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Commonwealth of Virginia
Department of State Police
Richmond , Virginia

... NO SACRIFICE TOO GREAT

HNICAL REPORT FOR STATE TROOPER SELECTION PROCEDURE

COLONEL D.M. SLANE, SUPERINTENDENT

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Commonwealth of Virginia

Department of State Police

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Technical Report for

State Trooper Selection Procedure

by

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Chicago, Illinois

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PREFACE

The Commonwealth of Virginia initiated in February 1976 a research program to study the entry requirements for the position of Trooper in the Department of State Police, and to develop a selection program that would be a valid indicator of job performance and as free as possible from adverse impact against ethnic minority groups and females.

The challenges of the career of the Trooper are many, and often severe. They are reflected in the Trooper's Pledge...

> "Humbly recognizing the responsibilities entrusted to me as a member of the Department of State Police... I pledge myself to perform my duties honestly and faithfully to the best of my ability and without fear, favor or prejudice.
>
> "I shall aid those in danger or distress, and shall strive always to make my State and Country a safer place in which to live. I shall wage unceasing war against crime in all its forms, and shall consider no sacrifice too great in the performance of my duty..."

The research program was launched against the background of an action against the Commonwealth by the U.S. Department of Justice alleging discrimination against minority groups (principally Blacks) and women--an action which eventually became formalized into a court suit. Prior to the initiation of the research program, and responsive to earlier allegations, a previous test selection procedure and mandatory height and weight requirements had been dropped. Selection criteria had been reduced to two elements: a medical examination and a field background investigation. This screening did not tap aptitudes or skills required of Troopers, but only physical health and character.

This report summarizes the current state of the art and technology in police selection and describes the research program executed to develop a valid procedure for the selection of Troopers for the Commonwealth of Virginia. The study was designed to conform closely to the requirements of Federal agency guidelines on selection procedures.

The skills, energy and dedication of many people were critical to the successful completion of this project. The interest in and support of the project by Mr. R. D. McIlwaine III, Legal Counsel to the Governor, was a stimulus to all of us. Governors Mills E. Godwin, Jr. and John N. Dalton provided firm support for our work. The assistance of D. Patrick Lacy, Jr., Deputy Attorney General of the Commonwealth and later private counsel in the suit was invaluable. Among the many

members of the Department of State Police who contributed much time and effort in arranging for an conducting the testing and collection of performance data, Captain C. E. Olive, Personnel Officer, played the key role in coordinating the many operations that were involved; Captain C. M. Robinson, Training Officer, effectively deployed his able assistants in the conduct of the testing and the collection of test results. Of our staff, special note must be taken of the programming and computer processing of Joel Erkenswick, and of the contributions of Janet Garcia in the typing of the tests we developed and the reports we have prepared, as well as in test scoring and related activities. Without the assistance of all those named, and very many others, particularly in the Department of State Police, the execution of this project would not have been possible.

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CHAPTER ONE

INTRODUCTION

The Civil Rights Act of 1964 and the 1972 amendments bringing state governments under the purview of the Act, as well as the regulations flowing from therefrom were designed and intended to rectify abuses in the unfair discrimination against minorities and women in selection and placement in employment. In the longer term, however, the Act and its consequences are having not merely a remedial effect but a constructive impact upon personnel management in the United States, whether or not legal challenges to the fairness of particular selection procedures are mounted. The consequence has been the professionalization of personnel management, the application of scientific tools and procedures designed to ensure that selection criteria are indeed job-related, relevant, and important to making choices among job applicants.

The studies mounted in the Commonwealth of Virginia had as their initial impetus legal challenges to the fairness of currently used selection procedures for selection of State Troopers in the Department of Police, on the basis that these procedures were alleged to result in adverse impact (lower rates of hire) against minority groups and women. This defensive position, however, became only a very minor issue in the research. The main thrust of the research program that is the subject of this report was to create a methodologically sound and valid selection procedure for State Troopers using the best and most relevant professional techniques available.

The overall objective of the research program was to develop a procedure for the selection of State Troopers that would contribute to the maintenance of a force of the quality of excellence in the performance of service to the citizenry that the Commonwealth currently possesses.

Two operational objectives supported this overall goal:

> First, to develop a procedure that would reliably and validly predict performance in the 22-week Basic Course Training School, as well as performance on significant aspects of post-training on-the-job activities.
>
> Second, to assess the aptitudes, skills and potential of all applicants, including minority group members and women, fairly, equitably, and without discrimination.

These objectives were to be achieved through sound practices and techniques as recommended by the psychological profession, and within the framework of the various federal guidelines on selection procedures.

To assess the validity of the procedure for both Blacks and Whites a sufficient number of each had to be included in the testing, in the

Basic Course, and on the job of Trooper. At the time the study was initiated in February 1976 there were no women on the Trooper force, and only nine Blacks.

The State Police has a sworn personnel complement of about 1100, and, depending upon the need for replacement or growth and the availability of funds from the legislature, conducts one or two Basic Course sessions every year, each lasting about twenty-two weeks. The dormitory and classroom facilities of the Training School permitted at the time of the study the accommodation of a maximum of about 70-75 recruits. The typical class size in years previous to 1976 averaged about 55; for the years 1973-76 inclusive, the total number of hires ranged from 64 to 96. Another factor to take into account was the recruiting problem. Although the Department had for several years a Black Trooper recruiter, the numbers of Blacks he was able to interest in working for the State Police was small. No specific recruiting of women was done.

Although it is intended that, in operational use, the final selection procedure that emerged from the research be administered early in the application process, as a screen before hire, the need to ensure that those tested also at least began the training program dictated that the experimental test battery be given primarily to new hires before they begin the Basic Course training. The results of the experimental battery were not made available in any way to the State Police, nor used for selection or other assessment purposes. Since previous height and weight standards and an earlier pencil-and-paper psychological test had been dropped from the screening process, these new hires were screened only on a physical examination and a background field investigation to assess honesty, integrity, and general suitability.

To assess the validity of the procedure for both Blacks and Whites, a sufficient number of each had to be included in the testing, in the Basic Course, and on the job of Trooper. This study was not designed to assess the validity of the procedure for the selection of women, although the design did call for, and the study did include, an evaluation of the performance of women on the tests and measures included in the procedure. A validity study, implying the collection of data on performance in the Training School and later on the job was not feasible in the case of women. At the time the project began, there were no women among sworn personnel, and practically no likelihood of recruiting and hiring a substantial number, of the order of 20 or more, in the near future. It was possible to test a sample of women representative of female applicants for police work (a U.S. Army Reserve WAC battalion) to acquire data on the performance of women on the predictors in the selection procedure. In the case of Blacks, there were about nine or ten Black sworn personnel in the Department when the study began, and the prospects for recruiting and hiring a reasonable number seemed good.

The State Police has a sworn personnel complement of about 1100 and, depending upon the need for replacement and growth, and the availability of funds from the legislature, hired less than 100 Troopers annually.

Applicants who pass the screening process and are hired are placed in a ride-along capacity, riding with an experienced Trooper and observing and becoming accustomed to the job until the next session of the Basic Course begins.

Validation Strategies

From a technical point of view, the two main strategies for determining whether and to what extent a selection procedure in fact measures attributes that will identify and distinguish between more successful and less successful workers are criterion-related validation and content validation.

In the criterion-related validation strategy, the tests and/or other measures are administered to a group of individuals for whom data on job performance, criterion measures, are also collected. Four main types of criteria may be identified (Ash, 1974): measures of on-the-job productivity (e.g., traffic violations issued, arrests, hours on patrol); measures of systematically-observed standardized performance (e.g., scores on a pistol target range); administrative indices (e.g., number of lost-time accidents, absenteeism); and judgmental evaluations (performance ratings of all sorts).

The validity of the selection measure is determined by statistical procedures that assess the magnitude of the relationship between performance on the selection measure and performance on one or more criteria of actual performance on the job.

In content validation, a careful analysis is made of the skills, knowledges, aptitudes, personality attributes, and physical characteristics that seem to be demanded by the job, and this analysis is compared with the content of the selection procedure. For example, if a police officer must be able to chase a fleeing suspect over rough terrain, a test of speed and endurance in running simulates this aspect of the job's content.

The relationships between performance on selection measures on the one hand and indices of job performance on the other are complicated and sometimes very difficult to assess.

First, the observed magnitudes of such relationships, expressed, for example, as correlation coefficients, are significantly affected by such factors as the base rate for the criteria of job performance, the selection rate among the applicant population, and the variance or spread of scores on the selection measure.

By base rate is meant the proportion of applicants in the selected population who would, if selected at random, be satisfactory on the job. For any job, applicants tend to select themselves to some extent. For example, people who see themselves as sick, weak, or afraid are not likely to apply for the position of State Trooper. Among those who do apply, therefore, most candidates will feel that they are physically up to the job. The higher the proportion among applicants who meet physical requirements, the less useful are physical tests

selection screening measures. On the other hand, the larger the proportion in the applicant population who cannot meet minimum standards, the more useful selection procedures become.

The selection rate affects test-performance relationships in this way: the lower the selection rate (i.e., the smaller the proportion of applicants selected from among all applicants selected from among all applicants applying), the more useful is a selective measure. If a job is exceptionally demanding, such as airline pilot, only the "cream of the crop" will be selected, a very small proportion of all candidates.

The third factor, variance of test performance, or spread of scores, also affects observed relationships. Obviously, if every applicant attains high scores on a particular selection procedure, that procedure cannot differentiate between good and poor job risks. The desirable selection procedure, therefore, is one on which applicants are distributed from low scorers to high scorers. Otherwise, the phenomenon of "restriction in range" makes it appear that the selection measure is uncorrelated with performance. For example, if all male candidates are at least strong enough to carry an inert traffic victim to safety, a test of body carry would appear to have almost no utility. However, if weaker males and females are also tested, the test could well screen out those who cannot perform this task, and the observed validities (i.e., correlation coefficients) would go up.

