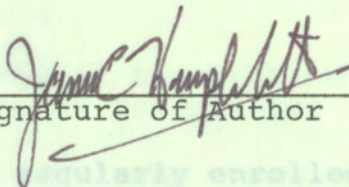
  
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Dr. John Preston  
Department of Vocational and Career Development  
College of Education  
Georgia State University  
University Plaza  
Atlanta, Georgia 30303

  
\_\_\_\_\_  
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The author of this dissertation is:

James Crovatt Humphlett  
209 Dunbarton Drive  
St. Simons Island, Georgia 31522

PROFESSIONAL EXPERIENCE: Federal Law Enforcement Training Center  
Glynco, Georgia

The director of the dissertation is:

Dr. John Preston  
Department of Vocational and Career Development  
College of Education  
Georgia State University  
University Plaza  
Atlanta, Georgia 30303

ORGANIZATIONS: Georgia Vocational Association

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VITA

JAMES CROVATT HUMPHLETT

ADDRESS: 209 Dunbarton Drive  
St. Simons Island, Georgia 31522

EDUCATION: Ph.D., Georgia State University, 1985  
Ed.S., Georgia State University, 1975  
M.Ed., Georgia State University, 1970  
B.B.A., Emory University, 1964

PROFESSIONAL EXPERIENCE: Federal Law Enforcement Training Center  
Glynco, Georgia

Atlanta Area Technical School  
Atlanta, Georgia

Emory University  
Atlanta, Georgia

PROFESSIONAL ORGANIZATIONS: American Vocational Association  
Georgia Vocational Association



groups were trained by the ABSTRACT instructors. Both methodologies were 24 hours in length.

A STUDY TO DETERMINE IF A LOW SPEED DRIVER TRAINING METHODOLOGY IS AS EFFECTIVE AS A HIGH SPEED DRIVER TRAINING METHODOLOGY IN TRAINING OF LAW ENFORCEMENT OFFICERS TO PERFORM HIGH SPEED DRIVING. Descriptive statistics analysis, Hotelling's  $T^2$ , was calculated to determine whether a significant difference existed between the high speed driving performances of the two groups.

#### Purpose

The purpose of this study was to determine if a low speed driver training methodology was as effective as a high speed driver training methodology in preparing Federal law enforcement officers to properly perform high speed driving.

#### Method and Procedures

This study used the facilities, equipment, supplies, and instructors of the Federal Law Enforcement Training Center (FLETC) located in Glynco, Georgia. A table of random numbers was used to divide an intact group of 48 students into two groups. One group was trained in driver training using the low speed driver training methodology (LS) of the National Academy for Professional Driving. The other group was trained using the high speed driver training methodology (HS) of FLETC. Both

groups were trained by the same instructors. Both methodologies were 24 hours in length.

Upon completion of driver training, all students were required to negotiate a high speed driving range. Each student's elapsed driving time and the number of incidents of improper driving techniques were recorded. Descriptive statistics and the multivariate analysis statistic, Hotelling's  $T^2$ , were calculated to determine whether a significant difference ( $p < .05$ ) existed between the high speed driving performances of the two groups.

### Results

There was no significant difference between the performances of the low speed trained group and the high speed trained group in their ability to perform high speed driving when measured by elapsed driving time to negotiate a high speed range and the incidence of improper driving techniques.

### Conclusions

Based on the descriptive statistics and the multivariate analysis results of this study it was concluded the LS used in this study was as effective as the HS in preparing students to perform high speed driving.

Atlanta, Georgia

1985



## LIST OF ABBREVIATIONS

A STUDY TO DETERMINE IF A LOW SPEED DRIVER TRAINING

CHP: California Highway Patrol

METHODOLOGY IS AS EFFECTIVE AS A HIGH SPEED

EVOC: Emergency Vehicle Operations Course

DRIVER TRAINING METHODOLOGY IN TRAINING

FLETC: Federal Law Enforcement Training Center

LAW ENFORCEMENT OFFICERS TO PERFORM

HS: High Speed Law Enforcement Driver Training  
Methodology HIGH SPEED DRIVING

HSG: High Speed Trained Group

LS: Low Speed Law Enforcement Driver Training  
Methodology

by

LSG: Low Speed Trained Group

JAMES CROVATT HUMPHLETT

MPH: Miles Per Hour

NAPD: National Academy for Professional Driving  
(prior to 1970 Academy for Police  
Driving)

A DISSERTATION

NCJRS: National Criminal Justice Reference Service

PAS: Physicians for Automotive Safety

Presented in Partial Fulfillment of Requirements for the  
Degree of Doctor of Philosophy in Educational  
Leadership in the Department of Vocational  
and Career Development in the College of  
Education, Georgia State University

Atlanta, Georgia

1985

## LIST OF ABBREVIATIONS

### ACKNOWLEDGEMENTS

- CHP: California Highway Patrol
- EVOC: The Emergency Vehicle Operations Course
- FLETC: Federal Law Enforcement Training Center
- HS: High Speed Law Enforcement Driver Training Methodology
- HSG: High Speed Trained Group
- LS: Low Speed Law Enforcement Driver Training Methodology
- LSG: Low Speed Trained Group
- MPH: Miles Per Hour
- NAPD: National Academy for Professional Driving (prior to 1982 - National Academy for Police Driving)
- NCJRS: National Criminal Justice Reference Service
- PAS: Physicians for Automotive Safety

Center Director, for his approval of the project, to David McKinley, Deputy Director, for his suggestion to do this project, and to Ray Rice, Assistant Director, for his advocacy and assistance. The cooperation and support of the personnel of the Driver Specialties Branch were exemplary throughout the study. Special recognition and thanks go to Lead Instructor, Bobby Freeman, who contributed much personal time and effort and conducted and coordinated the training aspects of this project.

The National Academy for Professional Driving was very supportive of this study and I am especially grateful



to Dr. Richard Turner and David Cergua for their beneficial suggestions, cooperation, and assistance.

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Without the approval, support, and cooperation of the personnel of the Federal Law Enforcement Training Center the completion of this dissertation would not have been possible. Special thanks go to Charles Rinkevich, Center Director, for his approval of the project, to David McKinley, Deputy Director, for his suggestion to do this project, and to Ray Rice, Assistant Director, for his advocacy and assistance. The cooperation and support of the personnel of the Driver Specialties Branch were exemplary throughout the study. Special recognition and thanks go to Lead Instructor, Bobby Freeman, who contributed much personal time and effort and conducted and coordinated the training aspects of this project.

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There is abundant evidence that the issue of police high speed pursuit is a major concern to police officers, law enforcement administrators, and the public in general (e.g., Pennessy, 1970; Walters, 1971; Bryne, 1974; Mahurin, 1978; Miller, 1983). According to Chapin (1978):

except for the question of when and how a police officer should use his gun, the high-speed chase engenders more discussion, and more controversy than perhaps any other aspect of patrol work.  
(p. 38)

The height of national attention directed toward the controversy surrounding police pursuit came when, on November 9, 1980, the Columbia Broadcasting System aired a segment titled, "Hot Pursuit" produced by Paul

## CHAPTER I

Loewenwarter on its weeknight, 60 MINUTES. This

## INTRODUCTION

High speed driving is an essential and hazardous task which most law enforcement officers are required to perform. The following are examples of situations which require that law enforcement officers be properly trained to perform high speed driving: pursuing a violator, attempting to give assistance to a fellow officer, attempting to intercept a crime in progress, and assisting in a medical emergency. High speed driving by law enforcement officers is a serious issue and is a controversial topic among law enforcement personnel and representatives of the public concerned with traffic safety.

There is abundant evidence that the issue of police high speed pursuit is a major concern to police officers, law enforcement administrators, and the public in general (e.g., Fennessy, 1970; Walters, 1971; Bryne, 1974; Mahurin, 1978; Miller, 1983). According to Chapin (1978):

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The height of national attention directed toward the controversy surrounding police pursuit came when, on November 9, 1980, the Columbia Broadcasting System aired a segment titled, "Hot Pursuit" produced by Paul Loewenwarter on its weekly news show, 60 MINUTES. This program lamented the deaths and injuries to innocent bystanders caused by high speed police pursuits in the Detroit area. The program advocated driver training for law enforcement officers and showed an example of driver training offered by the National Academy for Police Driving located in Lancaster, Texas. In 1982 the name of this organization was changed to the National Academy for Professional Driving (NAPD).

When discussing the public concern over police high speed pursuit, Barth (1981) stated:

the issue has been sensationalized and a journalistic license has been taken to present an inaccurate picture of the problem to the point where the public has little tolerance for any pursuit. (p. 55)

Turner (1978) and Mahurin (1978) indicated that more police officers are injured and killed in vehicular accidents than in incidents involving firearms. Unfortunately, the incidence of accidents, injuries, and deaths to police officers, innocent victims and the individuals being pursued during high speed chases has not been systematically maintained (Fennessy, 1970; Beckman, 1983). However, according to Schultz (1979):

training in many law enforcement agencies is lacking.



Figures from the Department of Transportation show that of the approximately 250,000 high-speed chases that take place each year, 6000 to 8000 end in crashes, killing about 500 people, and injuring close to 5000. (p. 1)

There are many facets to the issue of high speed pursuit driving by police officers. The following are some of the general law enforcement concerns related to police high speed driving for pursuit purposes:

- (a) proper law enforcement driver training, (b) proper driving tactics, (c) interjurisdictional considerations, (d) liability issues, (e) which offenses justify pursuit, (f) when to initiate a pursuit, and (g) when to terminate pursuit.

This study addressed only the issue of the proper training of law enforcement officers to perform high speed driving.

The proper training of local, state, and Federal law enforcement officers should encompass the learning of a wide range of knowledge, skills, and attitudes. A basic law enforcement training program should include instruction in (a) enforcement operations and techniques, (b) human relations, (c) legal aspects, (d) firearms, (e) physical training, and (f) driver training. One of the most critical law enforcement training subject areas in terms of cost, officer survival, and public safety is training for the task of high speed driving.

Unfortunately, driver training for law enforcement officers has not been viewed as being essential or required training in many law enforcement agencies in America.



Fennessy (1970) indicated that law enforcement managers have traditionally placed driver training on the low priority list for a number of reasons, not the least of which is cost (p. 234). Chapin (1978) stated that "officers . . . agreed that their driver training programs need to be upgraded" (p. 41). Barron & Aurillo (1981) indicated that often driver training has been overlooked for weapons training, Special Weapons and Tactics (SWAT) training and hostage negotiation training. They stated it is a paradox that the task that officers perform most is the area in which they generally receive the least amount of training (p. 2). In the last twenty years there have been numerous articles in the criminal justice literature advocating either the instigation or the improvement of law enforcement driver training (e.g., Barron & Aurillo, 1981; Skelton, 1969; Byrne, 1974; Scheidt, 1964; Mahurin, 1975, 1978; Tweed, 1978; Ayooob, 1974; Pacholak, 1980; McCleverty, 1970; Turner, 1978; Peters, 1973; Farmer, 1978; Korczynski, 1976; Allibee, 1976; James, 1980).

There has been a wide range in both the quality and quantity of training law enforcement officers receive to prepare them to perform high speed driving. At one end of the spectrum are a large number of officers who have received no driver training (Mahurin, 1978). At the other end of the spectrum are officers who have been fortunate enough to receive a comprehensive driver training program

encompassing lecture, demonstrations, and actual driving experience covering all aspects of law enforcement driving including high speed driving. D. C. Tweed, 1978;

(d) Within the profession of police driver training there are two separate and distinctly different instructional methodologies for preparing law enforcement officers to perform high speed driving. What clearly distinguishes one driver training method from the other is the driving speed which they advocate be used in training for high speed driving. using a new low speed law enforcement drive The traditional method of law enforcement driver training advocates teaching high speed driving at high speeds. High speed driver training experts begin training at low speed and have the trainees gradually increase the speed of their vehicles over a period of several practice sessions. A typical high speed law enforcement driver training program (HS) consists of training in defensive driving, skid control, and highway response or high speed driving. The top speed of a HS program would be limited by its high speed driving range configuration and vehicle limitations. An expensive specialized driving range, specially equipped vehicles, large numbers of instructors, and large quantities of tires, brakes, and fuel are required to conduct the high speed practical exercise component of HS. The following are examples of departments or organizations which advocate a HS: (a) Edmonton Police Department, Edmonton, Alberta, Canada 42; Maharaja,



(Pacholak, 1980); (b) Cook County Police Department, Chicago, Illinois (McCleverty, 1970); (c) Metropolitan Police Department, Washington, D. C. (Tweed, 1978); (d) Federal Law Enforcement Training Center, Glynco, Georgia (G. Graves, personal communication, March 3, 1984).

A new methodology for law enforcement driver training has been developed within the last ten years. A group of law enforcement driver trainers has evolved who indicate

they effect the same high speed driving knowledge and skills as HS by using a new low speed law enforcement driver training methodology (LS) (e.g., James, 1980; Allibee, 1976; Santa Clara city, 1973; Farmer, 1978; Turner, 1978; Fernstom & Ragsac, 1975). LS trainers limit the training speed in their program by placing traffic pylons on driving ranges in such a manner as to create turns or series of turns which are impossible to negotiate at speeds above 30-35 MPH. However, Turner (1976) stated that: "the process, once learned, can be applied effectively at high speed, thus making the transition from routine patrol to pursuit" (p. i). Farmer (1978) indicated there is evidence that LS training "is really paying off in situations where officers are going somewhere in a hurry" (p. 83).

There has been ample evidence which indicates that both HS and LS law enforcement driver training have been effective in reducing accident rates (e.g., Turner, 1978, p. 31; Farmer, 1978, p. 82; Chapin, 1978, p. 42; Mahurin,



1978, p. 19; Tweed, 1978, p. 86; Miller, 1973, p. 26).

There has been no published research evidence which indicates the reasons for this reduction in accident rates after training. There are several plausible explanations for this reduction, including change in departmental policy, change in officer attitude, and change in driving ability.

their attendant costs to officers, police departments, and the public.

#### Significance of the Study

Effective high speed driver training is essential to the proper occupational training of local, state, and Federal law enforcement officers. The high cost of LS driver training has been a primary factor which has precluded many officers from receiving the much needed

training in this critical law enforcement task. If LS is

as effective as HS in preparing officers for high speed

driving, it would reduce much of the expense associated with HS. The expensive specialized high speed range is not required by LS. The parking lots of schools, shopping centers, and hospitals can accommodate a LS training program. LS requires fewer instructors and may reduce the amount of vehicle maintenance, and the amount of tires,

brakes, and fuel required to conduct training. LS could be made more readily available to law enforcement officers than HS.

If comparative research supported the effectiveness of LS in preparing officers to perform high speed driving,



it would greatly impact on the training of law enforcement officers in the United States. More officers would receive driver training demonstrated to be effective at teaching officers to perform high speed driving. As more officers received driver training there should be a decrease in the number of accidents associated with high speed driving and their attendant costs to officers, police departments, and the public.

#### Definition of Terms

The following Statement of the Problem is used in this study. Prior to this study there was no published valid research evidence that substantiated or refuted that LS was as effective as HS in preparing individuals to properly perform high speed driving.

Driving Range: The actual track upon which driver training students drive to learn their driving skills.

The purpose of this study was to determine if LS was as effective as HS in preparing Federal law enforcement officer trainees to properly perform high speed

Emergency Vehicle Operation: The driving of a police vehicle at high speeds for purposes other than pursuit.

High Speed Driving: The driving of a vehicle at speeds in excess of 55 MPH. The maximum speed attained in this study was approximately 75 MPH.

trained using LS could negotiate a high speed driving range as effectively as students trained using HS.

High Speed Range: An expensive driving range specially constructed to

#### Research Question

Do students trained by LS have the same ability as students trained by HS in negotiating a high speed driving range when measured by elapsed driving time and incidence of improper driving techniques?