Second, there is a rational relationship between test measures and job performance criterion such that different measures are useful for predicting different criteria. In general, cognitive measures (intelligence, reading comprehension, perceptual facility, mathematical ability) predict well school performance and those aspects of the job (e.g., effectiveness in court, maintenance of records, giving lectures and training) that involve cognitive skills. Cognitive measures do not predict personality aspects of the job, or physical proficiency, and should not be expected to do so.

Personality measures relate well to styles of performance ability to get along with others', stability under stress, and so on. Job performance criteria of these aspects of the job, however, are harder to come by.

In the personality domain, inferences from job demands (content validity) are more likely to be useful than criterion measures of explicit job performance.

Finally, in the physical domain criterion-related validity against overall job performance is very difficult to identify. Physical demands are critical--remove a body from a burning car--but of infrequent occurrence. To a minor extent, supervisory judgments of overall discharge of duties reflects an assessment of the ability of the Trooper to meet physical emergencies, but the main source of data for the justification of physical demand requirements must

be of the critical, even if infrequent, physical requirements of the job. For physical demands, as for personality dimensions, therefore the content validity strategy is more appropriate than the criterion validity strategy.

Chronology

In late February 1976, D. Patrick Lacy, Jr., Deputy Attorney General for the Commonwealth of Virginia, visited with us in Chicago to discuss the problem of selecting Troopers for the State Department of Police.

A definitive proposal was submitted on March 24, 1976. This proposal was premissed on the belief that testing would begin on July 1, 1976. As it turned out, because of the difficulty met in recruiting and hiring Black Trooper candidates, the next Basic Course (62nd) did not begin until November 1, 1976.

Work on background studies and test development began in April 1976.

10 May 1976	Task and attribute analysis completed
15 May 1976	Critical incidents reports collected
23 June 1976	Experimental test battery completed and printed
1-2 November 1976	62nd Basic Course testing completed
9-10 July 1977	Testing 1st WAC Battalion, 80th Division, U.S. Army Reserves
9-10 February 1978	Testing 63rd Basic Course
June 1978	Final test battery and Administration Manual completed and in operational use
23 August 1978- 11 October 1978	Operational testing 508 applicants invited 239 applicants reported 155 applicants passed

Report Outline

Chapter Two presents a summary of police selection research, covering cognitive and personality tests, biographical data, integrity measures, and physical strength and agility tests and measures. The chapter also includes a section on the role of women in police work and military service.

Chapter Three describes the job of a State Trooper, both generally and on the basis of the Virginia State Trooper's work as reflected in a distribution of work-time among various activities, on-the-job observation, critical incidents reported by Troopers, and a structured task and attribute analysis.

Chapter Four outlines the design and conduct of the study, describing the sample, the testing procedure, the tests that made up the experimental battery, and the various criteria -- ratings of

pre-school ride-along performance, school performance measures, and measures of job performance collected six months after testing.

Chapter Five summarizes the statistical results and conclusions of the study, outlines the content of the final test battery, and describes the selection decision rules designed to implement use of the battery.

Overall, the objectives of the research project have been accomplished to a satisfactory degree. A test battery has been developed which is a valid predictor of performance in the Basic Course and of performance indices collected after six months or more of experience on the Trooper job. These indices reflected diverse aspects of effectiveness: administrative measures such as turnover, supervisory evaluations of performance, and work-performance measures such as conviction rate. There was no evidence that the tests were differentially valid for Blacks and Whites (no validity data was available for females). The low-level multiple-hurdle screen (minimum cut-off scores for cognitive, personality, and physical strength and agility tests) should be fair to all candidates. The methods and procedures followed in the study conformed closely to the professional Standards for Educational and Psychological Tests (American Psychological Association, 1974) and the federal Uniform Guidelines on Employee Selection Procedures (Equal Employment Opportunity Commission et al., 1978), and the results seem to comport well with the desirability and need to provide equal employment opportunity to all.

CHAPTER TWO

A SUMMARY OF POLICE SELECTION RESEARCH*

> "...the ideal police officer is expected to have the wisdom of Solomon, the courage of David, the strength of Samson, the patience of Job, the leadership of Moses, the kindness of the Good Samaritan, the strategy of Alexander, the faith of Daniel, the diplomacy of Lincoln, the tolerance of the Carpenter of Nazareth, and finally an intimate knowledge of every brand of the natural, biological and social sciences" (Vollmer, 1936, p. 222).

There are two approaches to the screening of applicants for an occupation. First, one may choose to determine the characteristics of incumbents and select applicants who are similar to them. Second, one may attempt to assess job demands and select applicants who should be able to meet those demands at a high level of competency.

The first approach perpetuates the status quo, which may be disadvantageous if the occupation itself, or the larger social system, is in the process of change. Also, if the typical incumbent is not well suited to the demands of the job, the mismatch could continue indefinitely. An advantage to the approach is that the methodology is relatively straightforward.

The second approach strives for the "ideal", and is also perhaps idealistic, for there is an inherent gap between job demands and the traits that are tapped by psychological tests and other measures. For example, persons of a given intelligence level and a given constellation of personality traits may be successful in a variety of occupations. Conversely, in any given occupation, a wide range of intelligence levels and personality types may characterize equally effective incumbents. Despite the ability of man to stereotype, and researcher to construct ideal types, selection remains an imperfect art.

*Four extensive reviews of police selection research may be found in Blum (1964), Groner (undated), Barrett et al. (1975) and Landy, F. J. & Farr, J. L. (1975).

Additionally, there is an interaction between the person and his work environment which the selection procedure cannot easily duplicate. In actual practice, both approaches to applicant screening are used in selection: tests and measures are used that enable one to compare applicants with present incumbents or "successful" incumbents, and tests and measures are used which tap traits presumed to measure the abilities to meet various demands of the position.

This section of the report constitutes a summary of the use of tests in police selection, with special attention to cognitive and personality tests, tests of honesty or integrity, and tests of physical strength, dexterity, and agility with especial attention to the performance of women.

COGNITIVE AND PERSONALITY TESTS

Police agencies have made extensive use of both published tests and civil service examinations constructed by the police agency itself or by a merit commission which services it.

Civil Service Examinations

Many police jurisdictions have devised their own Civil Service examinations. Pomerance and Le Grande (1975) compiled question-types from 172 cities. All of the examinations purported to be "job-related". A content analysis of the examinations revealed that the most frequently used test types were Reading Comprehension (83 percent), Vocabulary (67 percent), Police Judgment (60 percent), and Basic Arithmetic (58 percent) (supra, p. 6). Thus, it is not surprising that Civil Service tests correlate highly with intelligence tests such as the Otis (Blum, 1964; Abbatiello, 1969; Eilbert, 1966), and that in the past many police jurisdictions used intelligence tests in selection.

Published Tests

In his 1964 review of psychological testing in police work, Blum (1964) states that departments began using intelligence tests (chiefly the Army Alpha Examination) in the nineteen twenties, and other psychological tests in the thirties. Citing O'Connor (1962), he notes that the use of tests was associated with a trend toward greater selectivity in hiring, and also that the selection strategy was based on the rejection of those likely to fail rather than on the selection of those with characteristics associated with successful police work (pp. 99-100).

In 1972, Murphy (1972) queried local police departments serving populations of at least 50,000 and employing at least 100 police officers, and all forty-nine state police agencies concerning the psychological tests they used in selection. He received 203 responses out of a possible 307 (30 of the 49 state agencies and 173 of the 258 local agencies). Of the 203 agencies, 80 used psychological tests in their selection procedures. The tests used are shown below (p. 573).

Type of Examination	Frequency of Use
Minnesota Multiphasic Personality Inventory	39
Psychiatric Interview	33
Army General Classification Test	13
Rorschach Test	9
Otis Quick Scoring Mental Ability Tests	7
Sentence Completion Test	5
Wechsler Adult Intelligence Scale	4
California Psychological Inventory	4
Draw-A-Person Test	4
House-Tree-Person Test (Tree Test Only)	4
Cattell Intelligence Test	3
Strong Vocational Interest Blank	3
Edwards Personal Preference Schedule	3
Allport-Vernon Scale of Values	2
Guilford-Zimmerman Interest Inventory	2
Kuder Preference Record-Personal	2
House-Tree-Person Test (House Test Only)	2
House-Tree-Person Test (Person Test Only)	2
Taylor-Johnson Profile Analysis	2
Bender-Gestalt Test	2
16 Personality Factors Test	2
Thematic Apperception Test	2
Beta Test	1
Gordon Personal Profile	1
Adams-Tepley Personnel Audit	1
Cornell Word Form-2	1
Flanigan Aptitude Classification Test	1
Thorndike Aptitude Test	1
F Scale	1
Thurston Temperament Schedule	1
Nelson-Denny Reading Test	1
Watson-Glaser Critical Thinking Appraisal	1
Quick Test	1
Culture Fair Intelligence Test	1
Bull Session Test	1
Self-Prepared Psychological Test	1

Cognitive Tests

Studies have shown a positive relationship between scores on intelligence tests such as the Army General Classification Test, Wonderlic Personnel Test, and the California Test of Mental Maturity and performance in the police academy (Dubois and Watson, 1950; Mullineaux, 1955; Mills et al., 1966; Clopton, 1971; Hess, 1972; Friedland, 1973). Blum (1964, pp. 27-129) found the Otis to be related to frequency of departmental commendations and to promotions but also to frequency of vehicle accidents, incidents leading to injury, and time taken off for illness. Bloch and Anderson (1974, p. 60) similarly obtained mixed results. Police recruits with high civil service test scores performed well in the police academy and on several other measures, but the high scoring women were more likely to use sick leave.

The usefulness of cognitive tests in predicting performance may also vary by race and sex. In a study of the Chicago Police Department, the Closure Flexibility Test* was shown to be related to the following performance criteria: rankings, awards, arrests, absences, complaints, and disciplinary actions. However, some of the relationships applied only to whites and others only to blacks (Furcon et al., 1971). In a later study which included many Illinois police departments, the test was recommended for continued research use, but was not at that time recommended for use in a statewide battery (Furcon and Froemel, 1973).

In the California study (Department of California Highway Patrol, 1976), the various examinations and other measures appear to relate quite differently to the performance of men and of women (p. 82).

Variables in the Prediction Equation in Order of Importance (California Study)

Men	Women
Number of College Hours	Number of College Hours
Exam--Decision Making	Percentage of Body Fat
Vertical Reach	Exam--Reading Comprehension
Height	Exam--Good Judgment
Percentage of Body Fat	Exam--Report Writing Skill
Shuttle Run	Military Service
Grip Strength	Weight
Age	Civil Police Experience
Exam--Reading Comprehension	Age
Exam--Report Writing Skill	Marital Status

In summary, while cognitive measures are generally found to predict performance in the police academy and some aspects of subsequent job performance, the best strategy may be to reject those most likely to fail, but not necessarily select those ranking the highest. Past a given cutoff score, other factors may become more important, chief among these being the personality of the applicant.

Personality Characteristics

Personality tests in police selection are intended to screen out those unable to withstand the stress of the police officers' world, and those whose behavior under stress would be likely to affect adversely individual performance and departmental effectiveness. However, it is only recently that nationwide statistics on stress in

*This test measures the "ability to hold a configuration in mind (despite distraction). It is the capacity to see a given configuration (diagram, drawing, or figure) which is 'hidden' or embedded in a larger, more complex drawing, diagram, or figure." The test is clearly a test of mental ability, but there is also evidence that it is a test of mechanical aptitude, analytic reasoning, and temperament (The Test Manual).

police work have been collected, through the collaboration of the International Conference of Police Associations and the National Institute of Occupational Safety and Health (as yet unpublished, but reported in Siegel, 1978 and Blackmore, 1978). The studies indicate high rates of divorce, suicide, alcoholism and various stress related physical ailments among police officers.

Dr. Edward Shev, psychiatric consultant to the Sausalito (Cal) police department (Shev, 1977) says that police have a suicide rate six times that of the general population, that over one-third of all police who have not been screened psychologically are emotionally unsuited for police work and should never have been hired. Police personnel also tend to suppress their emotional problems (Blackmore, 1978) which may manifest themselves on the job as aggression, hostility, dereliction of duty, or psychosomatic internalization leading to backaches, migraine headaches, ulcers, and heart disease. Police stress is, in other words, a major problem, and its consequences are severe. Personality tests attempt to identify those who are more or less able to handle such stress. The effects of stress may not, except in dramatic situations (such as a police officer "running amok") be directly evidenced in routine job performance, but it is possible by such tests to identify at least the most vulnerable job applicants.

Personality Test Research

In a seven-year followup of 87 police recruits who were selected on the basis of a civil service examination, medical examination, physical agility, and interview, but had also taken a battery of psychological tests which were not used for selection, Blum (1964) found significant but low correlations between various criteria of job performance and the Strong Vocational Interest Blank, the Minnesota Multiphasic Inventory, and the "F" scale (the authoritarian personality). The highest correlations were between several pathological subscales on the MMPI and serious misconduct.

The MMPI appears to be the most frequently used personality test in police selection and also in research involving policemen or police applicants. Studies by Zaice (1962), Matarazzo et al. (1964), Badalamente et al. (1973), Rubin and Cruse (1973), Rhead et al. (1968), Gottesman (1969), Mandel (1970), Savitz (1971), Hess (1972) and Shealy (undated), all using the Minnesota Multiphasic Personality Inventory, agree that the typical policeman or typical successful applicant has a tendency to "act out" or to be impulsive, and also to be sociable or extroverted. Matarazzo et al. (1964) concluded that the policeman is a man's man as defined by the lower classes.

The Manic, Depression and Hysteria scales of the MMPI have been related to certain criteria of performance in two studies (Azen et al., 1973; Marsh, 1962), and found to be unrelated in two others (Hess, 1972; Mandel, 1970).

Unlike the MMPI, the Gordon Personal Inventory and Gordon Personal Profile, the Edwards Personal Preference Schedule, the Rokeach Value Survey and the Myers-Briggs Type Indicator were developed for use with normal populations. Bass et al. (1954) found a high correlation between the Responsibility scale of the Gordon Personal Profile for deputy sheriffs in Baton Rouge (N of 22), but no significant correlations for the Baton Rouge city police (N of 37). It does not appear that any further police selection research has employed the Gordon. Kole found that police applicants described themselves on the Edwards Personal Preference Scale as being more willing to take orders, to accept routine, and to do things in a conventional way than others taking the scale (1962). Also using the Edwards, Zaice (1962) reports that policemen have a strong desire for achievement, and Matarazzo et al. (1964) claim that the typical policeman appears to like to work with others, but requires little kindness, and therefore is likely to be unsympathetic to others.

Rokeach et al. (1971), on the basis of the Rokeach Value Survey, also found that policemen are basically unsympathetic toward others, with high rankings on "obedience" and low rankings on "equality" and "forgiving". They concluded that there is a large gap between the values of the policed and the policers, and attribute this gap primarily to self selection rather than to social origins or socialization. Shealy (undated) using Myers-Briggs Type Indicator stated that policemen are more extroverted than introverted, and he also finds that the typical policeman is an analytic, impersonal, and factually oriented person.

It is tempting to account for this combination of traits (sociable-extroverted-impulsive coexisting with impersonality and a lack of sympathy) as an adaptation to the conditions of employment--the policeman sees people at their worst, and he becomes a "burnt out" case. Rokeach, however, is not the only one to note that applicants are very similar in personality traits to the veteran policeman (Mills et al., 1966; Sterling, 1970).

The Guilford-Martin Temperament Inventory and the Kuder Vocational Preference Record were used in Los Angeles County (Marsh, 1962; Azen et al., 1973). The two studies, done a decade apart, resulted in quite different findings. Sterne (1960) has also used the Kuder Preference Record, but found no statistically significant relations. The Strong Vocational Interest Blank has also been used in several studies (DuBois and Watson, 1950; Kates, 1950; Blum, 1964).

The California Psychological Inventory has been administered to Maryland State Police Cadets and Officers (Hogan, 1971), to correctional officers (Gough, 1956), and to the Oakland Police (Hogan, cited in Megargee, 1972). The Press Test, a test of the ability to work under stress, was part of the test battery in the Chicago study and revealed highly significant differences between the two racial groups (Baehr et al., 1971), as well as different relationships with the performance criteria for the two racial groups (Furcon et al., 1971). The

test was later recommended for use in an Illinois statewide battery (Furcon and Froemel, 1973).

In summary, nearly every personality test in the psychological repertoire has been used, nearly every test has shown significant results somewhere or sometime. Most psychologists, and probably many laymen, believe that personality factors are important in successful performance as a police officer. One may maintain that police should be similar to the policed, but it is equally possible to justify the proposition that because of the special nature of the job police officers must be quite different than the ordinary citizen.

The literature on the various personality tests simply does not produce a clear pattern, in part because there have been few attempts to replicate the strategies employed in earlier research, and in part because much of the reported research yields contradictory conclusions. It is clear that in most of the foregoing studies there has been no well defined job analysis and therefore there is little possibility of comparing the police officer's function between jurisdictions. A great variety of tests have been used with varying results. An extensive search of the literature does not indicate which tests are likely to prove valid. Among the personality tests, the literature merely provides leads which may or may not prove valid when used with another group of applicants.

Lastly, the literature on personality testing in police work should not be construed to imply that the typical police officer is emotionally maladjusted, neurotic, or psychopathic. Police officers are probably more stable than the general population (Gottesman, 1969; Fenster and Locke, 1973 a and b). However, given the conditions of their employment, in which danger is an ever present threat, it may be presumed that police officers should be required to be more stable than the general population.

Biographical Data

In addition to standard personality tests, some researchers have sought to find the key to stability in the applicant's past. Biographical data includes information on application blanks, on specially devised forms, and in information discovered by background investigation. The last may corroborate or disprove the information provided by the applicant. Through these means, for example, stability may be estimated by permanance in employment, permanance in residence, marital status, parents' marital status, and so on. The items are based upon the notion that past history may be the best predictor of future performance.

One of the earliest studies reporting on the relationship of biographical data and performance in police work was that of the Colorado State Highway Patrol (Cross and Hammond, 1951). According to their criteria of performance (success being defined as employment on patrol for one year, and failure being defined as having

resigned or been discharged within the past three years), more of the successful officers were formerly in agricultural, skilled, or law enforcement occupations, and more of the unsuccessful officers had been commissioned officers or in clerical and sales occupations, and were married with dependents or divorced.

A later study of various types of police jurisdictions in California (Levy, 1967) also used current employment as the criterion of performance. Those who remained employed were older (and had had more work experience), and also had less education than those who resigned or were terminated. Those who were terminated were most likely to have been fired from previous jobs and to have had the greatest number of marriages among married men. On the other hand, a study of New York City patrol officers (Cohen and Chaiken, 1972) found education was positively related to performance. Successful Chicago patrol officers were less likely than unsuccessful officers to have liked school, and as with the Colorado officers, previous sales experience was a negative predictor (Furcon et al., 1971). In a study of Los Angeles police, age and previous police experience were positively related to performance (Mormon et al., 1967).

In summary, there are some indications that age and previous police experience positively predict police performance, and that sales experience is a negative predictor. The criterion measures in several of the studies, however, were extremely primitive.

The Measurement of Integrity

Police work, like many other jobs in our society, places a premium on the honesty and integrity of the officer. Endowed with a broad range of powers, the possibility for abuse is ever-present.

It must be admitted that early classical research on honesty and conduct led to a pessimistic view of the possibility of predicting conduct from paper-and-pencil instruments, and tended to advance the view that honesty and dishonesty was largely situationally determined (Hartshorne & May, 1928a, 1928b; Jones, 1936; Hurlock, 1956). The sociologists, K. E. Schuessler and D. R. Cressey (1950) while not challenging the notion that a tendency to delinquency existed, found the data so mixed that they concluded that no dependable conclusions could be drawn.