## High Speed Law Enforcement Null Hypothesis Training Methodology:

There is no significant difference between LS program completers and HS program completers in their abilities to perform high speed driving when measured by: (a) the amount of time it takes them to negotiate a high speed driving range and (b) the incidence of improper driving techniques.

## High Speed Pursuit: Definition of Terms

The following definition of terms were used in this study.

Defensive Driving: A course of instruction in HS which teaches basic driving skills needed in everyday driving.

Driving Range: The actual track upon which driver training students drive to learn their driving skills.

Emergency Vehicle Operation: The driving of a police vehicle at high speeds for purposes other than pursuit.

High Speed Driving: The driving of a vehicle at speeds in excess of 55 MPH. The maximum speed attained in this study was approximately 75 MPH.

High Speed Range: An expensive driving range specially

constructed to allow students to experience high speed driving in a safe environment. A high speed range is usually constructed in a manner which confronts the students with many different types of

Line of Travel: A phrase used in driver training which

refers to the proper or improper positioning of



High Speed Law Enforcement Driver Training Methodology:

A comprehensive program of instruction for driver training which usually presents training in defensive driving, skid pan driving, and high speed driving. The maximum speed attained during the high speed training component of this study was 75 MPH. in a manner which prohibits speeds in

High Speed Pursuit: An active attempt by a law enforcement officer on duty in a patrol car to apprehend one or more occupants of a moving motor vehicle, the providing the driver of such vehicle is aware of the attempt and is resisting apprehension by maintaining or increasing his speed or by ignoring the law officers attempt to stop him (Fennessy, 1970, p. xi).

Improper Driving Techniques: The improper driving techniques of this study were (a) losing control of vehicle, (b) leaving the roadway, (c) locking brakes, (d) improper steering technique, (e) improper acceleration, (f) improper skid control, (g) improper line of travel, and (h) improper braking.

Late and Deep: A technique for negotiating turns taught in HS and LS which trains students to negotiate turns in an outside, outside, inside manner (see Outside, Inside, Outside on page 11).

Line of Travel: A phrase used in driver training which refers to the proper or improper positioning of

Skid the vehicle on a roadway as it negotiates a driving range. on a skid pan to learn proper skid

### Low Speed Law Enforcement Driver Training Methodology:

Stress A comprehensive program of instruction for law enforcement driver training which utilizes several different driving ranges and exercises which are configured in a manner which prohibits speeds in excess of 35 MPH.

### Outside, Inside, Outside: A technique for negotiating

turns taught in HS which trains students to use the entire roadway. Students are taught to set up their vehicle on the outside of a turn (outside), turn to the true apex of the turn (inside), and allow the vehicle to go back to the outside coming out of the turn (outside).

Practical Exercise: That portion of a driver training program of instruction in which students are either driving vehicles or observing fellow students driving vehicles.

Read the Road: A driver training objective which indicates that students have been trained to properly position their vehicle on the roadway while engaged in high speed driving. Inherent in this concept is anticipating and looking ahead on the roadway in order to be prepared to properly negotiate upcoming turns.

Skid Pan: A driving range with a very slippery surface.



Skid Pan Driving: That portion of HS during which a random students drive on a skid pan to learn proper skid and intact control driving techniques.

Stressor: Something which is a cause or source of stress.

#### Assumptions

The assumptions made for this study were as follows:

1. That this study would contribute to the limited knowledge in the field of research in law enforcement driver training.

2. That HS was a satisfactory method for training law enforcement officers to perform high speed driving.

3. That HS of the Federal Law Enforcement Training Center was an acceptable and typical HS.

4. That the LS of the NAPD used in this study was an acceptable and typical LS methodology.

5. That the measured elapsed time to negotiate a high speed range was a sound indicator of high speed driving ability.

6. That the number of recorded incidents of improper driving while negotiating a high speed range was an appropriate indicator of high speed driving ability.

#### Limitations

The findings in this study were based on the following limitations:

1. The absence of previous research studies in law enforcement driver training.

2. It was not logistically feasible to obtain a random sample from the target population and therefore an intact group was used for this study.

3. It was not possible to keep the students who served as subjects in this study from being aware that they were participating in a driver training experiment.

#### Delimitations

This study was based on the following delimitations:

1. This study was not concerned with the issue of whether or not a police officer should be involved in high speed pursuits.

2. The results of this study cannot be generalized to the target population because of the use of an intact group from the population rather than a random sample from the population.

3. The target population for this study is limited to Federal law enforcement officers receiving basic training at the Federal Law Enforcement Training Center (FLETC).

4. This study did not consider the age, sex, race, marital status, educational level, or amount of law enforcement experience of a student as a factor of performance in high speed driving.



## CHAPTER II

### REVIEW OF THE LITERATURE

This chapter provides a review of the criminal justice periodical literature within the last 25 years which focused on the issues of law enforcement pursuit driving and law enforcement driver training. In addition to a review of the limited number of texts, reports, and published driver training programs that pertain to police pursuit driving and driver training, this chapter also reports the results of telephone interviews conducted by the researcher to obtain the opinions of law enforcement driver training experts regarding HS and LS. Also included is a review of the educational and psychological literature concerning the issues of fear, stress, and anxiety and their effect on psychomotor skill learning and performance. This review is followed by a discussion on the effect of having individuals present, i.e., an audience, during the learning and performing of a motor skill. The chapter concludes with a review of the major efforts in experimental psychology that address motor skill learning and learning theory.

of high speed. Criminal Justice Literature review, training  
 at hi A computer search on the topic "Police Driver Training" was performed by the National Criminal Justice Reference Service (NCJRS) of the National Institute of Justice of the U. S. Department of Justice. This computer search contained abstracts and bibliographic references to numerous reports, films, books, and articles which related in some way to the topic of police driver training. After an appropriate examination and review of the 121 references listed in the NCJRS search, a total of 28 articles were considered appropriate and germane to this study. In addition to obtaining a general understanding of the problem of high speed pursuit and an insight into police driver training in general, these articles were reviewed specifically to determine which driver training methodology, i.e., HS or LS, was being recommended by authors in criminal justice literature and other authorities in law enforcement.

This task was complicated by the criminal justice authors using several driver training terms to refer to different driver training concepts. These concepts were inherent in both HS and LS. This fact required that this literature be carefully analyzed to discern whether HS or LS was being advocated. For example, in some articles pursuit driver training would refer to LS and in others it would refer to HS. There was no consensus within the criminal justice literature for a definition



of high speed. For the purposes of this review, training at high speed was defined as training speeds in excess of 55 MPH. With this problem acknowledged, the following discussion reflects an analysis of the survey of the criminal justice periodical literature regarding HS and LS driver training. (McInenly, 1978, p. 14; Tweed, 1978). In nine of the articles (Barth, 1981; Chapin, 1978; Mandel, 1978; Mahurin, 1978; Korczynski, 1976; Mahurin, 1975; Byrne, 1974; Walters, 1971; Skelton, 1969) the authors did not clearly advocate either the HS or LS emergency/pursuit driver training methodology. In these articles it was readily apparent that pursuit driving and the lack of training was a major problem in law enforcement and that the authors strongly advocated some form of police driver training to help rectify the situation. Several of these articles cited evidence that driver training was effective in reducing accident rates. For example, Chapin (1978) stated: which offered direct evidence, empirical data,

that Only one department - the Georgia State Patrol - had ever put its field officers through an intensive high-speed pursuit driving school. The results, according to a Georgia patrol spokesman, were stunning. There was an immediate 30 per cent reduction in the number of accidents involving state troopers, and the school, held at Road Atlanta, a twisting road-racing course 50 miles northeast of Atlanta, saved the agency \$286,000 in insurance premiums alone. But this training was a one-shot affair four years ago and has not been repeated. (p. 41)

of these articles referred to HS. James (1983) described In thirteen of the articles (Miller, 1983; Beckman, 1983; Barron & Aurillo, 1981; Pacholak, 1980; McInenly, 1978; Tweed, 1978; Weisel, 1977; Peters, 1973;



McCleverty, 1970; Dougherty, 1966; Bachofner, 1966; Scheidt, 1964) the authors advocated HS. None of these articles mentioned LS and there was no attempt to compare or contrast the two methodologies. Several of these articles cited evidence that HS was effective in reducing accident rates (McInenly, 1978, p. 14; Tweed, 1978, p. 85; Weisel, 1977, p. 63; Peters, 1973, p. 64). In reporting the results of a recent study of police accidents in Tennessee, Miller (1983) states:

The analysis found that officers who received emergency/pursuit driver training were significantly less frequently involved in on-duty police motor vehicle accidents than officers who had not received this training. (p. 26)

Several of these articles contain descriptions of HS methodologies used by various police agencies in the P.E., United States and Canada. It should be noted that each of these articles cited the need for a high speed range to conduct HS. No articles or research studies were located which offered direct evidence, empirical data, that HS was an adequate method for training law enforcement officers to perform high speed driving. Therefore, this was an assumption of this study. Six of the selected criminal justice articles advocated LS. (James, 1980; Farmer, 1978; Turner, 1978; Allibee, 1976; Ayooob, 1974; Santa Clara city, 1973). Two of these articles referred to HS. James (1980) described the LS of NAPD in Lancaster, Texas. He referred to his experience on the high speed driving range of the



California Highway Patrol (an advocate and acknowledged leader in HS) in derogatory terms stating that his instructor negotiated all the turns incorrectly and he wondered "whether the California troopers really did have the best training available" (p. 86). Advocates of LS believe that driving involves 90% mental ability and 10% physical ability (Turner, 1978, p. 13) and that technique not speed should be emphasized (Allibee, 1976, p. 2). Turner states, "why we drive is far more important than how" (p. 13). Turner (1978) believes learning is impeded by high speeds. He indicated survival rather than learning is one's primary motivation when being trained at high speeds. He stated, "By slowing our training speeds down to an average of less than 30 M.P.H., education replaces fear in the driver" (p. 13). None of the LS articles compared or contrasted the two methodologies. Several of the articles did cite evidence that training in LS reduced police accident rates (Turner, 1978, p. 31; Farmer, 1978, p. 83). No articles or research studies were located which contained valid research evidence that LS was an appropriate method for training law enforcement officers to perform high speed driving. The issues of fear, stress, and anxiety are interesting ingredients of LS. While LS advocates stated that fear at high speeds was detrimental to learning, high stress/anxiety is an essential ingredient of LS.



James (1980) referred to it as "low-speed, stress training" (P. 86). Turner stated that "stress is created in the mind of the student" (p. 14) by the narrow course of driving. Learning and performing in the presence of an audience of peers was said to create stress for a trainee and foster competition. It was unclear whether this stress aids in performance and learning or whether it was merely a factor to be handled by the student. Though it was not specifically stated, one gets the impression that the low speed stress is supposed to be analogous to the acknowledged stress that is present in high speed driving.

The NCJRS computer search revealed several reports on pursuit driving, a limited number of textbooks on pursuit driving, and a few published courses of instruction for police driving training. The following presents a brief analysis of this material as it related to HS and LS.

Three definitive reports have been made on the issue of police high speed pursuit. Fennessy, 1970; Physicians for Automotive Safety (PAS), undated; and California Highway Patrol (CHP), 1983. Fennessy (1970) identified pursuit driving as a "subclass of the overall emergency vehicle operation activity" (p. 123) and advocated police officers receive basic training in emergency vehicle operation and specialized training in pursuit operations. Fennessy recommended the HS of the California Highway Patrol and the HS of the North Carolina State



Patrol (p. 118). The PAS study strongly opposed police pursuits and recommended training police in accordance with a national standard. It did not recommend either HS or LS. The CHP (1983) study was a study of pursuits in California and did not address the issue of police driver training. The study was conducted to obtain definitive data concerning the severity of the problem of police pursuits and accidents in California.

There were a limited number of books which addressed the subject of police high speed pursuit driving. The English book, Roadcraft, The Police Driving Manual (1960), stated that "efficiency in driving at speed is not easily acquired. It needs study throughout one's driving life" (p. 86). This book did not cover formal driver training or training speeds. In Jones (1967) Police Pursuit Driving, speeds up to 50 MPH are listed on various driving range configurations. It is possible that higher speeds were not referenced because of the author's intent that the book be a general guide to teaching police pursuit driving and most users of the text would not have access to high speed ranges. Major E. W. Jones was an employee of the North Carolina State Patrol and this organization is an advocate of HS. In his 1961 Safety In Police Pursuit Driving, Dougherty describes the HS Emergency Vehicle Operation Course (EVOC) of the California Highway Patrol. Clark's (1976) Emergency and High Speed Driving Techniques stated:



High speed driving, to be as safe as possible, requires practice. If the law enforcement officer has not been trained in high speed driving on a test track when he was receiving his police training, then he should practice on lonely stretches of road to learn "the feel" of a vehicle at high speeds. The vehicle should be driven at progressively higher speeds each practice session in 5 M.P.H. increments until the top speed of the vehicle is reached. Don't move on up to high speeds immediately. (pp. 115-116)

Police Pursuit Driving Handbook by Schultz (1979) stated:

Pursuit at speeds of 100-145 M.P.H. is not something for the novice officer. Anyone who has not driven at these speeds before and enters into a chase to apprehend a suspect is endangering not only his or her own life but possibly the lives of innocent citizens. High-speed driving requires practice. (p. 37)

In his book Schultz also advocated the use of the HS EVOC of the California Highway Patrol. In an earlier text,

Police Traffic Enforcement, Schultz (1975) indicated:

a traffic law enforcement agency must provide rigorous training for drivers who will be engaged in pursuit driving. It is essential that the new and inexperienced traffic law enforcement officers be given considerable training before he is permitted to do extensive pursuit work. (p. 47)

The Mental and Physical Aspects of Tactical Police Driving

by Turner & Headen (1976) was the textbook issued by NAPD

which is one of the main proponents of LS. Tactical

Police Driving by Turner (1982) is the textbook currently

issued by NAPD during its LS. Both of these texts con-

tain valuable information regarding law enforcement

driving and both advocate LS.

justice literature in the last 25 years relating to



It was apparent that most of the books which address police pursuit driving advocate HS. It should be pointed out, however, that most of these texts were published prior to the advent of LS which evolved within the last ten years.

The programs of instruction for four driver training programs were reviewed for this study. However, descriptions of numerous other driver training programs were also reviewed in the numerous criminal justice articles cited earlier. The Pursuit Driving for Law Enforcement Officers of the U. S. Department of Transportation (1978) was an advanced training unit of the training program for the operation of emergency vehicles. This was an HS training program. The Defensive Pursuit Colorado State Patrol Advanced Driver Training Program of the Colorado State Patrol (undated) advocated training speeds from 30-65 MPH. Both of these two programs require high the speed driving ranges. Unfortunately, it was impossible to do Fernstrom & Ragsac's (1975) Hazardous Driving was Obstacle Course advocated LS. The rationale for the program was predicated on low cost, ease in setting up, and flexibility in presentation. Turner's NAPD, as discussed earlier (Turner & Headen, 1976) (Turner, 1982) was also a strong proponent of LS.

This review reflects a comprehensive analysis of the most relevant material published in the criminal justice literature in the last 25 years relating to evidence which supported the efficacy of either HS or LS.



police driver training. Only one article was located which reported on a research effort in police driver training. Farmer (1978) reported on a project conducted in October, 1969, by a Sheriff's Department in Michigan in conjunction with the General Motors Proving Grounds Traffic Safety Department. Farmer indicated: who are

The Oakland County Sheriff's Department selected 60 officers with similar backgrounds and experience and split them into two groups. The Control Group received no training. The other group received an eight hour course GM had developed from their research. (p. 77)

A follow-up of the two groups in October, 1972, indicated the trained group had had 5 accidents and the control group had had ten accidents. Further evaluation of the two groups was terminated due to deterioration of both groups through promotions, transfers, and employee turnover. The 8 hour training program used by General Motors used LS and the results reported indicated a reduction in the number of accidents. Unfortunately, it was impossible to determine from the information presented if this was a methodologically sound research study. The fact that only one published reference to a research effort in law enforcement driver training was located indicated this to be an area in which valid and reliable research efforts were needed.