In respect to the analysis of the central causes of police behavior of questionable integrity, furthermore, there has been a lively debate as between the "rotten apple" or "bad man" explanation versus the "rotten barrel" or "bad laws" explanation: lack of integrity among some police is the result of acculturation into a "bad" system (Swan, 1976; Bahn, 1976). Writers such as Bem (1974), however, adopt what has been called an "interactionist" position (Shealy, undated). The essential notions of the interactionist position are that some police applicants share personality characteristics that predispose them to low integrity behavior, and that these personality characteristics interact with situational factors and acculturation into the police milieu to determine moral conduct.

Although the acculturation process or the rotten barrel theory has attractive sociological plausibility in the context of the "contagion" or differential association theories of the genesis of crime and delinquency (Sutherland & Cressey, 1970), they do not provide a basis for screening out of the employment stream the potentially low-integrity prone. Yet this has been a pervasive and persistent problem in the United States and other countries.

Police and other public agencies, and private organizations, have attempted to deal with the problem in a variety of ways. The least standardized, and usually the least successful, has been by way of background investigations and reference checks. Skilled field investigations by such organizations as the FBI, other federal police agencies, and some other police departments have been fairly successful in identifying individuals with "bad records", but many investigation programs are routine, limited, and very likely to miss critical information related to honesty.

A second method, widely used by police and other government agencies and by private employers, is the polygraph or "lie detector" pre-employment interview (Reid & Inbau, 1977). This short-cut to an investigation is designed to identify those who attempt to be deceptive about their past records, and who in fact admit to serious crimes. In a study by John E. Reid and Associates of 225 Chicago suburban police (Reid & Inbau, 1977, p. 359), for example, only 44 percent "passed" the polygraph examination. "Of the 56 percent whose polygraph records indicated deception in response to significant questions, 80 of them admitted that they had committed burglaries or other serious thefts, 7 admitted that they had sold narcotics..., 38 admitted that they had paid bribes to police officers, 30 admitted buying or selling stolen merchandise, and 6 admitted committing such offenses as stealing cars, indecent exposure, and being involved in a hit and run accident." Many of these defalcations would not have been revealed by a background investigation, but most or all would be disqualifying for employment in police work. The extensive use of the polygraph to screen police candidates is reflected in reports in the police and polygraph press (Inglin, 1974; Barton, 1974; Romig, 1974; Blum, 1967, Territo, 1974; Horvath, 1972).

The polygraph is of use in identifying those who have committed past indiscretions, but not to predict who is likely to be prone to the committing defalcations but has not yet done so, particularly among younger applicants. The prediction of future behavior has been attempted by means of three main paper-and-pencil approaches: the use of biographical data, of standard personality tests, and, more recently, of tests designed specifically to elicit low-integrity attitudes.

The most prolific exponents of the first method were Sheldon and Eleanor T. Glueck, who, over a period of four decades, themselves produced a whole literature on the Glueck Prediction Tables (Glueck & Glueck, 1968). In their method, the investigators make judgments on the basis of interview or case data, or both, on such factors as 'Discipline by Father'. They compare a sample of delinquents with a sample of non-delinquents on categories as 'firm but kindly', 'erratic', 'overstrict or lax', and compute the percentage of delinquents and non-delinquents subjected to each kind of parental discipline. Then, for each alternative, each sub-category is assigned a weight which is a function of the percentage of delinquents whose parental discipline falls into the instant category. The sum of such weights over a number of factors (eg, 'Discipline by Mother', 'Number of Older Siblings', etc) is used as a predictor. The method is widely employed to predict such outcomes as probable future delinquency of school children, adjustment to prison of persons convicted in courts, probability of rehabilitation on parole, probability of recidivism after release from prison or from after-prison treatment programs, etc. Although the method is popular with certain groups of sociologists and penologists, however, it has not been used much in the employment situation, and recent critiques have challenged its methodological adequacy.

Other attempts to predict dishonesty from biographical data include a study to predict theft by clerks employed by a mass merchandiser (Rosenbaum, 1976), and a study of police officers involving both bio data and personality tests (Shealy, undated). Shealy, incidentally, found that police officers rated in the "low" integrity group were also more likely to have participated in varsity high school athletics, were less likely to be affiliated with religion, were less likely to have had relatives in police work in the past, were more likely to have relatives in police work currently, were less likely to have children, and were more likely to have more years of formal education. This group of predictors, however, reveals one of the great weaknesses of bio data. It is difficult to grasp either a notion of job relevance or of a unifying theme that pulls them together.*

However, the majority of psychologists involved in the prediction of lack of integrity or proneness to delinquency have used standardized personality measures for the most part under the assumption that future delinquency is predictable on the basis of indications of personality deviance such as anti-social personality, sociopathic personality, psychopathic deviate. In these uses, the testing is indirect and the purpose is generally disguised from or not apparent to the applicant.**

Significant predictions of proneness to delinquency have been claimed for a great variety of measuring instruments. Among them are such widely-used tests and questionnaires as the Minnesota Multiphasic Personality Inventory, (Hathaway & Monachesi, 1953); the California Personality Inventory, (Gough, 1965; Gough & Peterson, 1952); the Id-Ego-Superego Test (Mangold, 1965); the K D Scale and

*The use of biographical data to predict job performance has been discussed above (pp. 8-9).

**The use of personality tests specifically to predict delinquent tendencies should be distinguished from their use to predict job performance and general suitability for police work (see pp. 6-8 above).

Checklist (Bechtold, 1964); and the Activity Vector Analysis (Clark & Hasler, 1967). These are 'objective' personality tests, in which the examinee checks 'yes' or 'no' to indicate that the statements included (eg, 'People are against me') do or do not describe him. In Japan, Ichamura (1966) has used responses to the Rorschach Inkblot Test to predict criminal or delinquent tendencies. Majumdar and Roy (1952) and Mukkergee (1965) developed Rorschach profiles of delinquents. Porteus (1942, 1945, 1968) developed a paper-and-pencil maze-tracing test to measure intelligence in different cultures and found data to support the conclusion that running a maze with a pencil could also be used to predict delinquency: People who were sloppy, cut across corners, and ran into or across the maze boundaries also tended to be delinquent. Paul & Montogomery (1929) and Karpeles (1932) found that the mazes discriminated between delinquent and non-delinquent girls. The British psychologist H. B. Gibson (1966) developed a measure of delinquency proneness that depended upon knowledge of criminal argot or vocabulary; delinquents showed much greater familiarity with the criminal slang meanings of words (which, like 'snow', for example, can mean either the white stuff that falls from the skies, or the illicit drug heroin) than those without delinquent associations. Overall, success in this endeavour has been limited, however (K. E. Schuessler and D. R. Cressey, 1950).

Other psychological tests and questionnaires similar to the foregoing could be cited. As indicated above, they share one important characteristic. From the point of view of the person taking the test or questionnaire its intended function is <u>disguised</u>. The subject is generally aware that the test measures some aspect of personality (except in the cases of the Porteus mazes or Gibson's vocabulary test, both of which look more like a measure of some aspect of intelligence). The subject is <u>not</u> aware that the test is supposed to yield a measure of his honesty or proneness to delinquency.

Over the past decade, a number of tests have been developed that are more direct in approach. In them, the applicant cannot help be aware that honesty and integrity is at issue.

One of the first of these was the REID REPORT (Reid, 1967). The REPORT, in brief, has three sections, (1) measuring attitudes, (2) covering biographical data indicators of possible delinquency-proneness, and (3) asking for admissions to various defalcatory or delinquent behaviors. The contents are described below (pp. 12-13).

In the typical employment use of the REPORT, an applicant completes the form in the employer's personnel office. Part 1 is scored and all three sections are analyzed by a staff member of J.E. Reid and Associates. On the basis of the item score, plus evaluation of responses to the bio-data and the 'admissions' questions, an evaluation of 'Recommended for Employment' or 'Not Recommended' is made. Norms exist for the score itself, but the bio-data and the 'admissions' questions are also taken into account in the final recommendation. Thus, for example, a middling to high score, which might by itself lead to a 'Recommended' evaluation, may be reversed by a bad debt history, work instability,

or numerous admissions. Applicants in significant numbers do admit to practically every crime on the books.

The results of six validity studies indicate that the instrument has a validity of up to .62 against a criterion of verified previous theft history, is construct-valid (and resistant to faking) in sharply discriminating between prison inmates and job applicants, and has no identifiable ethnic bias.

The REID REPORT has been included in the experimental battery used in Virginia.

Two similar devices have appeared: the T. A. Survey (Cormack & Strand, 1970) and the Stanton Pre-Employment Survey (Klump, 1974). They are similar in format and coverage to the REID REPORT, but no published research on either could be located. The T. A. Survey is, like the REID REPORT, used by a large number of local, county and state police agencies.

Although substantial research remains to be done, the indications are that direct measures of integrity-related attitudes are more reliable and consistent than indirect measurement by inference from personality tests.

Paper and Pencil Test Findings: A Summary

It is apparent that psychological research on personality and cognitive measures in police selection has not yet come up with the key to discovering Vollmer's "ideal" police officer. Others who have reviewed the literature on police selection concur in this opinion.

Kent and Eisenberg (1972, p. 28) observe, "With some exceptions, the quality of research which has been performed in the area is poor.... The conclusions drawn in far too many studies border on charlatanism.... The only solid evidence for consistent predictive validity rests with relationships found between some psychological tests of aptitude or intelligence and measures of academy performance." They further observe that "...job or task analysis has largely been avoided or superficially addressed to date. No effective selection system can be developed without first acquiring specific and comprehensive information on what police officers do and are expected to do".

Groner (undated, p. 54) also criticizes the scant attention paid to job analysis and to adequate measurement of job performance. "So far, no single method or instrument has been shown to provide a uniformly accurate means of identifying even those persons who are most maladapted for police work, much less those who have high potential for becoming unusually successful in the diverse functions that policemen must perform.... To a great degree, our uncertainty is due to the lack of consistency among the research results reviewed here.... A more important problem by far has been the limited and inadequate attention given to the development of job performance measures for use in police research studies (p. 48). ...Selection research should consider the

differences in job functions and departments as key variables in selecting applicants...Selection studies must begin to focus on specifying the nature of the job in question...The picture that faces personnel administrators in this area is a dismal one. Few acceptable job performance measures exist, and the scope of the research that has been done has not taken into account the variations that exist in job functions."

It has been the objective of the present research to overcome these shortcomings as far as possible by extensive job analysis on the one hand and the use of multiple job performance (including school performance) criteria on the other.

PHYSICAL STRENGTH AND AGILITY

Just as there are great individual differences in cognitive aptitudes and abilities and in personality characteristics, there are also great differences in physical abilities. Not all men could serve adequately as State Troopers, and meet the physical demands of the job. However, unlike in most other characteristics, there are also stable and significant sex differences on physical abilities.

It is a fact of biology and physiology that women are on the average shorter, of lesser weight, possessed of less body strength, and less agile (e.g., they cannot run as fast or jump as far) than men. To the extent that a job such as State Trooper imposes strength and agility demands that are simulated by tests of these attributes, they are less likely to be successful on such tests than men. Even if there were no women applicants, however, it must be recognized that not all men are equally strong or agile. It is therefore important to identify physical strength and agility job demands and to assess the physical capacities of individual applicants to determine which ones can meet such demands.

Strength Differences

Women are less strong than men, even at equal height and weight, with an overall sex difference in muscle strength of the order of 55-65 percent, with a more pronounced difference in the upper extremities than in the lower extremities. Chaffin (1974) found a difference of 65 percent, Troup and Chapman (1969) 64 percent; Nordgren (1972) 56 to 74 percent; Asmussen and Heeboll-Nielson (1961) 58 to 66 percent. Nordgren (1972) observed that the sex differences in muscle strength were more pronounced in the upper arms than in the legs.

Sex differences in body size are also less than sex differences in strength, as noted by both Asmussen and Heeboll-Nielson (1961) and Nordgren (1972). McNab and his associates (1969) found that women subjects had significantly smaller capacities than male subjects, even when the results were expressed according to body weight and free body fat. The consequence of this relationship is that any height and weight standards will underpredict strength more frequently in the case of men than in the case of women. At equal height and weight, men are stronger than women.

Sex differences in muscle strength are also associated with a higher level of deleterious effects on women (in oxygen mobilization, muscle strain, and injury) than on men for lifting at or near women's maximum capacity (which is well below men's maximum capacity). Jorgensen and Poulsen (1974), for example compared oxygen uptake for men and women in a continual lifting task (floor to table) and found that females had a maximum oxygen uptake of 95 percent of normal average while males had an uptake of 121 percent of normal average. The endurance of females, independently of muscle strength, was significantly less than the endurance of males. Anatomy also militates against females. Hip sockets in the male are located directly under the bodies of the lumbar vertebrae in the same plane as the center mass of the body. In the female, the sockets are located further forward. This produces a force couple so that the lifting stress in

the back muscles in women, for the same object, can be as much as 15 percent higher than in males (Tichauer, Miller, & Nathan (1974). In other words, any object handled by women is approximately 15 percent "heavier" than if it were handled by a male of identical size and strength.

While the preceding analysis is based primarily upon laboratory studies or industrial tasks, they apply equally to the lifting and moving of heavy objects (e.g., bodies, automobiles, etc.) encountered by State Troopers.

Height and Strength

Until recently, the most widely-used surrogates for physical strength in police selection were standards of height and weight. These standards adversely affected the employment of women and some ethnic groups. Weight will not be discussed here, since many of the standards were phrased in terms of "weight appropriate to height." Statistics on height show the great disparity between men and women. In 1971-1974 the mean heights for the age group 18-24 were:

White Men	69.8 inches
Black Men	69.5 inches
White Women	64.3 inches
Black Women	64.0 inches

The cumulative percent distribution of height in inches of men and women in the age group 18-24 is perhaps more dramatic evidence (see Table 2.1).* For instance, at the requirement of 5 feet 7 inches the standard for the recruits at the time of the Washington, D.C. study, 16.9 percent of men and 86.5 percent of women would have been disqualified on the basis of height (Bloch and Anderson, 1974). At the time of the California study the minimum height standard was 5 feet 6 inches, which, as can be seen from the following table, eliminated 9.2 percent of the men and 76.7 percent of possible women candidates. In the latter study it was determined that people shorter than 5'6" could not reach the ground with both feet while sitting astride a motorcycle, could not safely back a patrol car without unbuckling the seat belt, and could not be seen when directing traffic at an intersection (California Highway Patrol, 1976, p. 18). At the time of the Pennsylvania study the minimum height requirement was 5'4" for women (disqualifying 45 percent of potential women candidates) and 5'8" for men (disqualifying 26.4 percent of men). Subsequently the requirement was changed to 5'6" for both sexes, and still later the Attorney General of Pennsylvania declared the height requirement was illegal and should be suspended. (Pennsylvania State Police, 1974).

It is possible to defend a height requirement in one of several ways: first, height is a good predictor of strength; second, height gives the appearance of strength and thereby may deter violence; and third, a minimum height is essential for some routine tasks as in the California study mentioned above and implied in the New York State screen-out items, such as, "Have sufficient height to see over the roofs of cars", and "Ability to climb into a window 5 feet above the

*All numbered tables appear in a separate section following the Appendices.

ground" (Eyde et. al., 1977, p. 13).

Height as a predictor of strength has been demonstrated by many investigators. One of the more carefully designed studies was conducted by Snook, a physiological psychologist associated with Liberty Mutual Insurance Company (Snook & Irvine, 1967; Snook & Irvine, 1968; Snook et al., 1970; Snook & Ciriello, 1974). Dr. Snook allowed the authors to reanalyze his raw data on 28 males and 31 females. The data are clearly persuasive of the conclusion that height and weight are predictive to a significant degree of the weight of lift a person can handle. The correlations are all very high and statistically significant beyond the .001 level, as follows:

	Height	Weight
Height	--	--
Weight	.54	--
Weight of Lift	.63	.59

In this instance, as in many others, the task more closely simulated industrial conditions rather than the conditions under which the state police work.

It is, however, also believed by some people that "a commanding presence", symbolized by more than average height, may quell violence. There is some empirical proof for that point of view in a study conducted by the Texas Department of Public Safety. Among the findings were that officers 5'9" or under were assaulted more often than taller officers, had more citizen complaints, and used their service revolvers in arrests and confrontations more often than did taller officers (Police Chief, 1974, pp. 34-35). However, the standard of height is so prejudicial to women (and some ethnic groups), that it is unlikely that the courts would allow the police to continue this standard.

Performance Testing for Strength and Agility

A second evaluation of physical strength is based upon actual performance. The performance may be of two types: standard gymnasium tests such as pull-ups, squat thrusts, sit-ups and so forth, and physical tests designed to simulate possible police job situations such as dragging an inert body from a car.

In a survey of state police agencies conducted by the authors and the Department of State Police of the Commonwealth of Virginia, a question was asked about the physical tests used, if any. The respondent was also asked for a copy of the test. Copies of the tests, and in two cases copies of reports were received from nineteen states. The states were fairly equally divided between those using job simulation tests, standard gym tests, and a combination of gym and simulation items, as can be seen in Table 2.2.

The argument for simulation items in physical testing is that they have face validity, whereas it has not been demonstrated that the various calisthenic exercises are related to the physical activities

actually performed by patrol officers (Wilkie, 1974). The argument for standard gym tests is that the average citizen (male or female) is familiar with them, and that given the requisite strength and agility a person can be taught to perform the physical duties of a patrol officer; and lastly, that the facilities for testing, using standard gymnasium tests, are numerous.

Michigan was one of two states submitting reports. The title, "Recommended Job Related Physical Performance Tests" indicates the thrust of their endeavor (Foss, 1975). The first step was to identify job-related physical requirements of the State Police, to identify the requirements as occurring weekly, monthly, and yearly, and to give the requirements importance ratings. On this basis, screen-out items were suggested, including: a 100 pound Dummy Drag-Lift test, one-half mile shuttle run test, bent-knee sit-up test, and seated stretch test (a combination of job simulation and standard gym tests). The author also indicates which tests were thought to be more difficult for women than for men. "It is anticipated that women applicants will have the greatest difficulty in passing the 100 lb. drag-lift and bent knee sit-up items of the screening evaluation.... The push-up and chin-up tests will prove to be more difficult for women than for men as part of the periodic performance evaluation...The push-up and chin-up test were purposely not included as screening test items since the arm-shoulder strength of women is known to be less than that of men and this would introduce a considerable selection bias" (p. 12). The author then quotes from Milton (1972, pp. 11-19) to the effect that some deficiencies may be compensated for by skills in other areas, and that optional or supplementary training, especially in self-defense may be one answer to womens' general strength inferiority.

Illinois also responded by sending a report, which had to do with selection, training, and continued physical fitness. The point is made that officers may spend most of their time each day riding patrol or doing paper work with resultant difficulty in responding to physically stressful situations. "Thus the officer actually lives two lives. One is similar to the average person, i.e. casual walking, driving, standing, or working at a desk. The other is a demanding physical performance which could require running, vaulting, and physical confrontation." (Nargelenas, 1976, pp. 1-2). Some of the physical demands that are mentioned are:

1. Foot pursuit through many types of terrain of a fleeing criminal.

2. Throwing, rowing, or swimming to save a drowning person's life.

3. Extricating and carrying an injured person from an accident scene.

4. Defending oneself or others against a physical by a criminal.

5. Physically controlling without unnecessary use of force, an argumentative and combative violator, persons under the influence of alcohol or drugs, or a mentally ill subject.

6. Physical exertion, involved in directing traffic for long periods of time under all types of weather conditions.

7. Searches for escaped criminals or lost children during all types of weather conditions through many types of terrain.

8. Removing heavy objects from the roadway which may be a hazard to the motoring public.

9. Assisting stranded motorists by physically pushing a vehicle or changing a flat tire.

10. High speed pursuit requiring physical stamina to control the police vehicle in an extended chase.

11. Rescuing injured from buildings on fire or from other catastrophe areas.

12. The ability to take cover quickly without injury to oneself while being shot at. (pp. 2-3).

These physical demands are specified in many of the incidents collected in the critical incident study of the Virginia State Troopers (described in Part Three). These demands may not happen daily, but an officer's inability to react properly can be fatal to himself-herself and to others.