The advocates of HS strongly believe their methodology is the proper way to train police officers. They are highly critical of LS because it never exposes the evidence which supported the efficacy of either HS or LS.



A large amount of the criminal justice material was subjective and highly opinionated. Because of the absence of published research evidence, the researcher believed it appropriate to personally contact a limited sample of driver training experts who are supporters of HS and driver training experts who are proponents of LS to obtain their views regarding police driver training. Accordingly, the individuals listed in Table 1 were contacted by telephone and interviewed on approximately the dates indicated.

Name	Approximate Date	Training Preference
Dr. William Scott	3/19/84	HS
Pres. Bill Scott Racing, Inc.		
George Graves	3/20/84	HS
Captain Jerry Smith	3/15/84	HS
Sergeant Douglas Orr	3/15/84	HS
Sergeant Larry Jowdy	4/11/84	HS

Additional individuals were contacted but interviews with them did not offer any substantive contributions to the issue of whether LS was satisfactory in preparing officers to drive at high speeds. In lieu of a detailed report of the contents of each interview, the following is a general synopsis of the twelve interviews. It should be noted that the individuals contacted are merely representatives of the two methods regarding proper police driver training and in no way should they be viewed as the only experts in driver training. Additional individuals with similar credentials could have been contacted. However, it was believed they would merely reiterate and confirm what had been obtained from the driver training experts contacted.

The advocates of HS strongly believe their methodology is the proper way to train police officers. They are highly critical of LS because it never exposes the

Table 1 continued Table 1

## Driver Training Experts Interviewed

Name	Approximate Interview Date	Driver Training Methodology Preference
David Cerqua Instructor - National Academy for Professional Driving Dallas, Texas	7/16/84	LS**
Brian Traynor Highway Safety Specialist National Highway Traffic Safety Administration	2/16/84	HS*
Dr. William Scott President Bill Scott Racing, Inc.	3/19/84	HS
George Graves Branch Chief Driver Specialities Federal Law Enforcement Training Center * High Speed	3/20/84	HS
Captain Jerry Smith Chief Anti-Terrorism Branch Office of Special Investigation United States Air Force	3/15/84	HS
Captain William Carlson Commander Highway Patrol Academy California Highway Patrol	3/15/84	HS
Sergeant Douglas Orr Sergeant In Charge Emergency Vehicle Operations Course California Highway Patrol	3/15/84	HS
Sergeant Larry Jowdy Deputy Traffic Services Detail Los Angeles Sheriff's Department	4/11/84	HS



## Table 1 continued

David Cerqua 7/16/84 LS\*\*  
 Instructor - National Academy  
 for Professional Driving  
 Dallas, Texas

R. A. (Doc) Whitworth 4/10/84 LS  
 Manager Traffic Safety  
 Department  
 General Motors Proving Grounds

Dr. Robert Ulrich 4/18/84 LS  
 Chairman Safety Department  
 Central Missouri State  
 University

Dr. Russell Arend 4/11/84 LS  
 Director Institute of Police  
 Traffic Management  
 University of North Florida

Richard Turner 6/29/84 LS  
 Chairman - National Academy  
 for Professional Driving  
 Dallas, Texas

\* High Speed

\*\* Low Speed

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physics, are the same at low speed as they are at high speed. The only variable is the severity of the energies being encountered and the fact that the reactions and perceptions of the drivers could be different at high speeds. The advocates of LS strongly believe their methodology is the proper way to train police officers. They indicated their method can be made easily available to the average police agency and that it properly prepares officers to perform all the police driving tasks including high speed driving. It should be noted that most LS

officer to high speed driving. They believe it is essential that an officer be exposed to proper driving techniques at low speeds with a gradual increase in the training speed until the student actually drives at high speed. HS advocates fear that students could freeze at their first exposure to a high speed chase and that the first high speed exposure should occur in a safe training setting. HS advocates do not believe the stress encountered by students in LS is analogous to the stress felt by students driving at high speeds. They indicated that LS stress was a false or artificial stress. Most HS advocates favor the conduct of high-speed police chases and believe police officers should be safe but aggressive drivers and be comfortable or confident when driving at high speeds. HS proponents acknowledge that the vehicle dynamics, the laws of physics, are the same at low speed as they are at high speed. The only variable is the severity of the energies being encountered and the fact that the reactions and perceptions of the drivers could be different at high speeds.

The advocates of LS strongly believe their methodology is the proper way to train police officers. They indicated their method can be made easily available to the average police agency and that it properly prepares officers to perform all the police driving tasks including high speed driving. It should be noted that most LS



advocates do not favor high speed police chases due to the inherent risk to the officer and the public. They want to produce drivers who are uncomfortable when driving at high speeds. They do not want aggressive drivers and prefer to train drivers who will be cautious and more safety prone. They firmly believe the techniques of proper driving can be learned at low training speeds and that officers can make the transition and apply these techniques at high speeds. Stress is an important component to LS driver training experts. They believe the stress of competition and peer pressure coupled with the stress of the narrow driving ranges of LS is analogous to the stress felt by students in HS training programs.

In summary, LS proponents firmly believe that more and/or better learning takes place during training at low speeds (Griffith & Rogers, 1976) was located that was remotely related to this study. In this experiment the researchers

Both HS and LS driver training experts indicated that they had conducted extensive experimentation and research in driver training. They stated they had not published the results of their research efforts and that to their knowledge no one had published any results of research in driver training techniques. They indicated that their respective driver training programs are constantly being studied and reviewed and changes are implemented when their research indicates the change would be a program improvement. Each of the driver training experts interviewed said they were not aware of any driver training



research having been conducted which was similar to the comparative research of this study and they indicated that they would be very interested in the results of this study. Computer searches of dissertation abstracts, educational literature, and psychological literature were conducted to obtain and review relevant literature on: police driver training; research in driver education; the effect of fear, stress and anxiety on motor skill learning; the issue of having an audience (peer group) present during motor skill learning; and learning theory and psychomotor skill learning. The following provides a review of this literature.

#### Driver Education

Only one study involving research in driver education of learning and that the pressure of a student's peer group serves as a stressor. Accordingly, this section related to this study. In this experiment the researchers explored what research has shown regarding the variables studied the effects of fear arousing components of a high school driver education program on students' safety skill learning.

attitudes and driving performance on simulators. The fear variable was introduced and controlled by exposing students to films and essays of varying degrees of stress, fear, and anxiety as they relate to motor skill learning. When arousal levels are high, an individual might experience an unpleasant emotional reaction which is called stress (Landers, 1980, p. 77). The results indicated increments in the fear variable greatly reduced students' error rates in the driving simulators. Significant research has been conducted within the last 25 years dealing with arousal and motor skill learning.



Ryan (1979) Fear, Stress, and Anxiety Related stressor, demonstrated that to Motor Skill Learning red performance of a No research studies were located that directly related to fear, stress, and/or anxiety and police driver training. If one considers the driving of a vehicle as an example of human motor behavior then the experimentation done by educators and psychologists on motor skill learning and performance and their relationship to stress, fear, and anxiety is relevant to this study. Both the HS and LS consider stress an important component of their training programs. The why and how of stress has not been clearly identified, addressed, and published by any police driver trainer. One advocate of LS (Turner 1978) clearly states that fear at high speeds is an inhibitor of learning and that the pressure of a students's peer group serves as a stressor. Accordingly, this section explores what research has shown regarding the variables of stress, fear, and anxiety as they relate to motor skill learning. (1969) studied the differential effects of educational and psychological scientific literature, the terms stress, anxiety, fear, and arousal, are used interchangeably. When arousal levels are high, an individual might experience an unpleasant emotional reaction which is called stress (Landers, 1980, p. 77). Significant research has been conducted within the last 25 years dealing with arousal and motor skill learning. Marteniuk stated this might indicate that this group had

Ryan (1962), using electrical shock as a stressor, demonstrated that increased tension impaired performance of a difficult motor task but that the rate of learning was independent of the state of tension. Carron (1968), also using electrical shock as a stressor, studied the effect of the timing of stress on motor performance. His study showed that applying stress late during the learning of a motor task had a significant detrimental effect on the performance of both high and low anxious learners. The anxiety state of these learners had been established by using the Taylor Manifest Anxiety Scale (MAS). His study showed that upon the removal of shock, both high and low anxious learner's performance significantly improved. The Carron & Morford (1968) study on the effect of anxiety and stress on motor learning, using electrical shock as a stressor, demonstrated that the shock had no effect upon the amount learned.

Marteniuk (1969) studied the differential effects of electrical shock arousal on motor performance. This study focused on the effect of shock, i.e., stress, being task related and not being task related. The results indicated that the task related stress group performed better than the non-task related stress group. In the after stress component of the study, the shock group which was task related performed better and Marteniuk stated this might indicate that this group had



actually learned more rather than have just improved performance. He indicated this was an issue for future research. that anxiety is a multidimensional phenomenon that we should use multimethod procedures to examine it. (p. 88)

Marteniuk & Wenger (1970) conducted a study similar to Marteniuk (1969) and demonstrated that there were significant improvements in learning 24 hours after the college students as subjects and utilized standard motor stress sessions by both the stress related group and the tasks used in experimental psychology. There is at stress unrelated group as compared to a control group. best a tangential relationship between these simple

However, there was no significant difference between the motor tasks and the complex task of driving an automobile performance of the two stress groups. Martens and at high speeds.

Landers (1969) found no difference between the level of anxiety of subjects once a motor task was learned. They also found that competition and failure did not affect performance of subjects. located that studied the effect

of Goldstein & Dorfman (1978) studied the effect of speed and load stress as determinates of performance in a motor task. This study demonstrated that both increased load stress and increased speed stress have a significant negative impact on performance. Popkin, Stillner & Pierce (1981) concluded that extensive prolonged competitive stress could cause an organic mental disorder. preferably in an isolated vehicle, and to arrange other students, on stage, and in the presence of

The effects of fear and stress on students during the learning and performance of complex motor skills are far from clear. Some studies indicated these variables facilitated performance while others indicated they had a detrimental effect upon performance. As Landers (1980) stated in the conclusion to his review of the research



work related to arousal and motor performance:

The evidence presented supports the conclusion that anxiety is a multidimensional phenomenon and that we should use multimethod procedures to examine it. (p. 88)

It should be noted that all of the studies cited above were experimental research efforts which used increased anxiety. His results, however, were inconclusive regarding learning and performance. From the tasks used in experimental psychology. There is at best a tangential relationship between these simple motor tasks and the complex task of driving an automobile at high speeds.

#### Presence of Audience Related to

#### Learning Theory and Motor Skill Learning

Schmidt (1982), in discussing the current status of learning theory and motor skill learning in Chapters 12 and 13, wrote:

Three articles were located that studied the effect of having an audience (peer group) present during the learning and performance of a motor skill. Zajonc (1965) reviewed all of the evidence to that date on this subject and concluded that the presence of others was a source of arousal (stress) and that from the perspective of learning:

he would advise the student to study all alone, preferably in an isolated cubicle, and to arrange to take his examinations in the company of many other students, on stage, and in the presence of large audience. (p. 274)

psychologists extensively tested the behaviorist S-R drive theory of learning of Hull (1943). It was Hull's S-R general behavioral models that provided guidelines for those interested in motor skill learning. Unfortunately, this theory proved to be an inadequate explanation of motor skill learning.



Martens (1969a, 1969b) documented the presence of an audience during the learning and performance of a complex motor skill does cause an increase in anxiety (arousal). This was shown by recording an increase in Palmar sweating which is an accepted indicator of increased anxiety. His results, however, were inconclusive regarding learning and performance. From the results shown one would conclude that a person should learn a motor skill alone but be required to demonstrate his proficiency in the motor skill in the presence of others.

#### Learning Theory and Motor Skill Learning

Schmidt (1982), in discussing the current status of learning theory and motor skill learning in Chapters 12 and 13, wrote:

You will also realize that, unfortunately, no theory yet proposed is capable of explaining the kinds of learning phenomena and principles that I have presented in Chapters 12 and 13. (p. 587)

Unfortunately, this sentence succinctly states the current status of learning theory and motor skill learning.

During the late 1940's and early 1950's, experimental psychologists extensively tested the behaviorist S-R drive theory of learning of Hull (1943). It was Hull's S-R general behavioral models that provided guidelines for those interested in motor skill learning. Unfortunately, this theory proved to be an inadequate explanation of motor skill learning.



The next significant motor learning theory was termed a closed-loop theory of motor learning by J. A. Adams (1971). In an introduction to his theory, Adams wrote:

The research on skills today is as many-sided as the definition of skills, about as McGeoch found it fifty years ago, with research being done on such diverse topics as sports, music, the factory, and military jobs. In their totality these fields can embrace a full span of human performance from lifting a finger to flying an airplane or delivering a speech. In experimental psychology, topics like conditioning, for example, started out with a well-defined subject matter and paradigm, and pursued a systematic search for variables, laws and theory. Research on skills, by contrast, has studied anything that looks skillful to the common-sense eye. If the study of verbal behavior had gone the same way, we would have journals filled with studies on how to learn and remember novels, billboards and theatre marquees. Compared to the study of skills, the history of verbal behavior and conditioning over the same period is a scientific story to be envied. (p. 112)

Adams called for more basic research efforts that focused on common elements and mechanisms in what was generally considered to be skilled behavior. He wrote:

The villain that has robbed "skills" of its precision is applied research that investigates an activity to solve a particular problem, like kicking a football, flying an airplane, or operating a lathe. This accusation sounds more damaging than intended, because applied research is necessary when basic science lacks the answers. Nevertheless, the overall outcome of applied research is a collection of answers on specific problems, practically important to someone at a particular moment, but not the steady building of scientific knowledge that can some day have power to answer all the problems. Instead of starting with ideas about the laws and theory of movements and then finding the best situations in which to test them,



than investigators of skills have often started with tasks that look skillful and, by studying them, hope to arrive at laws and theory. This approach is backwards for scientific productivity because it results in disconnected pockets of data that lack the unifying ideas that are general scientific principles. The task-centered approach is justified when practical reasons require us to know about tasks and efficiency in them, but it is a limited way of achieving the larger scientific goals of laws and theory. (p. 112-113)

Adams' theory posited two mechanisms for motor skill acquisition. He developed the concept of open and closed loop aspects of motor skill learning. An open loop skill has no feedback for error correction until the task is terminated. The required movements of such a task are so rapid that corrective feedback cannot be processed. A golfer hitting a golf ball is an example of an open loop skill. A closed loop skill has feedback, and error detection and correction. The requirements of such a task are predictable and the task is usually self-paced. Using a lathe is an example of a closed loop skill.

Because of certain limitations and shortcomings of Adams' theory, Schmidt (1975) offered his schema theory of discrete motor skill learning. Schmidt's schema theory was formulated because of his dissatisfaction with Adams' position (Schmidt, 1982, p. 592). Schmidt's theory indicated we learn skills by learning rules (schema) about the functioning of our bodies. Schema theory is currently an alternative to Adams' closed loop theory and has the advantage that it accounts for more kinds of movements



than Adams' theory. In summarizing the two theories

Schmidt (1982) wrote:

Adams' theory holds that the learner acquires a reference correctness (called the perceptual trace) through practice and that the improvements in motor responding result from the increased capability of the performer to use the reference in closed loop control. Schema theory, on the other hand, is based largely on the idea that slow movements are feedback based, with rapid movements being program-based; with learning, the subject develops rules (or schemas) that allow for the generalization of parameters to produce novel responses. Both theories can claim a number of lines of experimental support, but neither of them is capable of explaining all of the available evidence on motor learning. (p. 602)

Though learning theory and motor skill learning is not in its infancy it can be stated it is in its early stages of development. As Singer (1972) stated when discussing the status of motor skill learning theory:

Regardless of theoretical position, however, there is still a long way to go before scholars stop discussing theories and instead, make a major impact on instructional methods used in the school systems, industry, the military, and recreational programs. (p. 432)

### Conclusion

The issue of proper driver training for law enforcement officers has been extensively discussed in the criminal justice literature. There are two distinct methods of driver training being advocated. There has been no published research evidence regarding the effectiveness of either method. A review of current research evidence indicated it is unclear what effect stress,



anxiety, and fear have upon psychomotor skill learning. Research evidence produced by experimental psychologists indicated that the presence of an audience had a negative impact during the learning of a motor skill but had a positive effect during the performance of a motor skill.

The development of learning theory is a highly complex endeavor. Unfortunately, each of the three major theories of motor skill learning has proven inadequate. Each theory has served as a catalyst for extensive research efforts which have furthered the knowledge in motor skill learning. This experimental study investigated the effectiveness of LS when compared to HS in preparing students to perform high speed driving. This chapter describes the research design and methodology utilized in the study and includes the following sections: (a) Population and Sample, (b) Experimental Design, (c) Procedures, (d) Data Analysis, and (e) Summary.

It was apparent there was a need for methodologically sound research efforts in the area of police driver training. The comparative experiment conducted by this study was an initial endeavor in an area which is clearly in need of additional training research effort.

The target population for this study was the Federal law enforcement officers who receive basic law enforcement training at FLETC. It was not possible to obtain a random sample from the target population because of the operational procedures of FLETC.

Approval was obtained to use an intact group of 40 students who received basic law enforcement training in the Eight Week Police Training Program in FLETC class number 8 PT-406 as the sample for this study. See Appendix A for documentation of the approval process. This class was selected because of the time it received basic training (7/30/84 - 9/30/84) and because it was composed of students from only two Federal agencies.

Table 2 presents demographic data of the sample and the population. The data in Table 2 demonstrates the representativeness of the sample to the population.

Because this study did not use a random sample from the population the

target population. None of the subjects in the sample had previously attended FLETC.

This experimental study investigated the effectiveness of LS when compared to HS in preparing students to perform high speed driving. This chapter describes the research design and methodology utilized in the study and includes the following sections: (a) Population and Sample, (b) Experimental Design, (c) Procedures, (d) Data Analysis, and (e) Summary.

Population and Sample

The target population for this study was the Federal law enforcement officers who receive basic law enforcement training at FLETC. It was not possible to obtain a random sample from the target population because of the operational procedures of FLETC. This study had two

Approval was obtained to use an intact group of 48 students who received basic law enforcement training in the Eight Week Police Training Program in FLETC class number 8 PT-406 as the sample for this study. See Appendix A for documentation of the approval process. This class was selected because of the time it received basic training (7/30/84 - 9/30/84) and because it was composed of students from only two Federal agencies.



Table 2 presents demographic data of the sample and the population. The data in Table 2 demonstrates the representativeness of the sample to the population.

Because this study did not use a random sample from the population the results cannot be generalized to the target population. None of the subjects in the sample had previously attended FLETC.

Sample size is an important consideration in any research study. There are statistical techniques which can be utilized to estimate required sample sizes for experimental studies. These techniques involve the use of algebraic equations which require statistical information about the population. The required statistical information, the means and measures of variance, were not known for the target population of this study and therefore these techniques could not be utilized in this study.

According to Tabachnick & Fidell (1983), when running a multivariate analysis it is important to have more cases than dependent variables (p. 231). This study had two dependent variables and therefore a sample size of 48 satisfied this requirement. Tabachnick & Fidell also

state: Total number of students to receive training in either state: Five Week, Eight Week, or Nine Week Basic Training Programs at FLETC from 10/01/83 - 8/10/84.

Given a large enough sample, rejection of  $H_0$  becomes virtually certain . . . . Therefore with given levels of Type I and Type II error, the sample size chosen should be adequate but not excessive. (p. 28)

Gay 1976 states that for: Table 2

### Demographic Data for Sample and Population

---

Category	Sample Percent N=48	Population <sup>a</sup> Percent N=637
<hr/>		
Marital Status		
Yes	29	45
No	71	55
Sex		
Male	90	88
Female	10	12
Race		
American Indian	0	1
Asian	0	1
Black	10	12
Hispanic	0	2
White	90	84
Educational Degree		
G E D	0	3
High School	37	35
Associate	21	14
Bachelor	42	44
Master	0	4
Law Enforcement Experience		
Yes	15	44
No	85	56
Average Age	25 years	30 years

---

<sup>a</sup>Total number of students to receive training in either the Five Week, Eight Week, or Nine Week Basic Training Programs at FLETC from 10/01/83 - 8/10/84.

---

In their discussion of this design, Campbell and Stanley indicate that the control group can be regarded as one of the treatments. The Procedures section of this chapter and Appendices B and C provide further elaboration on



Gay 1976 states that for: experimental studies a minimum of 15 subjects per group will give some degree of confidence that conclusions reached concerning differences between groups are valid ones. (p. 77)

Winkler and Hayes (1975) indicate that "When the sample size is very large, there is a real danger of detecting

trivial associations as significant results" (p. 445).

Based on Gay, Tabachnick & Fidell, and Winkler & Hayes, it was concluded that a sample size of 48 was an appropriate size for this experimental study.

testing and treatment (Campbell and Stanley, p. 8). The

external threat to Experimental Design

This experimental study used the posttest-only control group design (Campbell & Stanley, 1966). This design was selected because it controlled all of the eight different classes of extraneous variables identified by Campbell and Stanley which could jeopardize the internal validity of the experiment. The following is a graphic presentation of this experimental design:

the study in Chapter I. The subject 01 comprising the

sample were aware that there was a condition from the

In this presentation R stands for random assignment, X

is the LS treatment received by the experimental group

and Y is the HS treatment received by the control group.

In their discussion of this design, Campbell and Stanley

indicate that the control group can be regarded as one

of the treatments. The Procedures section of this chapter

and Appendices B and C provide further elaboration on



these two treatments. The 01 is the post treatment measurement of the experimental group and 02 is the post treatment measurement of the control group. This graphic design conforms to the design used by Campbell and Stanley 1966 (p. 25).

In addition to controlling all of the eight internal threats to the validity of this experiment, this design controlled one of the four external threats to the validity of the experiment, i.e., interaction of pre-testing and treatment (Campbell and Stanley, p. 8). The external threat to validity, multiple-treatment interference, was not relevant to this study. Both of the remaining threats to external validity, interaction-effects of selection biases and treatment, and relative group "is the all-purpose procedure for achieving pre-effects of experimental procedures, were not controlled by the posttest-only control group design.

The reactive effects of experimental procedures was a concern of this study and was listed as a limitation of using the following procedure. The names of the 48 the study in Chapter I. The subjects comprising the sample were aware that there was a deviation from the number ranging in order of 01 to 48. A table of random standard operating procedures in the FLETC driver training numbers (Borg & Gall, 1983, pp. 905-907) was used for this particular class. Every attempt was made to assign students to either the experimental or control control for this effect. This was done by communicating group. Starting with an arbitrary point in the table to the subjects that the Drivers Specialties Branch was of random numbers, using only the last two digits of the continually conducting experiments in its training area numbers in the table and moving from top to bottom and in order to ensure it was presenting the most cost then to the next column to the right, the first usable effective and latest in the state of the art in driver two digit number (between 01 and 48) was assigned to the



training. This was done in a low key manner. Additionally, during the actual conduct of training there were no obvious special arrangements or observers which would signal the participants that they were special and were receiving special attention.

The interaction-effects of selection biases and treatment was not a concern of this study. Because an intact group was used in this study it is inappropriate to generalize the results to the population. However, it is believed that the sample is representative of the population and that this is demonstrated in Table 2.

of 24 hours of driver training comprised of 8 hours

#### Procedures

of lectures and 16 hours of practical exercises. During

Random assignment to the experimental and control group "is the all-purpose procedure for achieving pre-treatment equality of groups" (Campbell and Stanley, p. 6). Random assignment of the subjects to the

highway response (high speed) range. The maximum speed attained by students on the high speed range was approximately 75 MPH. During practical exercises, when

subjects were alphabetized and assigned a two digit number ranging in order of 01 to 48. A table of random numbers (Borg & Gall, 1983, pp. 905-907) was used to

assign students to either the experimental or control group. Starting with an arbitrary point in the table of random numbers, using only the last two digits of the

numbers in the table and moving from top to bottom and then to the next column to the right, the first usable two digit number (between 01 and 48) was assigned to the

experimental group was trained in law enforcement driver training using the standard 24 hour driver

experimental group. The next usable two digit number was assigned to the control group. This procedure was continued until all students in the sample were randomly assigned to either the experimental or control group.

The equipment, facilities, supplies, and instructors of FLETC, located at Glynco, Georgia, were utilized for this study. The control group was trained in law enforcement driver training using the standard driver training HS program of the Driver Specialties Branch of FLETC. This training program consisted of a total of 24 hours of driver training comprised of 8 hours of lectures and 16 hours of practical exercises. During the practical exercise portion of the HS training, the students time was evenly divided between driving on a defensive driving range, a skid pan range, and a highway response (high speed) range. The maximum speed attained by students on the high speed range was approximately 75 MPH. During practical exercises, when students in the control group were not actually driving they were observing the driving of fellow students or were being critiqued by instructors. See Appendix B for a more detailed description of the HS used in this study. The experimental group was trained in law enforcement driver training using the standard 24 hour driver training program. During the practical exercise portion of the driver



training program (LS) of the NAPD. This program consisted of 8 hours of lectures and 16 hours of practical exercises. These students received NAPD student handout material. NAPD lesson plans, instructional media, and track equipment were utilized to teach this group. During the practical exercise portion of their LS training, the students' time was divided between driving on the following five low speed driving ranges: (a) narrow road, (b) braking/lollipop, (c) perception/reaction, (d) backing course, and (e) widened road. The maximum speed attained by students on the widened road range was approximately 35 MPH. During practical exercises, when students in the experimental group were not actually driving, they were observing their fellow drivers or were being critiqued by their instructors. See Appendix C for a more detailed description of the LS used in this study. Both the experimental and control groups utilized the same vehicles during their training. The pertinent lecture portions of HS and LS were delivered by the lead instructor of the FLETC Driver Specialties Branch. This lead instructor coordinated the practical exercise instruction of both groups. The lead instructor had attended a two week NAPD instructor training program and was certified by NAPD as a fully qualified LS instructor. The same team of FLETC driver training instructors conducted the practical exercise portion of the driver

training instruction of both groups. This procedure attempted to ensure that any group performance differences could not be attributed to the quality or abilities of the instructors of the two groups, i.e., the instructors were the same for both groups.

Upon the successful completion of their respective driver training programs, the students in both the control and experimental groups were required to perform high speed driving by negotiating a high speed range on which they had had limited exposure. This was the post treatment measurement of the control and experimental groups and was accomplished in the following manner.

On the last day of their respective training programs the students in the experimental and control groups were driven, at low speed (30 MPH), around the 1.5 mile high speed Range Number Eight at FLETC. Appendix D shows the configuration of this range. This was done to give the students a limited exposure to the layout of the range and was done for student safety considerations. The next morning, after all students had successfully completed their respective driver training programs, they were instructed to negotiate Range Eight to the best of their ability using high speeds. Specifically they were instructed to negotiate this range as fast as they could using the knowledge and techniques they had learned in their respective driver training classes. They were told that their times and



the number of incidents of improper driving would be recorded. Students were required to negotiate Range Eight twice. Each student made one run in each direction, i.e., clockwise and counter-clockwise. The combined performances for these two runs constituted a student's performance for post treatment measurement purposes.

Each student's driving time in each direction was measured using a standard stopwatch and these times were recorded. In addition to recording the students' driving times, the incidence of improper driving techniques were observed and recorded by a team of six FLETC driving instructors and one Georgia State Patrol driver-training instructor. The eight types of improper driving techniques which were recorded were: (a) losing control of vehicle, (b) leaving the roadway, (c) locking brakes, (d) improper steering, (e) improper acceleration, (f) improper skid control, (g) improper line of travel, and (h) improper braking. Each member of this team was assigned to a separate turn on Range Eight. The students were randomly assigned driving order numbers 1 through 48 and the team of instructors were instructed to observe each numbered driver for improper driving techniques.

This study was designed to compare the effectiveness of two driver training methodologies in preparing law enforcement officers to perform high speed driving. This procedure kept each member of the team of instructors from knowing whether the student being observed had been trained using HS or LS.

*An intact group sample* Data Analysis and approval from their The independent variable for this study was the two driver training methodologies HS and LS. The two dependent variables were (a) the total elapsed time to required to negotiate the high speed range in both directions and (b) the total number of observed incidents of improper driving techniques. Appropriate descriptive statistics for the two dependent variables were calculated for each run on the high speed range and overall performance for the experimental and control groups. as to amount of elapsed time required to negotiate According to Huck (1974) the most appropriate multivariate analysis statistic for this type of experiment, i.e., two groups, one independent variable, and two dependent variables, is Hotelling's  $T^2$  (p. 179). and The Georgia State University computer center and the data processing statistical package of the University of California were utilized to accomplish this analysis and calculate Hotelling's  $T^2$  in order to test the null hypotheses ( $p < .05$ ).

### Summary

This study was designed to compare the effectiveness of two driver training methodologies in preparing law enforcement officers to perform high speed driving. The target population for this study was the recruits who receive basic law enforcement training at FLETC.



An intact group sample was identified and approval from their Federal employers was obtained for their participation in this study.

Random numbers were used to assign participants to either an experimental group which was taught driver training using LS or to a control group which was taught driver training using HS. After completion of training, all participants were required to negotiate a high speed driving range to compare the high speed driving effectiveness of each group. Each subject's performance was measured as to amount of elapsed time required to negotiate the range and the number of observed incidents of improper driving techniques. The results of this study and a discussion of the statistical data analysis are reported in this chapter in the following sections: (a) Description of Sample, (b) Method, (c) Basic Data, (d) Dependent Variable - Elapsed Time, (e) Dependent Variable - Incidence of Improper Driving, (f) Restatement and Testing of Hypothesis, and (g) Summary.

variables of elapsed time and number of incidents of improper driving technique.

An intact group of 48 students in FLETC class number 8 PT-406 comprised the sample for this study. These students received basic law enforcement training at FLETC from July 30, 1984, through September 20, 1984. The average age of the students in the sample was 25.6 years, 92 percent were male and 92 percent were caucasian. All students were high school graduates, 29 percent had received associate degrees, and 50 percent

held bachelor degrees. None of the subjects in the sample had attended FLETC previously.

# Method

## CHAPTER IV

The sample was randomly divided into two groups, an ANALYSIS AND PRESENTATION OF DATA experimental group and a control group. Table 3 presents

The purpose of this study was to determine if LS was as effective as HS in preparing law enforcement officers to perform high speed driving when measured by the amount of time required to negotiate a high speed range and the incidence of improper driving techniques. The results of this study and a discussion of the statistical data analysis are reported in this chapter in the following sections: (a) Description of Sample, (b) Method, (c) Basic Data, (d) Dependent Variable - Elapsed Time, (e) Dependent Variable - Incidence of Improper Driving, (f) Restatement and Testing of Hypothesis, and (g) Summary.

Students were required to negotiate the range twice; each student made one run in each direction. The elapsed time

### Description of Sample

An intact group of 48 students in FLETC class of each student was recorded using a standard stopwatch number 8 PT-406 comprised the sample for this study. and their number of incidents of improper driving was These students received basic law enforcement training recorded by a team of driver training instructors. In at FLETC from July 30, 1984, through September 20, 1984. this chapter and Chapter V, for discussion purposes, the: The average age of the students in the sample was 25.6 experimental group will be referred to as the low speed trained group (LSC) and the control group will be referred to as the high speed trained group (HSC). caucasian. All students were high school graduates, 29 percent had received associate degrees, and 50 percent



held bachelor degrees. None of the subjects in the sample had attended FLETC previously.