In 1975, the International Association of Police Chiefs conducted a survey on physical fitness programs in state police agencies. They found that only one state (Illinois), "...indicated an understanding of the concept of total fitness which involves the development of balance, flexibility, agility, strength, power, and endurance." (Insert in Illinois Report). In the material received in the 1976 Virginia survey, two states (Tennessee and New Mexico) apparently have adopted the same approach. Illinois owes its position in the forefront to the presence on the staff of the University of Illinois at Urbana of outstanding fitness experts such as T. K. Cureton.

It is worth noting in some detail the Physical Readiness Screening developed by the University of Illinois Department of Physical Education (Considine, undated) because this battery has been well-researched, it combined both gym exercises and simulations, and it was to a large extent the model on which the Virginia battery was based.

The final battery includes five (5) exercises:

1. Fifty-yard dash (Scramble and Pursue) from a starting position seated in the driver's seat of a car with the door closed. Score is time in seconds.

2. Hand dynamometer. Score is weight pulled in pounds.

3. Body carry of a 150-pound dummy. Starting position is 20 yards from an automobile in which a dummy is "sitting" in the rear seat behind a closed door. Candidate runs to auto, pulls out dummy and carries it back to the start line. Score is time in seconds.

4. Flexed arm hang. Candidate pulls himself/herself up to eye level on a chinning bar. Score is time in seconds before unflexing arms.

5. Obstacle course. Candidate goes through six sets of obstacles, running the course three times. The obstacles are (a) step through three tires, (b) vault a vaulting horse, (c) go through a window frame, (d) run a figure-8 around three pylons, (e) crawl through a tunnel, and (f) walk with hands and feet along the stringers of a 28-foot ladder.

Analysis of extensive data collected on this battery highlights the significant sex differences on all these tests. The following data are based on a sample of 185 men and 44 women applicants in Champaign, Illinois.

Following are mean scores and standard deviations for men and women for data combined for four groups of applicants, and the "passing" score used:

	Male		Female		
	Mean	SD	Mean	SD	Passing Score
Scramble and Pursue (sec)	8.09	0.63	9.36	1.36	9.5
Grip Strength (lbs)	118.46	17.81	76.89	17.01	80
Body Removal (sec)	12.04	1.62	19.95	6.00	17
Flexed Arm Hang (sec)	42.52	19.23	27.47	19.13	21
Obstacle Run	92.62	15.53	117.25	40.07	135
No. Cases	185		44		

All the group differences were statistically significant. It should also be noted that the performance of females was much more variable than the performance of males on Scramble and Pursue, Body Removal, and the Obstacle Run.

In a sample of 61 men and 20 women, the proportion of candidates passing the battery, as a function of the number of individual tests passed, was as follows:

	Number of Tests Passed					
	5	4	3	2	1	0
Male Percent Passing	88.5	98.3	100.0			
Female Percent Passing	0	20.0	45.0	55.0	60.0	90.0

To reduce the adverse impact on women, some test programs have followed one or more of three courses: set different passing scores for the sexes on the same tests, require women to pass a fewer number of the tests to qualify on the battery, and/or use modified or different tests.

In general, there is little consistency across police jurisdictions in existing physical testing programs. Not only do they differ on the matter of simulation tests versus standard gym tests, but they also differ on the four approaches (unisex tests and standards, equal in all respects for men and women alike, or one or more of the three scoring and battery combination compromises indicated above). The batteries for fifteen state police jurisdictions are shown in Table 2.3. Note that in four states different tests or different requirements are set for men and women. In the remaining states, the battery is standard for men and women alike, although in some cases with minor modifications of one or more of the tests.

An indication of the average expectable performance difference between men and women is given in the Illinois data cited above, and in the averages attained by a recent West Point Military Academy candidate cohort:

West Point Physical Aptitude Examination and
Candidates Average Scores by Sex (USMA, no date)

		Male	Female
1.	Pull-ups	8	---
	Flexed Arm Hang	---	27.6 seconds
2.	Modified Basketball Throw	66 feet	42 feet
3.	Standing Long Jump	7 feet 6 inches	6 feet
4.	300 Yard Shuttle Run	60.5 seconds	67.5 seconds

The averages for men and women taking the New York State Physical Aptitude Test were as shown in Table 2.4. On all tests, the women's average scores are at least one standard deviation below the men's average scores.

Where states use the same sub-test the passing scores usually differ. For instance, in Massachusetts the candidate must run the mile in 12 minutes, in Vermont in 10 minutes, and in New Mexico in 8½ minutes. Pennsylvania and Vermont require 15 sit-ups, Wisconsin requires 20, New Jersey 23, and New Mexico 25.

Nevertheless the justification for the tests is remarkably similar, and as in the Illinois report (Nargelenas, 1976) relies on the critical aspects of the job. The justification for the various tests used is that they are job related. A few examples will suffice.

Wisconsin justifies its five part Physical Agility Review as follows:

1. Squat thrust--self-defense, occasional need to assume cramped or prone position in rescue/first aid operations.

2. Sit-ups--often necessary to lift weights, bend down at trunk enforcement sites, accident scenes, motorist assists (changing tires, etc.).

3. Deep knee bends--deep squatting position necessary in motorist assist, accident investigation, first aid, rescue and self-defense situations.

4. Lift 80-pound portable scale--truck enforcement often is conducted with portable scales. Successful candidates must be able to lift and carry the portable scale to the various components being weighed. The minimum distance a scale must be carried is 30 feet.

5. Arm flex with standard five-pound dumbbell-coordination and mobility of arms in vehicle operation, often under adverse or hazardous conditions. Ability to grip steering wheel, tire wrench, weapon, and other items of equipment. Necessary use of limbs for traffic direction over prolonger periods.

Nevada's Physical Performance Examination is based upon job simulation with tests measuring the ability of candidate to reach all vehicle controls, to accurately shoot a service revolver, to possess the necessary coordination in order to demonstrate the field sobriety test, to have the speed, agility and endurance necessary to overtake a fleeing suspect and overcome any resistance, to have sufficient strength to remove an adult occupant of a burning vehicle, and to carry injured persons up and down steep inclines.

Whether the agency uses simulation items, standard gym tests or a combination, there is an attempt to justify the examination as job related. With only a few exceptions, however, there has been no attempt to relate performance on simulation tests to performance on standard gym tests. The Kings County Department of Public Safety (State of Washington) compared patrol officer applicants on four simulation tests (Six Foot Fence Surmount, Body Drag, Quarter Mile Run and Stretcher Carry) and four standard gym tests (Pull-Ups, Squat Thrust, Sit-Ups and Standing Broad Jump). Of 168 males who took the tests, 19 failed; of the 19, three failed both the simulation and gym tests, 11 failed only the gym tests and 5 failed only the simulation tests. Thirty-three (33) females took the test and 30 failed; one did not complete the eight events, 25 failed both the simulation and gym tests, two failed only the simulation tests, and two failed only the gym tests. For females, at least, it makes no difference which type of test is used, the failure rate will be very high. (Wilkie, 1974).

In the analysis of the data for police and fire applicants in Champaign, Illinois (described above), the five tests were intercorrelated for men and women separately (Table 2.5), and for the total group. For the total group all the intercorrelations are relatively higher than the intra-sex correlations, largely due to greatly increased variance when the sexes are combined. Within each sex the correlations are 0.3 or less, but generally comport with physical strength theory.

No studies were located in which physical test data was correlated with job performance criteria. Where job relatedness has been addressed, it has been on the basis of content validity, as in Wisconsin and

Nevada (cited above). In this context, a content validity approach seems to be eminently defensible: analysis of the duties and activities of the State Trooper job reveals significant physical strength and agility demands (see Chapter Three, The Job of the Trooper). However, analysis of the data for the Virginia Sample does also show at least modest criterion-related validity against a number of school and job performance measures.

Physical Tests: A Summary

Physical strength is demanded of the police officer infrequently, but in extremely important situations. Until recently, noone questioned the propriety of police agency selection procedures featuring tests for strength. It was only when consideration to equal opportunity for women became an issue that these selection procedures were questioned. This is so because the difference in strength between men and women is so great that any test of strength, no matter how job related, has adverse impact upon the employment of women in police work.

WOMEN IN POLICE

The selection of women for police work presents certain problems in terms of the physical strength and agility requirements of the job. These problems have been discussed above, in the section on physical testing. Prior to 1972, their low representation in police work was primarily accounted for by male-only hiring policies for sworn personnel, however. The physical demands of the job was certainly one factor behind this policy, but others, more important, perhaps, also played a role. These included early sex role socialization in the home and schools, societal sex-typing of certain occupations, the lack of role models, social attitudes regarding the exposure of women to severe hazards of personal injury or death, and the like.

The force of these latter factors has been greatly attenuated as a concomitant of the women's liberation movement, however. Since the early 1970's their numbers in police work have increased, but at a slow pace.

This section reviews, not selection procedures per se, but the growth of female participation in police and related work, the changing attitudes toward women serving in these roles, and differences in task assignments and selection standards.

State Police

Massachusetts in 1930 was the first state to employ female state police officers. Connecticut followed suit in 1943. However, in both instances the role of women was limited (Horne, 1975, pp. 20-22). Pennsylvania, in 1972, was the first state to employ women (a group of fourteen) in duties identical to those performed by men, and to conduct an evaluation of their experience (Pennsylvania State Police, 1974). At the time of the Pennsylvania study, there were differences in physical selection and training between men and women, with lesser requirements being placed upon the women. Moreover, although the management of the department assumed that men and women would be treated equally in their assignments, they were not. Specifically, many supervisors were reluctant to assign women to general police duties, some women were never allowed to perform basic trooper tasks, some commanders created special jobs for the assigned women, and most of the females were not allowed to become involved in dangerous situations (e.g., they were not assigned to positions on the emergency trooper rosters, did not work midnight shifts, and some were assigned to another patrol zone when potentially dangerous situations occurred in their own zone (Pennsylvania State Police, 1974, p. 4). Perhaps because of differential treatment the women were less efficient in traffic patrol and incurred the resentment of many of the male troopers. Citizens who had had contacts with female troopers were generally favorable, and a majority felt that female troopers could perform as well as male troopers (Pennsylvania State Police, 1974, pp. 10-15).