### Method

The sample was randomly divided into two groups, an experimental group and a control group. Table 3 presents demographic data on the experimental and control groups. The data in Table 3 tends to substantiate the assumption of the pretreatment equality of the two groups which comes with random assignment. The experimental group was trained in driver training using the LS of the NAPD. The control group was trained in driver training using the HS of the Driver Specialties Branch of FLETC. The same team of instructors taught both groups. Upon the successful completion of their respective driver training programs the students in both groups were required to perform high speed driving by negotiating a high speed range on which they had not received any of their training.

Students were required to negotiate the range twice; each student made one run in each direction. The elapsed time of each student was recorded using a standard stopwatch and their number of incidents of improper driving was recorded by a team of driver training instructors. In this chapter and Chapter V, for discussion purposes, the experimental group will be referred to as the low speed trained group (LSG) and the control group will be referred to as the high speed trained group (HSG).

Table 3

Demographic Data for Experimental and Control Groups

Scattergrams are shown in Figures 1, 2, and 3, and

Category	Experimental		Control	
	Frequency	Percent	Frequency	Percent
Marital Status				
Yes	5	21	9	38
No	19	79	15	62
Sex				
Male	22	92	21	88
Female	2	8	3	12
Race				
Black	2	8	3	12
White	22	92	21	88
Educational Degree				
High School	5	21	13	54
Associate	7	29	3	12
Bachelor	12	50	8	33
Law Enforcement Experience				
Yes	5	21	2	8
No	19	79	22	92
Average Age	24.1 years		25.6 years	

<sup>a</sup> N= 24 for each group



### Basic Data

Scattergrams were produced to provide a visual presentation of the results of this study. These scattergrams are shown in Figures 1, 2, and 3, and indicate the performances of the subjects in the HSG and LSG on their counter-clockwise run (first run), clockwise run (second run) and their overall (total) performance in negotiating the high speed range. These scattergrams revealed the basic homogeneity in the performances of the HSG and LSG. Except for the performances of three subjects in the HSG and one subject in the LSG on the first run, and one subject in the HSG on the second run, there appeared to be little noticeable difference in the performances of the subjects in the two groups.

### Dependent Variable - Elapsed Time

The results of the study regarding the dependent variable, elapsed time, are shown in Tables 4, 5, and 6. These tables show the means, ranges, and standard deviations for the two groups (HSG and LSG) on their first run, second run, and overall performance in negotiating the high speed range.

An analysis of the results shown in Tables 4, 5, and 6 revealed little difference in the performances of the two groups with regard to the elapsed time variable. On the first run the average performance of the HSG was 2.7 seconds faster than the LSG and on the second run it

Figure 1

Scattergram Indicating Performance of Subjects in  
High Speed Trained Group and Low Speed Trained  
Group on First Run (Counter-Clockwise)  
on High Speed Range

(Down) Incidents of Improper Driving Techniques

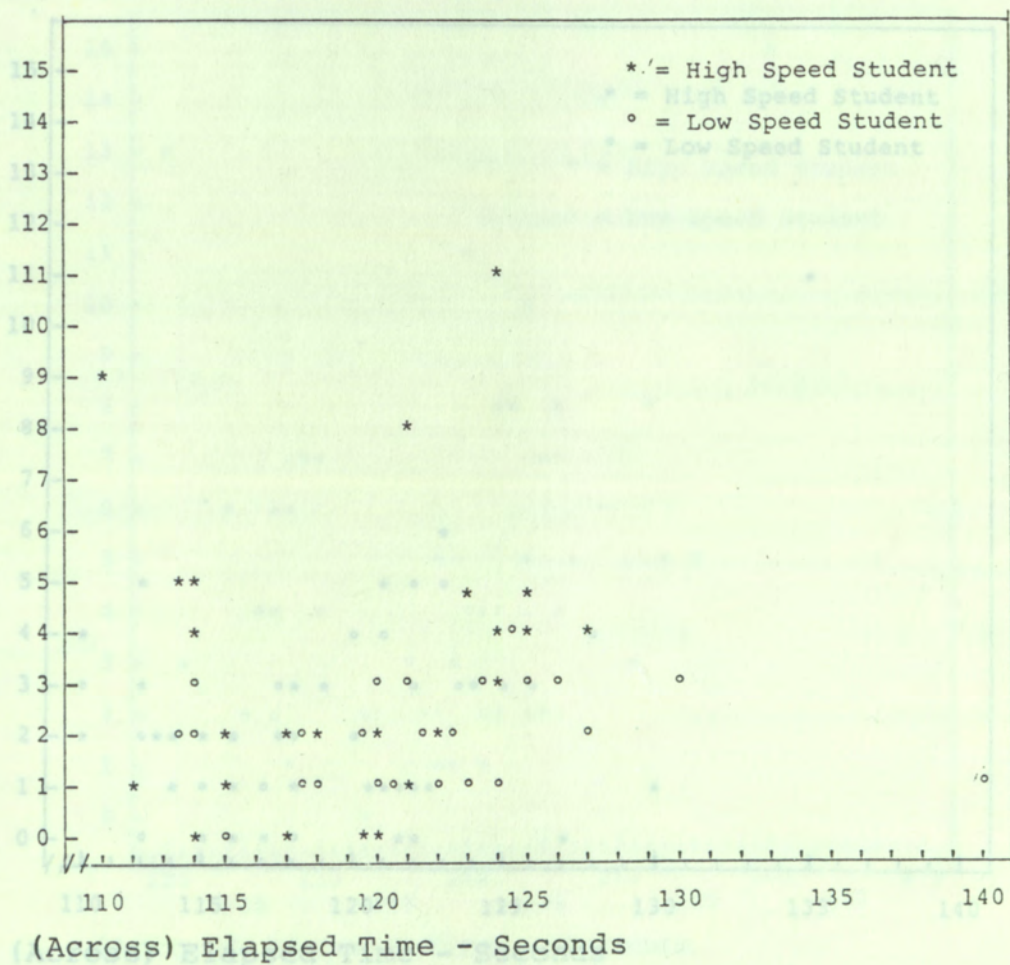




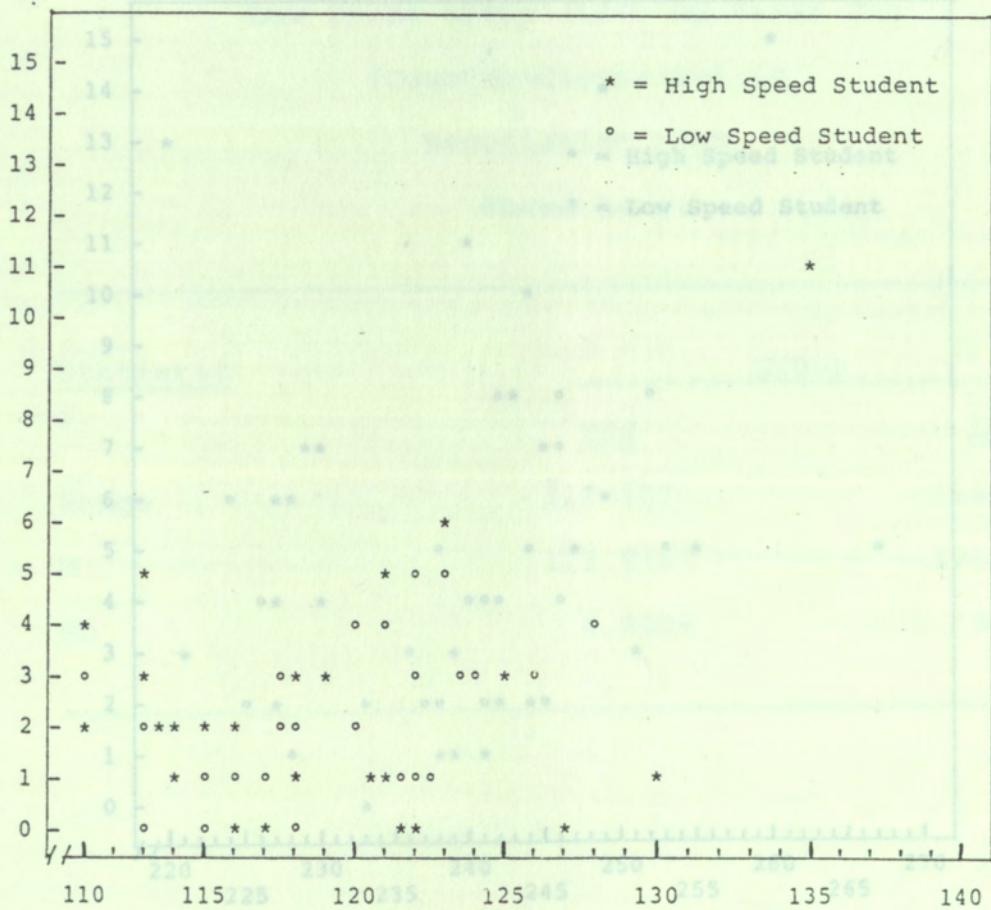
Figure 2

Scattergram Indicating Performance of Subjects in  
High Speed Trained Group and Low Speed Trained

Speed Trained Group on Second Run (Clockwise)

Speed Range on High Speed Range

(Down) Incidents of Improper Driving Techniques



(Across) Elapsed Time - Seconds





Table 5

Descriptive Statistics Table 4

Descriptive Statistics for Dependent Variable Elapsed

Time (Seconds) for High Speed Group (HSG) and

Low Speed Group (LSG) on First Run

(Counter-Clockwise) in

Negotiating High

Statistic	Speed Range	Group
Range	110-135	110-128
M	118.875	118.333
	<u>HSG</u>	<u>LSG</u>
SD	6.3198	4.8883
Range	110-127	113-139
M	118.9167	121.5833
SD	4.8626	5.7250

Table 5  
Descriptive Statistics for Dependent Variable Elapsed  
Time (Seconds) for High Speed Group (HSG) and  
Low Speed Group (LSG) on Second Run  
in (Clockwise) in Negotiating  
High Speed Range

Statistic	Group	
	HSG	LSG
Range	110-135	110-128
MD	118.875	119.333
SD	6.3198	4.4883



was .4 seconds faster. The measures of variability for both groups were also quite similar on the first and second runs and the overall performances.

Table 6  
Dependent Variable - Incidence of  
Descriptive Statistics for Dependent Variable Elapsed  
Time (Seconds) for High Speed Group (HSG) and  
Low Speed Group (LSG) Overall Performance  
in Negotiating High Speed Range

Statistic	Group	
	HSG	LSG
Range	220-260	224-267
M	237.7917	240.9167
SD	10.6239	9.7219

The HSG was instructed to negotiate turns of 90° or more in an "outside, inside, outside," line of travel and to take turns tighter than 90° in a "late and deep" line of travel. The LSG was instructed to negotiate all turns in a "late and deep" manner. The HS instructed students to brake only in the straightaways while the LS instructed students that it was permissible to do light braking into turns, e.g., trail braking. Because of these two deviations in driving techniques taught by HS and LS, the two improper driving techniques, improper line of travel and improper braking, were discounted for statistical hypothesis testing purposes. However, data for these two

was .4 seconds faster. The measures of variability for both groups were also quite similar on the first and second runs and the overall performances.

Dependent Variable - Incidence of Improper Driving Techniques

Originally there were eight types of improper driving techniques. These were: (a) losing control of the vehicle, (b) leaving the roadway, (c) locking brakes, (d) improper steering, (e) improper acceleration, (f) improper skid control, (g) improper line of travel, and (h) improper braking. During the conduct of the experiment it became evident that the two methodologies, HS and LS, taught different driving techniques regarding proper line of travel and proper braking technique.

The HSG was instructed to negotiate turns of 90° or more in an "outside, inside, outside," line of travel and to take turns tighter than 90° in a "late and deep" line of travel. The LSG was instructed to negotiate all turns in a "late and deep" manner. The HS instructed students to brake only in the straightaways while the LS instructed students that it was permissible to do light braking into turns, e.g., trail braking. Because of these two deviations in driving techniques taught by HS and LS, the two improper driving techniques, improper line of travel and improper braking, were discounted for statistical

hypothesis testing purposes. However, data for these two driving techniques, improper line of travel, revealed were



techniques were recorded and are reported and discussed in this section.

Tables 7, 8, and 9 indicate the means, standard deviations, and ranges of the HSG and LSG on their first run, second run, and overall performance in negotiating the high speed range regarding the dependent variable, incidence of improper driving techniques.

Tables 10, 11, and 12 indicate the total number and type of improper driving techniques for the HSG and LSG on their first run, second run, and overall performance on negotiating the high speed range. These tables show the two previously noted techniques of improper driving, improper line of travel and improper braking, being subtotaled from the other six techniques.

An analysis of the data contained in these tables revealed that a significant difference did exist between HSG and LSG on their first run performance regarding the dependent variable, incidence of improper driving technique. The HSG had a total of 80 incidents compared to 47 for the LSG on their first run. However, on the second run this difference virtually disappeared with the HSG having 58 incidents and the LSG having 54 incidents. When considering the overall performance of the two groups on this dependent variable, the HSG had 138 total incidents compared to 101 for the LSG.

An analysis of the results obtained for the improper driving technique, improper line of travel, revealed some

interesting facts. As previously discussed, the HSG and LSG were taught different driving techniques regarding proper line of travel. The team of driver training instructors were HS instructors and had been instructed to evaluate the performance of each student driver from the perspective of HS. Therefore the 199 incidents of improper line of travel (See Table 12) for the HSG was an accurate recording of this improper driving technique for HSG. This indicated there was an average of 8.3 incidents of improper line of travel for each subject in the HSG.

The 236 incidents of improper line of travel for the LSG (See Table 12) was not accurate. The LSG had been taught that all turns should be negotiated in a late and deep line of travel. It should be noted that 15 of the total 18 turns on the high speed range should have been negotiated as late and deep turns by both the HSG and the LSG. Only 3 turns were configured in a manner consisting of 90° or more, all of the remaining 15 turns should have been driven in a late and deep manner by both groups. In other words, according to HS, only 3 turns should have been driven in an outside-inside-outside line of travel. Therefore it was assumed that a significant number of the 236 incidents of improper line of travel for the LSG were accurate observations of this improper driving technique for the LSG.