From its initiation, the California State Evaluation of Women Traffic Officers (California Highway Patrol, 1976) was designed in experimental fashion. Prior to testing, more than 1,300 hours were

expended by California Highway Patrol personnel in recruitment, in addition to media recruitment. Of 1,458 women who submitted applications, 1,362 were disqualified (failed to meet written or physical test standards, etc.) or disqualified themselves by failing to appear. Of the 96 remaining women, 41 were taken into the experimental class along with 42 men, and given the standard 16 week training course. Twenty-seven women and 30 men completed the course. At the end of the one year evaluation period, 22 women and 28 men remained in the project. In addition to the costs of attrition, more women had injuries and these injuries were more severe than those suffered by men. This was attributed to the fact that the women were physically weaker than the men who were selected, and that the physical requirements for selection were too easy. It is interesting to note that the graduates also thought the physical screening should be more demanding.

The authors conclude with the following recommendations (California Highway Patrol, 1976, p. 2):

"1. Future STO recruitment efforts should be aimed toward those candidates who are most likely to meet job qualifications. Applicants should be provided with the complete information regarding the job process.

"2. Further research should be conducted on minimum physical qualifications for STO. This research should result in a more difficult and job-related pre-employment physical agility test, which will reduce training costs due to injuries.

"3. The equation for weighting the various phases of the selection process should be cross-validated before it is actually used to rank candidates on the employment eligible list.

"4. The Department should continue to use the Qualification Appraisal Panel (QAP) and new STO pre-employment examination as parts of the selection process.

"5. The minimum education requirements for STO should be raised to include an appropriate number of college hours.

"6. More individualized training should be provided to cadets during Academy training.

"7. A system should be established by the Department for requiring officers to remain in good physical condition throughout their careers."

New York State Police first hired women troopers in 1973 on the basis of a modified physical agility test. In 1974 they employed consultants from the United States Civil Service Commission to develop a uni-sex examination. (Tordy, et al. 1976; Eyde, et al. 1977a,b). In 1975, 22,128 candidates, including 1,187 women took the written test. The physical performance test was completed by 3,627 candidates. The ratio of the pass rates of women to men on the written test was

86 percent, and did not show adverse impact according to the four-fifths rule. The physical performance test did have adverse impact on women: 99 percent of the men but only 67 percent of the women passed the screen-out items. The failures were attributed to three items: "Have sufficient height to see over roofs of cars," "Ability to climb into a window 5 feet above the ground," and "Ability to change a car tire." It is obvious that the first two items correlate with the height of the candidates, and thus under the guise of performance criteria reintroduce the height standard.

In 1976, the Commonwealth of Virginia, Department of State Police conducted a survey to determine which states employed women as sworn personnel, and also to discover what differences obtained between men and women with regard to selection, training, and conditions of employment. Twenty-three states responded affirmatively (that they had women Troopers), 23 states in the negative, three states did not respond, and one state did not have a state police agency. Of those state police departments which did not have any women in their employ, Virginia and Ohio had women in training, North Carolina was in the process of recruiting female applicants, and Washington had employed two female troopers who had resigned after a short term of employment.

The numbers and percent of policewomen employed by the states responding affirmatively is shown in Table 2.6.

Given the small numbers of women employed in the state police and the recency of their employment, it is predictable that very few occupy positions of supervisory authority (defined as Corporal or above). There were eight women employed as supervisors by six states: Connecticut, Massachusetts, Michigan, Oregon, Pennsylvania, and Tennessee. Two of these, Connecticut and Massachusetts, have employed women for many years. The comments from Connecticut are informative;

> "...we have a position of State Policewomen which has existed for many years primarily designed to deal with female and juvenile suspects but recently evolved in general criminal investigation. State Policewomen never patrolled the highways and were never first responders to criminal investigations, nor did they investigate accidents. It was from these ranks that we selected a State Police Lieutenant and a State Police Sergeant both of whom passed the standard civil service examination for their ranks."

The survey form asked whether physical ability tests were administered during the selection process. Five states replied in the negative. One of these, Iowa, was planning to institute a test. If physical ability tests were administered, the respondent was asked if they differed for men and women. Ten states replied that there were no differences. One of these states, New York, replied that the previous test for women was less strenuous than that for men, but this had been challenged legally. Oregon mentioned that by setting the scores so that 50 percent of the females passed,

approximately 90 percent of the males passed. Eight states used different physical tests for men and women, but one of these, Massachusetts, planned a unisex test in the future. As noted in the discussion of the New York study, unisex physical testing will almost certainly have adverse impact upon the employment of women.

Two states mentioned differences during the training program. One did not require women to do squat thrusts, and also allowed women a different and less strenuous manner of performing push-ups and pull-ups. Women in training in another did not participate in boxing instruction.

The survey form also asked whether there were differences in assignment of male or female troopers. Seventeen states replied in the negative. The other six mentioned a variety of differences. Typical comments were:

> "There will be no difference in assignments of male or female Troopers. However, we have a position of State Policewoman..."

> "All three female troopers began with patrol duty on the road. Two of these are still in that capacity (riding alone and assigned like male troopers to patrol duty) and one third is with the Narcotics Section."

> "At the present time both (1 female is a supervisor) female Troopers have been reassigned to the office of the Deputy Superintendant (in an investigative capacity). They have completed successfully their first year and a half as Troopers in the patrol function and on special assignment to the schools due to court ordered bussing."

> "Until now women have only been assigned to specialized positions such as crime lab, questioned documents, fingerprint sections, and communication section."

> "At the present time two women are assigned to Patrol, three to Drivers License, and one to Recruiting."

Pennsylvania, as has been previously mentioned, conducted an evaluation of the female troopers, in the course of which it was discovered that females were indeed assigned differently than males.

It is interesting to speculate on the use of two-trooper vehicles as a policy facilitating the acceptance of women into the state police and especially in the patrol function. Nine of the 23 states employing women use some two trooper cars (primarily on night duty), whereas only 3 of the 23 states which do not employ women use two trooper cars.

Lastly, the states were queried as to their overall evaluation of their women employees. Apart from Pennsylvania and California which replied by submitting their studies, the informants were unable to answer definitively. Their experience was too recent and the numbers too small. Typically the response was that so far they had proven satisfactory.

It is possible that Oregon plans an evaluation similar to that undertaken by California, for they mention,

> "On October 15, 1976, our Department's Gemini Project will go into effect and twenty-three new recruits will be selected for duty. Twelve of these recruits are females and will undergo exactly the same training as the eleven men. These will be our first females assigned to road patrol duties."

Michigan also planned to conduct an evaluation, and the New York study gives data on female candidates, but not on troopers. Unfortunately, the latter was discontinued for lack of funding.

City and County Police

Although city and county police forces do not yet employ large numbers of women, their experience with policewomen is lengthy in specialized clerical functions or in duties relating to women and children, and they do employ a larger proportion of women than do the state police. According to the 1976 Uniform Crime Reports (1977, p. 226) cities employed 2.4 percent, suburbs 4.2 percent, and Sheriff's departments 7.7 percent women. Moreover, it is in local jurisdictions where the greatest numbers of women in law enforcement are found (as are the greatest number of all law enforcement personnel). Thus when women began to be assigned to general patrol as a function of the civil rights and womens' movements, some of the jurisdictions employed sufficient personnel to mount evaluations of the women on patrol.

The Police Foundation in 1972 sponsored a study of 86 women and 86 comparison men hired by the Washington, D.C. police department. The report deals with the work of these officers over a period of one year (Bloch and Anderson, 1974). The principal differences found were that women made fewer arrests and gave fewer traffic citations, men were more likely to engage in serious unbecoming conduct, women were somewhat more likely to be assigned to light duties as a result of injuries, but there was no difference in the number of sick days used. In other ways they were similar: they responded to similar types of calls, similar proportions of citizens who were dangerous, drunk and/or violent, etc. They were observed to have similar results in handling these situations. Similar numbers of new women and men resigned from the police department. Citizens expressed similar levels of respect. However, patrolmen doubted that women were equal to men (pp. 3-7).

Men and women had a similar number of driving accidents, but it took the women longer to pass their driving skills test (pp. 32-33).

Two background variables were found correlated with the officer's (both men and women) overall rating at the end of the probationary year: performance in the police academy was positively correlated, and white officers had higher ratings than black officers. The pre-employment interview proved of no value, good scores on the interview related to nothing for women and poor performance for men. Height (at the time of employment, officers of both sexes were required to be 5'7") also proved a doubtful standard. Shorter officers of both sexes seemed to perform better than taller ones (pp. 53-56).

Walsh (1975) in a review of Policewomen on Patrol states that the data given are not supportive of the position that the women had proven themselves on patrol. He says, "Police departments are primarily patrol-oriented organizations...Why did less than half of the new policewomen remain on Patrol (45 percent compared to 71 percent of the men)." Bloch's (1975) reply in the same issue makes these points:

> "...that the performance of any group of officers is (not) independent of the supervision that they receive". and
>
> "...it would be unconstitutional to exclude all women from policing because the average woman was not 'as good' as the average man. If some women can do it, than we believe that it becomes the responsibility of police departments to learn to select, train, and retain (after probation) only the competent women." (p. 22)

New York City has undertaken two formal studies of female officers' performance. The first examined 165 males and 165 females who were recently assigned to patrol. This study took place between October, 1973 and March 1974. The second involved 80 males and 80 females who had graduated from the Police Academy in March, 1974. In the second study the pairs were carefully matched for ethnicity, age, marital status, education, appointment date and prior employment. The data gathered reveal no significant differences in the usual measures of police performance (Bouza, 1976). The report also indicates that women officers were not fully accepted by their male colleagues and mentions that while women officers showed less physical strength and agility then men only 7 percent of patrol incidents required unusual physical exertion (Chicago Sun-Times, Dec. 5, 1977).