A survey of the FLETC Driver Specialties Branch Chief, Acting Assistant Branch Chief, and six Driver



Table 7

Descriptive Statistics for Dependent Variable Incidents  
 of Improper Driving Technique for High Speed  
 Group (HSG) and Low Speed Group (LSG)  
 on First Run (Counter-Clockwise) in  
 Negotiating High Speed Range

Speed Range			
Statistic	Group		
	HSG	Group	LSG
Range	0-11		0-4
M	3.33		1.95
SD	2.9167		2.99
SD	2.5007		1.5108

Table 8  
Descriptive Statistics for Dependent Variable Incidents  
of Improper Driving Technique for High Speed  
Group (HSG) and Low Speed Group (LSG)  
on Second Run (Clockwise) in  
Negotiating High  
Speed Range

Statistic	HSG	Group	LSG
Range	HSG		LSG
Range	0-11		0-5
MD	2.4167		2.25
SD	2.5007		1.5108



Table 9

Descriptive Statistics for Dependent Variable Incidents  
 of Improper Driving Technique for High Speed  
 Group (HSG) and Low Speed Group (LSG)  
 Overall Performance in Negotiating  
 High Speed Range

Statistic	Group	
	HSG	LSG
<u>Driving Technique</u>		
Range	0-15	0-8
M	5.75	4.2083
SD	4.2758	2.1464
Locking Brakes	4	1
Improper Steering	14	2
Improper Acceleration	43	38
Improper Skid Control	5	0
Total	80	47
Improper Line of Travel	105	120
Improper Braking	41	57
Total	146	177

Table 10  
 Frequency and Type of Improper Driving Technique  
 of High Speed Group (HSG) and Low Speed  
 Group (LSG) on First Run in  
 Negotiating High  
 Speed Range

Improper Driving Technique	Group	
	HSG	LSG
Losing Control of Vehicle	3	0
Leaving the Roadway	11	6
Locking Brakes	4	1
Improper Steering	14	2
Improper Acceleration	43	38
Improper Skid Control	5	0
Total	80	47
Improper Line of Travel	105	120
Improper Braking	41	57
Total	146	177



Table 11

## Frequency and Type of Improper Driving Technique

of High Speed Group (HSG) and Low Speed

Group (LSG) on Second Run in

Negotiating High

Speed Range

Driving Technique	HSG	Group	LSG
Improper Driving Technique			
Losing Control of Vehicle	<u>HSG</u>		<u>LSG</u>
Losing Control of Vehicle	5		0
Leaving the Roadway	12		4
Locking Brakes	4		1
Improper Steering	12		5
Improper Acceleration	23		44
Improper Skid Control	<u>12</u>		<u>0</u>
Total	58		54
Improper Line of Travel	<u>199</u>		<u>236</u>
Improper Line of Travel	94		116
Improper Braking	<u>38</u>		<u>56</u>
Total	132		172

Specialties Instructors was conducted to ascertain their opinions regarding the number of incidents of the improper driving technique, improper line of travel, recorded for the HSG and the LSG. The results of this

Table 12

Frequency and Type of Improper Driving Technique of High Speed Group (HSG) and Low Speed Group (LSG) Overall Performance in Negotiating High Speed Range

Improper Driving Technique	Group	
	HSG	LSG
Losing Control of Vehicle	8	0
Leaving the Roadway	23	10
Locking Brakes	8	2
Improper Steering	26	7
Improper Acceleration	66	82
Improper Skid Control	7	0
Total	138	101
Improper Line of Travel	199	236
Improper Braking	79	113
Total	278	349



Specialties Instructors was conducted to ascertain their opinions regarding the number of incidents of the improper driving technique, improper line of travel, recorded for the HSG and the LSG. The results of this survey indicated these professional driver trainers considered the number of incidents of improper line of travel for both the HSG and the LSG to be excessive and they concluded the subjects in both groups had not learned to read the road during their respective driver training programs.

Because of the condition discussed above, a multivariate analysis was conducted for this study. When a multivariate analysis was conducted for this study, when a

Restatement and Testing of Null Hypothesis

The null hypothesis for this study stated that there would be no significant difference between LS program completers and HS program completers in their abilities to perform high speed driving when measured by: (a) the amount of time it takes them to negotiate a high speed driving range and (b) the number of incidents of improper driving techniques.

In this study there were two levels of a single independent variable (HS and LS) and two dependent variables, elapsed time and incidence of improper driving techniques. According to Huck et al. (1974) with this type of study, it would be inappropriate to use a separate univariate analysis for each of the two dependent variables. The correlations between the

dependent variables could be something other than zero and when the condition of correlated dependent variables exists the application of univariate tests, one for each dependent variable, would cause the probability of a Type I error to be higher than the level of significance used. This means that the set of univariate tests would be positively biased and that the null hypothesis would tend to be rejected too often.

Because of the condition discussed above, a multivariate analysis was conducted for this study. When a multivariate analysis indicates a significant difference between treatment groups it can be assumed with confidence that the treatment groups differ with respect to at least one dependent variable and that the decision to reject the null hypothesis can be made with the probability of making a Type I error equal to the selected level of significance. Accordingly, a multivariate analysis was conducted to test the null hypothesis of this study.

The multivariate test calculated for this study was Hotellings's  $T^2$ . Table 13 indicates the means of the two groups on the two dependent variables, time and incidents of improper driving techniques. The calculation of Hotelling's  $T^2$  is quite complex and requires the use of a computer. Using the data processing statistical package of The University of California, Hotelling's  $T^2$



was calculated at the Georgia State University computer center. The results of the multivariate analysis are shown in Table 14. The  $T^2$  statistic had a value of 4.9987. The associated F value was 2.4450 which had a corresponding P value of Table 13. These results indicated that High Speed Group (HSG) and Low Speed Group (LSG) conventional Mean Results on Dependent Variables

#### Elapsed Time and Incidence of

Table 14

#### Improper Driving

Summary Table of the Multivariate Analysis

Variable	df	Group	
		HSG	LSG
4.9987	2, 45	2.4450	
Time (Seconds)		237.79	240.92
Incidents		5.75	4.21

The results of this study indicated that LS was as effective as HS in preparing students to perform high speed driving when considering both the time required to negotiate a high speed range and the total number of incidents of improper driving.

#### Summary

An analysis of the results of this study has been presented in this chapter. The results of the study have been visually presented in scattergrams. Descriptive statistics for the two dependent variables, elapsed time and incidents of improper driving, have been presented. The results of a multivariate analysis using

was calculated at the Georgia State University computer center. The results of the multivariate analysis are shown in Table 14. The  $T^2$  statistic had a value of 4.9987. The associated F value was 2.4450 which had a corresponding P value of .0982. These results indicated that the null hypothesis could not be rejected at the conventional 5 percent level.

Table 14  
Summary Table of the Multivariate Analysis

<u><math>T^2</math></u>	<u>df</u>	<u>F</u>	<u>P</u>
4.9987	2, 45	2.4450	.0982

The results of this study indicated that LS was as effective as HS in preparing students to perform high speed driving when considering both the time required to negotiate a high speed range and the total number of incidents of improper driving.

#### Summary

An analysis of the results of this study has been presented in this chapter. The results of the study have been visually presented in scattergrams. Descriptive statistics for the two dependent variables, elapsed time and incidents of improper driving, have been presented. The results of a multivariate analysis using



Hotelling's  $T^2$  were also indicated. The study tested one hypothesis which examined the capacity of LS to prepare students to perform high speed driving compared to the ability of HS trained students. The findings of the study indicated there was no significant difference between LS and HS and their capacity to prepare students to perform high speed driving.

The first section provides a summary of the study indicating the problem, purpose, research methods, data analysis, and findings of the study. The second section provides the conclusions drawn from the findings of the study. The final section suggests recommendations for future research.

### Summary

#### Restatement of the Problem

The literature reveals high speed driving by law enforcement officers to be a major problem and concern to the public and law enforcement managers. Proper training to prepare officers to perform high speed driving is essential to a comprehensive training program. Currently there are two distinctly different driver training methodologies utilized in law enforcement driver training. The major characteristic distinguishing one methodology from the other is the driving speeds used by students while in training. One methodology advocates that trainees be trained using high

speeds to learn how to perform high speed driving while the other methodology uses low speeds in its training program. Numerous references were located which

addressed the problem of high speed driving and police

driver training. No research evidence was located which documented the effectiveness of either method.

## CHAPTER V

### SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Chapter V is divided into three major sections.

The first section provides a summary of the study indicating the problem, purpose, research methods, data analysis, and findings of the study. The second section provides the conclusions drawn from the findings of the study. The final section suggests recommendations for future research.

#### Summary

##### Restatement of the Problem

The literature reveals high speed driving by law enforcement officers to be a major problem and concern to the public and law enforcement managers. Proper training to prepare officers to perform high speed driving is essential to a comprehensive training program. Currently there are two distinctly different driver training methodologies utilized in law enforcement driver training. The major characteristic distinguishing one methodology from the other is the driving speeds used by students while in training. One methodology advocates that trainees be trained using high



speeds to learn how to perform high speed driving while the other methodology uses low speeds in its training program. Numerous references were located which addressed the problem of high speed driving and police driver training. No research evidence was located which documented the effectiveness of either method.

#### Restatement of the Purpose

The purpose of this study was to determine if LS was as effective as HS in preparing students to perform high speed driving. The measures used to determine high speed driving ability were elapsed time required to negotiate a highway response range and the number of incidents of improper driving techniques.

#### Research Methods

This study was conducted at and used the equipment, facilities, supplies, and instructors of FLETC located in Glynco, Georgia. Using a table of random numbers, an intact group of 48 students was divided into two groups. The experimental group was trained in driver training using the LS of the NAPD. The control group was trained using the HS of FLETC. Both groups were trained by the same instructors. Both methodologies were 24 hours in length. Upon completion of their driver training, all students in both groups had successfully completed training and were certified as being trained in driver training, i.e., were competently trained to operate a vehicle.

Immediately after completion of training, each student was required to negotiate a high speed range to which they had been given a brief exposure at low speed (30 MPH). Each student in each group negotiated this range twice, once in each direction. The students' elapsed times required to negotiate the range and the number of incidents of improper driving techniques were recorded.

#### Data Analysis

The independent variable for this study was the two driver training methodologies. The two dependent variables for this study were the elapsed time required to negotiate the high speed range and the number of incidents of improper driving techniques. Descriptive statistics for each of these dependent variables were calculated. The multivariate analysis statistic, Hotelling's  $T^2$ , was calculated to determine whether any significant differences existed between the performances of the two groups on the dependent variables. Hotelling's  $T^2$  was calculated at the Georgia State University computer center utilizing the data processing statistical package of the University of California.

#### Findings

The findings of this study are summarized as follows:

1. There was no significant difference between the LSG and HSG in their ability to perform high speed driving when measured by elapsed time to negotiate a high speed



range and the incidence of improper driving. The mean elapsed time for HSG was 237.8 seconds compared to driver 240.9 seconds for LSG. The total number of incidents of improper driving for LSG was 101 compared to 138 for HSG.

2. The HSG had 199 incidents of the improper driving technique, improper line of travel, and the LSG had 236 incidents. Based on the number of recorded incidents of improper line of travel and a survey of FLETC driver training personnel regarding the number of incidents of improper line of travel, it appears that neither HS nor LS accomplished the training objective of teaching their students to read the road. However, there was no noticeable difference in the performances of the HSG and the LSG regarding improper line of travel. Neither group performed well in this area.

3. Initially, on the first run at negotiating the high speed range, the HS produced more aggressive drivers while the LS produced more safety conscious drivers. The HSG had a total of 80 incidents of improper driving techniques on the first run while the LSG had 47 incidents. It was interesting to note that this initial difference was basically eliminated on the second run. The HSG had 58 incidents of improper driving compared to 54 incidents for the LSG.

Conclusions

Conclusions drawn from a research study should not go beyond the findings obtained from the study. This was



particularly true with this study because it is the first research study to scientifically compare two driver training methodologies. The following conclusions were reached based on interviews conducted with professional driver trainers, information obtained in the review of the literature and the analysis of the data obtained in the study.

Based on the descriptive statistics and the multivariate results, this study found there was no significant difference between the HS and the LS and their capacity to prepare students to perform high speed driving. The mean elapsed times for negotiating the high speed range were almost identical. The total and mean incidences of improper driving did not reveal any significant difference between the two groups. It was therefore concluded that the LS used in this study was as effective as the HS in preparing students to perform high speed driving.

Both LS and HS purported to train students to read the road. Both methodologies presented lecture material on how to read the road and both methodologies provided student handout material which related to training students to read the road. However, based on the number of inci-

1. This study should be replicated to verify the findings of improper line of travel recorded for the LSG and HSG and the survey of the professional driver trainers of

2. This study should be replicated using state and local law enforcement officer trainees as subjects and that both methodologies were ineffective in accomplishing



the objective of teaching students to read the road. Though both methodologies taught different lines of travel regarding certain types of turns, the data obtained in this study indicated that neither method was successful in teaching students to read the road. On the first run on the high speed range the LSG had a significantly lower number of incidents of improper driving techniques. This initial difference noted on the first run could be attributed to the differing philosophies of the two methodologies regarding the type of driver they wish to produce. HS advocates want to produce safe aggressive drivers who feel comfortable during high speed driving while LS advocates want to produce drivers who are more safety prone and actually feel uncomfortable during high speed driving. It was concluded that the first run results reflected this philosophical difference. The first run incidence of improper driving techniques indicated that initially HS tends to produce more aggressive drivers while LS tends to produce more cautious drivers.

#### Recommendations

Based upon this study and its conclusions, the following recommendations are made:

1. This study should be replicated to verify the findings.
2. This study should be replicated using state and local law enforcement officer trainees as subjects and

their performance compared to the performance of the Federal law enforcement trainees used in this study.

3. This study should be conducted at a driver training facility that is biased toward LS and the results compared with the results of this study which was conducted at a training center which was biased toward HS.

4. This study should be conducted in a driver law training setting which allows attaining driving speeds in excess of 100 MPH to determine what impact the higher driving speeds would have on the results of the study.

5. A study similar to this one should be conducted using experienced law enforcement officers to determine what impact previous law enforcement driving experience would have on the results of the study.

6. Studies should be conducted to investigate the comparative operational costs of HS and LS.

7. A study using the participants of this study should be conducted six months and one year from their graduation from training to determine their retention of high speed driving abilities.

8. A longitudinal study of the participants in this study should be made to determine their subsequent driving records on the job.

9. A study should be conducted to compare and contrast the HS and LS in their capacities to train students to perform skid control and defensive driving.



10. A longitudinal study should be conducted to compare and contrast driver attitudes of HS and LS trained law enforcement officers to determine if HS trained officers are more aggressive in high speed driving than LS trained officers.

11. Research studies should be conducted to determine which line of travel should be taught in law enforcement driver training.

12. Studies in driver training should be conducted to determine what effect fear, stress, and anxiety have upon the learning and performance of high speed driving.

13. Studies in driver training should be conducted to determine what effect having an audience present, i.e., a peer group, has upon the learning and performance of high speed driving.

14. Studies in driver training should be conducted to determine the most effective method of teaching students to read the road.

15. Both HS and LS driver training experts should publish the results of their research in driver training.

16. Law enforcement agencies which do not have access to high speed driver training facilities should utilize LS to train their officers in driver training.

## APPROVAL PROCESS FOR USING STUDENTS IN STUDY



DEPARTMENT OF THE TREASURY  
FEDERAL LAW ENFORCEMENT TRAINING CENTER  
OLYMPIA, GEORGIA 31814

LET 1 (PMF)

March 7, 1984

Lieutenant Roy Schaney  
Office of Training  
United States Secret Service  
9269 Powder Mill Road  
Beltsville, Maryland 20705

Dear Lieutenant Schaney:

The purpose of this letter is to request you to obtain formal written permission for the Federal Law Enforcement Training Center to use the 24 United States Secret Service Uniform Division students in SPT-487 in a driver training methodology research study. I am advised that James C. Humphlett of my staff has already talked with you concerning this request and obtained your tentative approval. The enclosed concept paper outlines the proposed study in detail and will hopefully answer any questions you may have regarding the project.

## APPENDIX A

Your students would be randomly assigned to either a control or experimental group. It is possible that the students in the experimental group may require remedial training in driver training. This will have to be determined at the end of the experiment. In any case you have the commitment of the Center that no students will be adversely affected and that all students will graduate from the Center properly trained in driving skills. (This assumes they satisfactorily complete all other phases of training.)

Your expeditious approval to utilize your students will be appreciated. This experiment should go a long way in settling the issue of the efficiency of law enforcement driver training at slow speeds and should have a significant impact on not only Federal law enforcement driver training but also State and local law enforcement training. Your attention to this request is sincerely appreciated. Should you have any specific questions concerning this request, please contact James C. Humphlett at (404) 952-4726. Thank you.

Sincerely,

*Ray M. Pice*  
Ray M. Pice  
Assistant Director  
(Program Management)

Enclosure



## APPROVAL PROCESS FOR USING STUDENTS IN STUDY



DEPARTMENT OF THE TREASURY  
FEDERAL LAW ENFORCEMENT TRAINING CENTER  
GLYNCO, GEORGIA 31524

LET 1 (PMP)

March 7, 1984

Lieutenant Roy Schaney  
Office of Training  
United States Secret Service  
9200 Powder Mill Road  
Beltsville, Maryland 20705

Dear Lieutenant Schaney:

The purpose of this letter is to request you to obtain formal written permission for the Federal Law Enforcement Training Center to use the 24 United States Secret Service Uniform Division students in 8PT-407 in a driver training methodology research study. I am advised that James C. Humphlett of my staff has already talked with you concerning the study and obtained your tentative approval. The enclosed concept paper outlines the proposed study in detail and will hopefully answer any questions you may have regarding the project.

Your students would be randomly assigned to either a control or experimental group. It is possible that the students in the experimental group may require remedial training in driver training. This will have to be determined at the end of the experiment. In any case you have the commitment of the Center that no students will be adversely effected and that all students will graduate from the Center properly trained in driving skills. (This assume they satisfactorily complete all other phases of training.)

Your expeditious approval to utilize your students will be appreciated. This experiment should go a long way in settling the issue of the efficiency of law enforcement driver training at slow speeds and should have a significant impact on not only Federal law enforcement driver training but also State and local law enforcement training. Your attention to this request is sincerely appreciated. Should you have any specific questions concerning this request, please contact James C. Humphlett at (404) 952-4726. Thank you.

Sincerely,

Ray M. Rice  
Assistant Director  
(Program Management)

Enclosure



DEPARTMENT OF THE TREASURY  
FEDERAL LAW ENFORCEMENT TRAINING CENTER  
OLYMPIA, GEORGIA 31524



WASHINGTON, D.C. 20223

OFFICE OF THE DIRECTOR

March 22, 1984

LET 1 (TMT)

MEMORANDUM:

TO: Ray M. Rice  
Assistant Director

FROM: SAIC - Uniformed Forces and Firearms Branch  
Office of Training

SUBJECT: Driver Training Methodology Research - FLETC

Reference is made to your letter (attached) dated March 7, 1984, concerning your request to utilize 24 members of a Uniformed Division Recruit Class (8PT-407).

Based upon your letter and conversations with Lt. Roy Schaney of my staff, it is felt that this request can be honored. It is understood that, as always, standard driving training for these Recruits will be maintained by the Center, and the results of the driver training methodology research study will be made available to the Secret Service.

This Office looks forward to continuing cooperation between our agencies.

Your expeditious approval to utilize your students will be appreciated. This experiment should be conducted in a controlled manner, the issue of the efficiency of law enforcement training at slow speeds and should have a significant impact on the Federal law enforcement driver training program. Your assistance in this law enforcement training. Your assistance is sincerely appreciated. Should you have any questions concerning this request, please contact James C. Humphlett at (404) 952-4726. Thank you.

*Garry M. Jenkins*  
Garry M. Jenkins  
Special Agent in Charge  
Uniformed Forces and Firearms  
Branch/Office of Training

Sincerely,

*Ray M. Rice*  
Ray M. Rice  
Assistant Director  
(Program Management)

Enclosure





DEPARTMENT OF THE TREASURY  
FEDERAL LAW ENFORCEMENT TRAINING CENTER  
GLYNCO, GEORGIA 31524

LET 1 (PMP)

March 7, 1984

Lieutenant Roy Schaney  
Office of Training  
United States Secret Service  
9200 Powder Mill Road  
Beltsville, Maryland 20705

Dear Lieutenant Schaney:

The purpose of this letter is to request you to obtain formal written permission for the Federal Law Enforcement Training Center to use the 24 United States Secret Service Uniform Division students in 8PT-407 in a driver training methodology research study. I am advised that James C. Humphlett of my staff has already talked with you concerning the study and obtained your tentative approval. The enclosed concept paper outlines the proposed study in detail and will hopefully answer any questions you may have regarding the project.

Your students would be randomly assigned to either a control or experimental group. It is possible that the students in the experimental group may require remedial training in driver training. This will have to be determined at the end of the experiment. In any case you have the commitment of the Center that no students will be adversely effected and that all students will graduate from the Center properly trained in driving skills. (This assume they satisfactorily complete all other phases of training.)

Your expeditious approval to utilize your students will be appreciated. This experiment should go a long way in settling the issue of the efficiency of law enforcement driver training at slow speeds and should have a significant impact on not only Federal law enforcement driver training but also State and local law enforcement training. Your attention to this request is sincerely appreciated. Should you have any specific questions concerning this request, please contact James C. Humphlett at (404) 952-4726. Thank you.

Sincerely,

*Ray M. Rice*  
Ray M. Rice  
Assistant Director  
(Program Management)

Enclosure



DEPARTMENT OF THE TREASURY  
FEDERAL LAW ENFORCEMENT TRAINING CENTER  
GLYNCO, GEORGIA 31524

Form 25A-2181

LET 1 (PMP)

March 7, 1984

UNITED STATES CAPITOL POLICE  
WASHINGTON, D.C. 20540

Captain Mike Hanneld  
Training Division  
United States Capitol Police  
Room G-1, West  
Rayburn House Office Building  
Washington, D.C. 20510

April 12, 1984

Dear Captain Hanneld:

The purpose of this letter is to request you to obtain formal written permission for the Federal Law Enforcement Training Center to use the 24 United States Capitol Police students in 8PT-407 in a driver training methodology research study. I am advised that James C. Humphlett of my staff has already talked with you concerning the study and obtained your tentative approval. The enclosed concept paper outlines the proposed study in detail and will hopefully answer any questions you may have regarding the project.

Your students would be randomly assigned to either a control or experimental group. It is possible that the students in the experimental group may require remedial training in driver training. This will have to be determined at the end of the experiment. In any case you have the commitment of the Center that no students will be adversely effected and that all students will graduate from the Center properly trained in driving skills. (This assume they satisfactorily complete all other phases of training.)

Your expeditious approval to utilize your students will be appreciated. This experiment should go a long way in settling the issue of the efficiency of law enforcement driver training at slow speeds and should have a significant impact on not only Federal law enforcement driver training but also State and local law enforcement training. Your attention to this request is sincerely appreciated. Should you have any specific questions concerning this request, please contact James C. Humphlett at (404) 952-4726. Thank you.

Sincerely,

*Ray M. Rice*  
Ray M. Rice  
Assistant Director  
(Program Management)

Enclosure

cc: Sgt. Cook



FD-36 (Rev. 5-22-64)

UNITED STATES CAPITOL POLICE  
WASHINGTON, D.C. 20510

April 12, 1984

Mr. Charles F. Rinkevich  
Director  
Federal Law Enforcement Training Center  
Glynco, Georgia 31524

Dear Mr. Rinkevich:

We recently received an inquiry from the Center regarding a proposed study of driver training methodologies. It is my understanding that the Center proposes using the Capitol Police participants in class 8PT-407 as members of the control and experimental groups for this study.

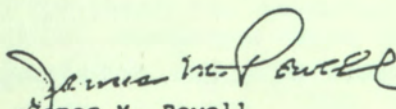
Assistant Director Ray M. Rice has given his assurance that, if necessary, remedial driver training will be provided those members of the experimental group in order to enable them to meet the Center's customary standards for graduation (assuming their satisfactory completion of all other phases of training).

I also understand that it will be necessary to waive the usual fifty-five mile per hour speed limit during the highway response phase of training.

We believe that there are significant benefits to be gained from this research, both in terms of improved training and cost savings. Therefore, we will be pleased to have our trainees participate and we look forward to exploring this subject through your research efforts.

Should additional consultation be required on this matter, the appropriate members of your staff may contact our FLETC Liaison Officer, Sergeant James A. Cook.

Sincerely,

  
James M. Powell  
Chief of Police

cc: Sgt. Cook

Course: Defensive Driving

## APPENDIX B

Length and Method of Presentation:

### HIGH SPEED LAW ENFORCEMENT DRIVER TRAINING METHODOLOGY

TOTAL LENGTH - 24 hours

This Lecture takes the students 8 hours

Practical Exercise 16 hours

#### COURSES

Course: Defensive Driving

Length and Method of Presentation:

<u>Lecture</u>	<u>Practical Exercise</u>	<u>Total</u>
12:20	5:20	7:50

## APPENDIX B

#### Description

This course teaches the students safe driving habits through classroom discussion of safe defensive driving techniques. The students are given the opportunity to practice these techniques on the defensive driving range. Emphasis is placed on recognizing and avoiding potentially hazardous driving situations.

#### Objectives

Upon the completion of this course the student will be able to:

1. Identify basic components of modern automobiles and understand the importance of their safe working condition.
2. Identify potentially hazardous driving situations and determine preventive measures to avoid accidents.
3. Demonstrate precision vehicle handling capabilities.
4. Relate importance of space cushion driving to the dynamics of vehicle operation.



Course: Skid Control

## APPENDIX B

Length and Method of Presentation: The student will be able to:

Lecture	Practical Exercise	Total
2:30	5:20	7:50

### HIGH SPEED LAW ENFORCEMENT DRIVER TRAINING METHODOLOGY

TOTAL LENGTH - 24 hours

This Lecture makes the students aware of the importance of immediate, spontaneous reaction in the techniques of emergency and self-induced skid situation. The students learn basic advanced skid control techniques which they must demonstrate satisfactorily.

Course: Defensive Driving

#### Objectives

Length and Method of Presentation:

Upon the completion of this course the student will be able to:

<u>Lecture</u>	<u>Practical Exercise</u>	<u>Total</u>
2:20	5:20	7:50

Description demonstrate advanced skid control by initiating a skid and holding a vehicle in a skid, utilizing

This course teaches the students safe driving habits through classroom discussion of safe defensive driving techniques. The students are given the opportunity to practice these techniques on the defensive driving range. Emphasis is placed on recognizing and avoiding potentially hazardous driving situations.

#### Objectives

Course: Highway Response Driving

Upon the completion of this course the student will be able to:

Length and Method of Presentation:

1. Identify basic components of modern automobiles and understand the importance of their safe working condition. 3:00 5:20 8:20

Description 2. Identify potentially hazardous driving situations and determine preventive measures to avoid accidents. the student to select the proper line of travel through a highway response driving range comprised of:

3. Demonstrate precision vehicle handling capabilities. braking, steering, and acceleration. The positioning of the vehicle.
4. Relate importance of space cushion driving to the dynamics of vehicle operation. student to be aware of personal limitations, as well as vehicle limitations. Safety to one's self and the public is most important and is displayed through safe driving techniques.

Course: Skid Control

Length and Method of Presentation: the student will be able to:

<u>Lecture</u>	<u>Practical Exercise</u>	<u>Total</u>
2:30	5:20	7:50

### Description

This course makes the students aware of the importance of immediate, spontaneous reaction in the techniques necessary to correct a vehicle in an emergency and self-induced skid situation. The students learn basic and advanced skid control techniques which they must demonstrate satisfactorily.

### Objectives

Upon the completion of this course the student will be able to:

1. Demonstrate basic skid control techniques.
2. Demonstrate advanced skid control by initiating a skid and holding a vehicle in a skid, utilizing correct acceleration.
3. Demonstrate proper skills in controlling the violent weight change of the vehicle in the initial skid and avoid a skid in the opposite direction.

Course: Highway Response Driving

Length and Method of Presentation:

<u>Lecture</u>	<u>Practical Exercise</u>	<u>Total</u>
3:00	5:20	8:20

### Description

This course teaches the student to select the proper line of travel through a highway response driving range comprised of turns of different radii by employing proper braking, steering, and acceleration. The positioning of the vehicle on the roadway is the most important factor. Highway Response training teaches the student to be aware of personal limitations, as well as vehicle limitations. Safety to one's self and the public is most important and is displayed through safe driving techniques.









This study utilized the HS of the Driver  
Specialties Branch of the Federal Law Enforcement  
Training Center. For information concerning  
this driver training methodology contact:

Mr. George Graves

Branch Chief

Driver Specialties Branch

Federal Law Enforcement Training Center

Chgo, Georgia 31524

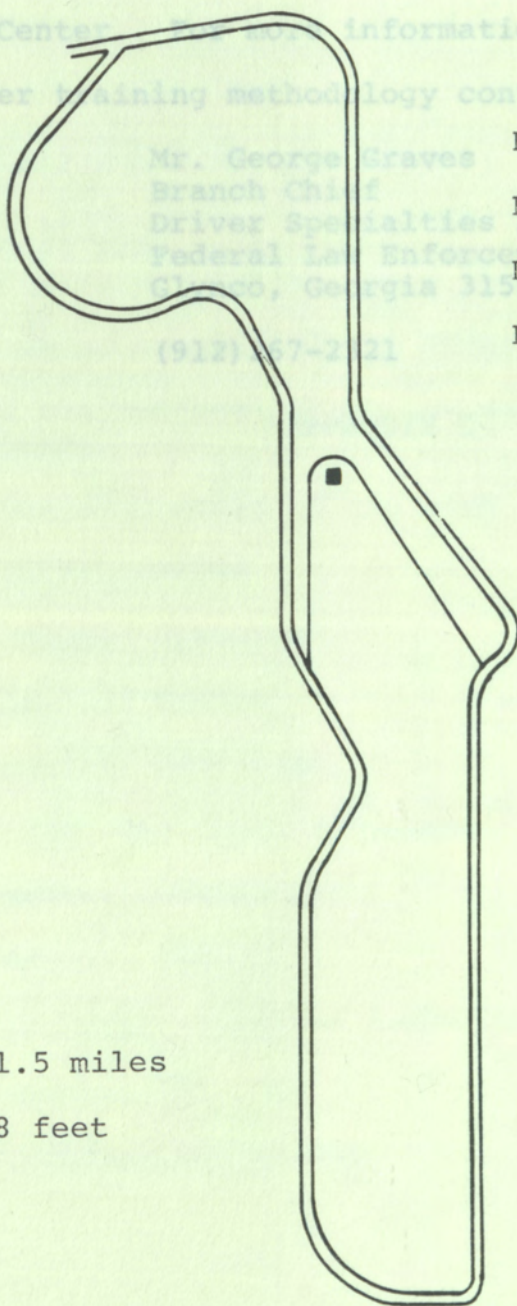
(912) 667-2121

HIGHWAY

RESPONSE

DRIVING

RANGE



Length - 1.5 miles

Width - 18 feet

This study utilized the HS of the Driver Specialties Branch of the Federal Law Enforcement Training Center. For more information concerning this driver training methodology contact:

Mr. George Graves  
Branch Chief  
Driver Specialties Branch  
Federal Law Enforcement Training Center  
Glynco, Georgia 31524

(912) 267-2321

#### APPENDIX C



## APPENDIX C

## LOW SPEED LAW ENFORCEMENT DRIVER TRAINING METHODOLOGY

TOTAL LENGTH - 24 hours

Lecture 8 hours

Practical Exercises 16 hours

PROGRAM OF INSTRUCTION

This is an integrated 24 hour program of instruction consisting of classroom presentation interspersed with practical exercises during which students drive on five different range configurations. The overall objectives of the LS is to teach officers proper law enforcement driving techniques. The following is a topical outline of some of the subject matter covered in classroom presentations:

## APPENDIX C

1. training rules of the road (practical exercises)
2. safety checks
3. vehicle dynamics
4. laws of motion
5. pursuit techniques
6. tires and shock absorbers
7. brakes and braking
8. driving techniques
9. accident avoidance techniques
10. reading the road
11. judgment and safety

Trainees develop proper driving techniques and skills during practical exercises. APPENDIX C following indicates the five driving ranges of LS:

## LOW SPEED LAW ENFORCEMENT DRIVER TRAINING METHODOLOGY

TOTAL LENGTH - 24 hours

Lecture 8 hours

Practical Exercises 16 hours

### PROGRAM OF INSTRUCTION

This is an integrated 24 hour program of instruction consisting of classroom presentation interspersed with practical exercises during which students drive on five different range configurations. The overall objectives of the LS is to teach officers proper law enforcement driving techniques. The following is a topical outline of some of the subject matter covered in classroom presentations:

1. training rules of the road (practical exercises)
2. safety checks
3. vehicle dynamics
4. laws of motion
5. pursuit techniques
6. tires and shock absorbers
7. brakes and braking
8. driving techniques
9. accident avoidance techniques
10. reading the road
11. judgment and safety

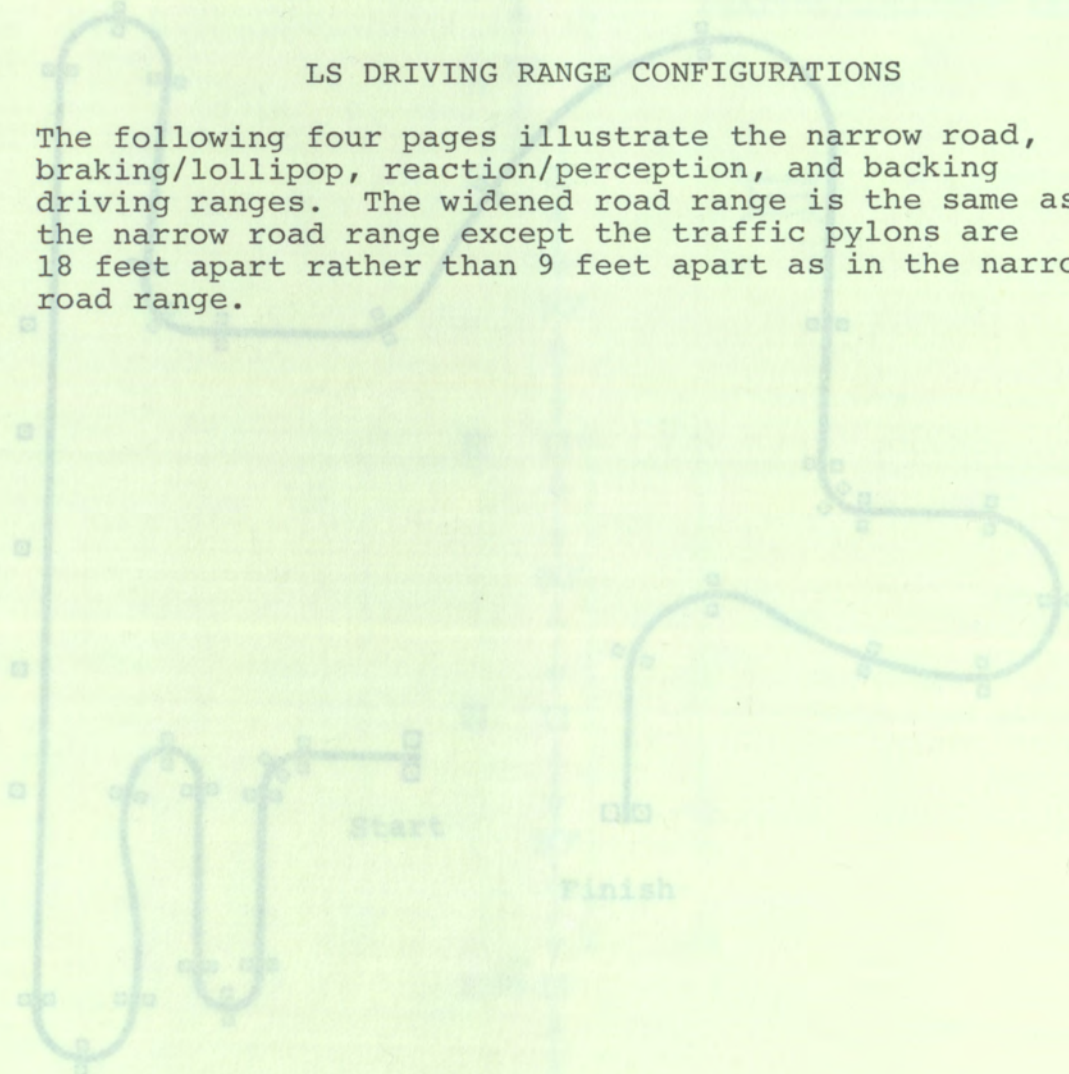


Trainees develop proper driving techniques and skills during practical exercises. The following indicates the five driving ranges of LS:

narrow road  
braking/lollipop  
reaction/perception  
backing  
widened road

#### LS DRIVING RANGE CONFIGURATIONS

The following four pages illustrate the narrow road, braking/lollipop, reaction/perception, and backing driving ranges. The widened road range is the same as the narrow road range except the traffic pylons are 18 feet apart rather than 9 feet apart as in the narrow road range.

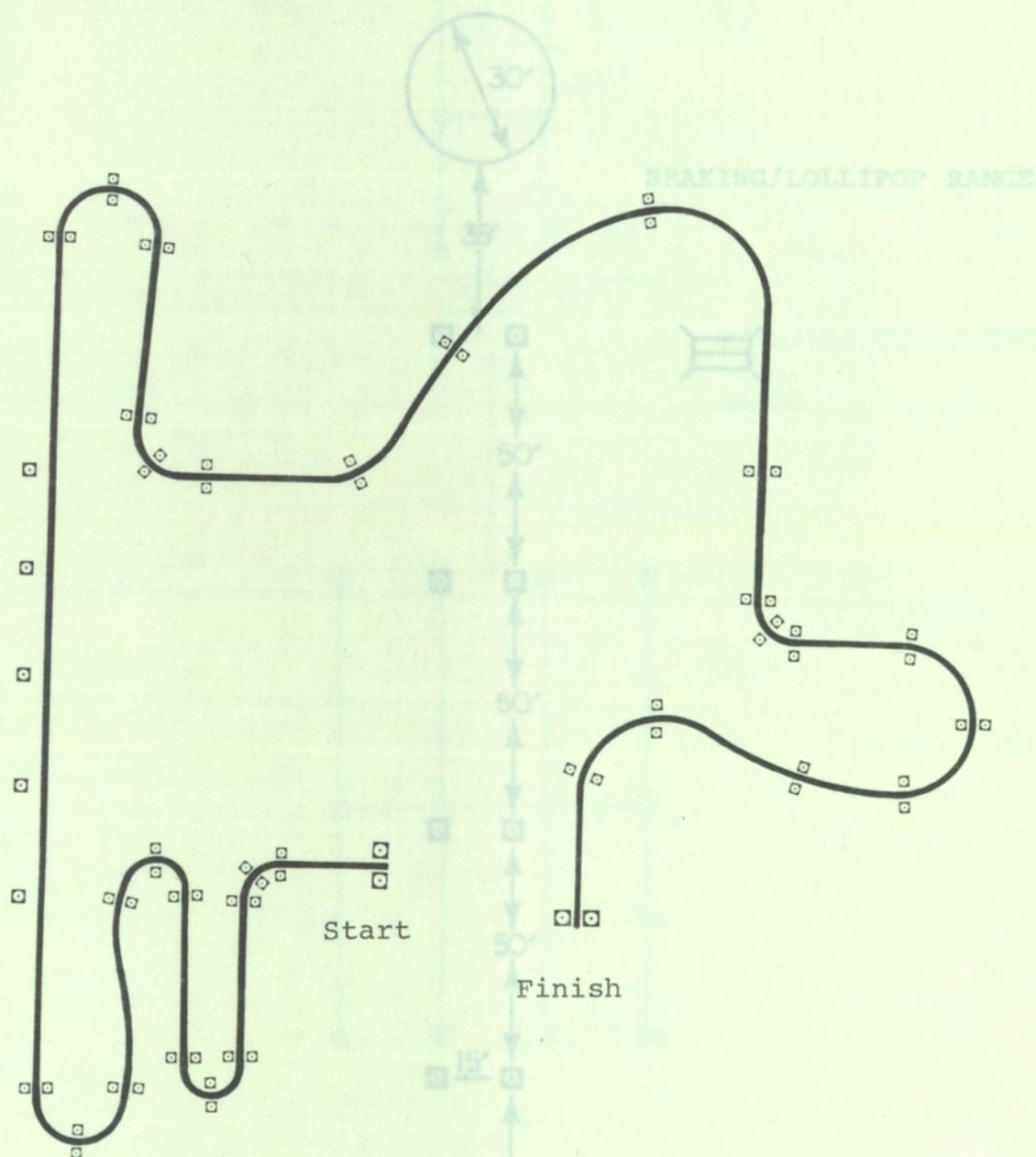


Length - .5 mile

Width - Narrow Road - 9 feet

Width - Widened Road - 18 feet

## NARROW ROAD RANGE



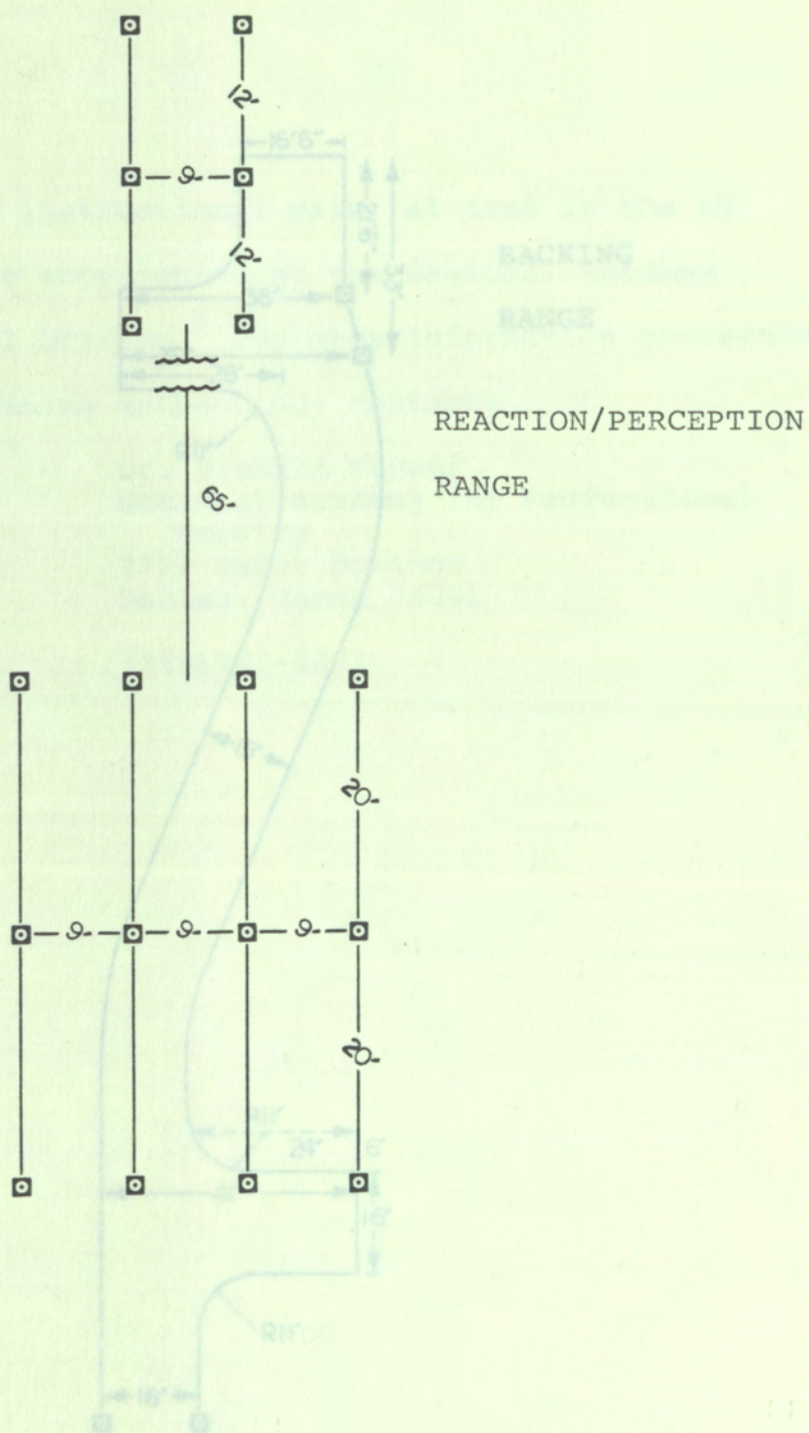
Length - .5 mile

Width - Narrow Road - 9 feet

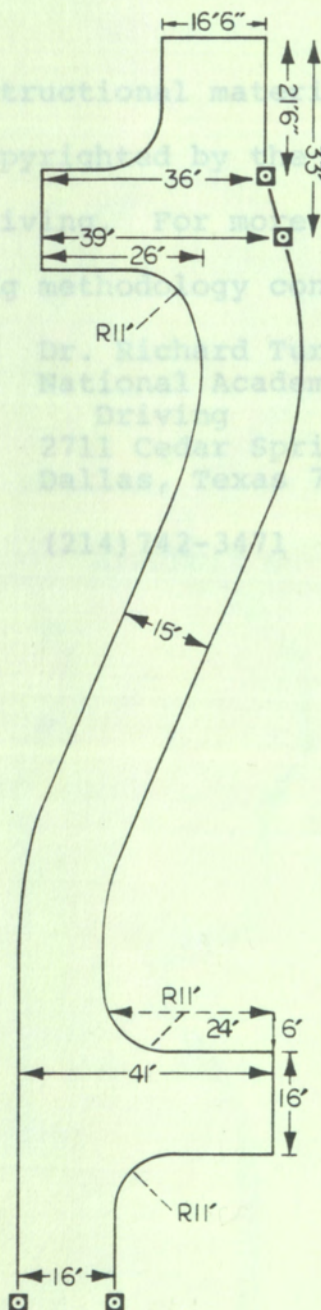
Width - Widened Road - 18 feet











BACKING  
RANGE

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this driver training methodology contact:

Dr. Richard Turner  
National Academy for Professional  
Driving  
2711 Cedar Springs  
Dallas, Texas 75201  
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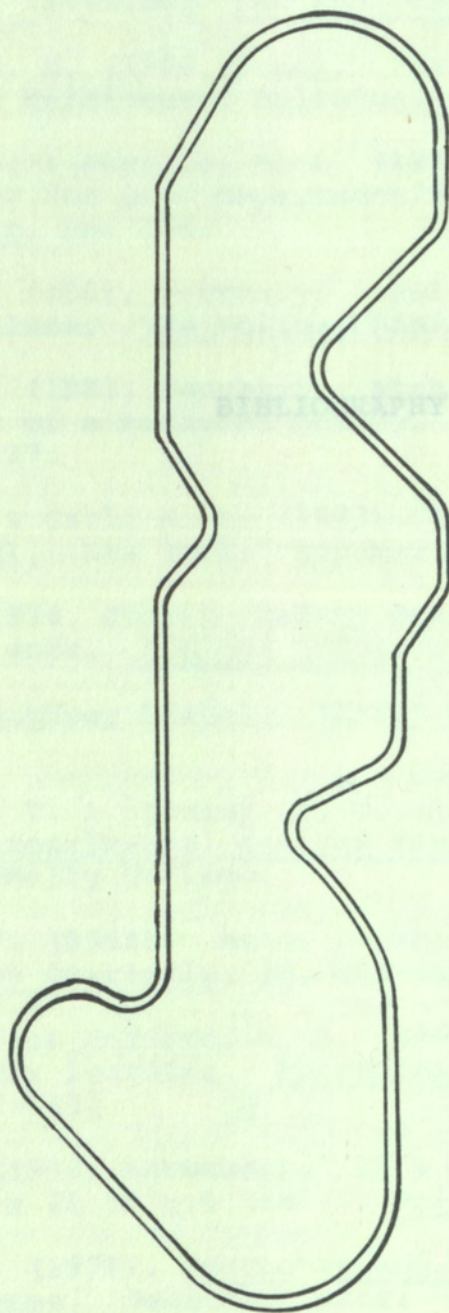
## CONFIGURATION OF HIGH SPEED RANGE

APPENDIX D

Length - 1.5 miles

Width - 18 feet

## CONFIGURATION OF HIGH SPEED RANGE



Length - 1.5 miles

Width - 18 feet



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