A study of women police officers in Philadelphia concluded that women were not as efficient as men in patrol duties. The women required more assistance to make arrests, were assaulted more often, had more vehicle accidents and more injuries than the men. The researchers recommended that women not be placed on patrol, except for purposes of continuing research. (Chicago Sun-Times, June 20, 1978).

St. Louis County has used policewomen since 1972. An evaluation of the first 16 hired with 16 comparison males indicated that they could do the job. True, women made fewer arrests, qualified later on the firing range, and had more automobile accidents, but there were no significant differences in overall performance ratings. And contrary to the custom in the cities--New York, Washington, as well as others such as Indianapolis, Peoria, and Miami where generally favorable results have been reported with women on patrol--St. Louis County used no two-person patrols (Sherman, 1973, 1975).

Federal Police

Federal agencies began employing women officers at about the same time, the Seventies, and for the same reasons as state and local police. In 1972 the first two women graduated from the Federal Bureau of Investigation training course and were sworn in as agents (Horne, 1975, p. 21). By 1977 there were 14 women attending the academy (about 10 percent of the total), and 69 of the FBI's agents were women. The FBI is quoted as saying that it has had difficulty recruiting women and blacks (Chicago Sun-Times, December 18, 1977.) In the Chicago area, to give another example, there are 325 agents, 5 of whom are women. An FBI spokesman is quoted as saying, "We are an equal opportunity employer, however, we do have our qualifications...and sometimes it's a difficult task to get minorities that meet them." (Chicago Sun-Times, December 29, 1977).

In 1973, twenty WAC volunteers were selected for the first women's military police training program. The Marine Corps has also recently started to train women police (Horne, p. 21).

Women in the Military

Related to the employment of women in police work is their employment in the military. The military, like the police, has been traditionally thought of as a male preserve. Also many if not most jurisdictions give veterans bonus points in applying for government jobs, and it follows that if fewer women have the opportunity to serve in the military, they are also deprived of this benefit. Lastly, veterans of military service are a likely pool of applicants for police work, for they have engaged in disciplined training following their high school graduation (if graduated) and are presumably in good physical conditions, not averse to wearing a uniform, and so forth.

In 1972, women were 1.9 percent of all military personnel. By 1976 women constituted over 5 percent (Binkin and Bach, 1977, p. 14).

> "...over the 1972-1976 period, women recruits raised the quality of the armed forces. Women were far more likely to be high school graduates, and scored higher on standardized tests; they tended to equalize the racial mix with that of the overall population, a higher proportion of female recruits than male recruits were white,

and, on average, served longer than their male counterparts." (Binkin and Bach, p. 19).

Despite the satisfactory nature of their experience with women, the military, at the time of writing, planned only to increase the percentage of women to 7 percent by 1982 (Binkin and Bach, p. 19). The most significant reason for the disparity between the proportion of women in the labor force and the proportion of women in the military is probably the general societal reluctance to assign women to combat duties.

However, there are also reports that women are unable to do some of the heavy physical work involved in some military assignments:

> "Sixty-two of ninety-seven Air Force women assigned to aircraft maintenance duties reported they did not have sufficient strength to perform many required, such as changing aircraft tires and brakes, removing batteries and crew seats, closing drag chute doors, breaking torque on bolts and lifting heavy stands.
>
> "The Marine Corps reported that among the women who were being trained to climb telephone poles, most were not able to hoist the necessary equipment, which weighs about 50 pounds.
>
> "Five Army women trained as ammunition storage specialists had been assigned clerical duties in their units because they 'physically could not do the work'. At one location, all ammunition had to be moved by hand (rounds weigh 58 pounds and boxes weigh 120 pounds).
>
> "Army women were also reported to be having difficulty performing the physically demanding duties of ambulance drivers: loading and unloading patients, braking and steering ambulances, and changing wheels and tires.
>
> "Supervisors of Navy women assigned as boatsawin's mate on tugboats or other small craft indicated that 'women cannot physically do much of the work, which includes lifting and handling sandbags that weigh 100 pounds, paint cans that weigh 72 to 94 pounds, and boatlines that weigh as much as 7 pounds a foot.' (Binkin and Bach, pp. 80-81)."

At the same time that women's participation in the military services began to increase, the service academies began to plan for women students. On October 7, 1975 President Ford signed into law the bill which permitted them into the national service academies. The bill states that the academic and other standards required should be the same except for minimum, essential adjustments in such standards required because of physiological differences between male and female applicants (United

States Military Academy, p. 3, no date). Standards are different in the pre-entrance physical tests, e.g. men are required to do pull-ups and women are required to do flex-hangs. The physical education program is generally the same, but not identical. Women cannot compete with men in boxing, wrestling, football, and lacrosse, and in a few of the co-educational courses the grading is adjusted for women cadets. In military training women use a lighter rifle than the men. In academic courses there is no difference.

Conclusions on Women in Police

There are two underlying themes in the previous reluctance of the military and the police to employ women for some of the duties identical to men (the military does not yet plan to send women into combat): the possibility of serious physical injury or death, and women's relative lack of physical strength. In both occupations the vast majority of employees live to retirement. It is perhaps not the frequency of danger, but the almost constant possibility of danger that permeates the life of a police officer. It should be noted that, however, the killing in line of duty of the first women police officer in Washington, D.C. occasioned no public outcry (Kiernan & Cusick, 1978, p. 50). Undoubtedly, attitudes are changing.

CHAPTER THREE

THE JOB OF THE TROOPER

The job of State Trooper has been extensively described both on national and local bases. The national common-language description is incorporated in the Dictionary of Occupational Titles (1977) under the title STATE-HIGHWAY POLICE OFFICER (Code 375.263-018).

OVERALL JOB DESCRIPTION

The DOT description of the State Trooper job is as follows (U.S. Department of Labor, 1977, page 256):

> "Patrols State highways within assigned area, in vehicle equipped with two-way radio, to enforce motor vehicle regulations and safe driving practices. Monitors passing traffic to detect stolen vehicles and arrests drivers where ownership is not apparent. Provides road information and assistance to motorists. Directs activities in accident or disaster area, rendering first aid and restoring traffic to normal. Investigates conditions and causes of accident. Directs traffic in congested areas and serves as escort for funeral processions, military convoys, and parades. Performs general police work by keeping order and apprehending criminals. Appears in court as witness in traffic violation and criminal cases. Keeps records and makes reports regarding activities. May assist law enforcement officers not under State jurisdiction. May serve as DISPATCHER RADIO (gov. ser.) at patrol substation. May supervise activities of station equipped to inspect automobiles for safe operating conditions."

The Commonwealth of Virginia Trooper job description mirrors in most respects the national description:

> "Enforces motor vehicle traffic laws and all criminal laws of the Commonwealth; patrols the highways in an assigned "Area" of the state for the purpose of maintaining order and controlling traffic.
>
> "Work consists of routine patrol tasks performed in accordance with prescribed departmental regulations and requires a detailed knowledge of motor vehicle

laws and all criminal laws. Good public relations must be established and maintained to make law enforcement effective. Discretion, courtesy, and tact must be exercised in determining whether the nature of a violation justifies warning or arrest, in assuring persons that their constitutional rights are being respected, and in firmly handling belligerent, excited, or recalcitrant individuals. Errors in judgment can result in false arrest and serious consequences and embarrassment to the Commonwealth. Apprehending law violators is frequently dangerous, involving travel at high speed on the highways and the use of firearms. The Trooper works alone the major portion of the time, exercising independent discretion when faced with emergencies involving apprehension of law-breakers and traffic accidents. Supervision is received from a State Police Sergeant who details patrol assignments, inspects and observes work, and gives detailed instruction in non-routine situations.

"Examples of duties characteristic of positions in this class:

"1. Patrols highways in a police car or on a motorcycle. Apprehends law violators, issues warning or summons or makes arrest.

"2. Investigates crimes and accidents within assigned patrol area for the purpose of obtaining facts and evidence for presentation in court. Makes photographs, removes fingerprints, takes measurements, etc. Writes up complete report of investigation and disposition of case.

"3. Visits scene of traffic accidents, clears road of bystanders, places flares if needed, and keeps traffic moving. Cares for injured persons and administraters first aid as required.

"4. Watches for stolen cars or criminals on information furnished by headquarters, stops suspected persons, and makes arrest if ownership is not proven.

"5. Assists local law enforcement agencies in such tasks as quelling fights, disorders, and riots and participating in raids and searches.

"6. Directs traffic to relieve congestion. Assists motorists by giving traffic information and advice as called upon. Answers questions from the public on laws governing motor vehicle operation and laws and rules governing human conduct in general.

"7. Supervises the operation of authorized motor vehicle inspection stations during semi-annual inspection of all vehicles. Checks for conformance to regulations, gives instructions to garage operators, and checks records of inspection.

"8. Makes talks and gives instructions in highway safety to schools, clubs, and civic groups.

"9. Appears in court as a witness in criminal and civil cases.

"Qualification Standards

"Completion of a standard highschool course and two years' experience in work involving public contacts and the operation of a motor vehicle. College education may be substituted for experience on an equivalent time basis.

"Ability to operate a motor vehicle; ability to deal firmly but courteously with the public; familiarity with State traffic laws and criminal laws; some skill in the use of firearms; minimum height 5 feet 10 inches, maximum height 6 feet 4 inches; minimum weight 160 pounds, maximum weight 220 pounds;* minimum age 21 years, maximum age 29 years; good physical condition as disclosed by a thorough physical examination; good record relative to character and reputation in the community. Candidate must successfully complete an intensive training and probationary period prior to regular appointment."

JOB ANALYSES UNDERTAKEN IN VIRGINIA

To determine specific aptitudes, skills, and other attributes which aspirants for the position of Trooper should possess, four different analyses of the Trooper occupation were undertaken.

The first involved an analysis of the distribution of time Troopers spend in the average week. Each week each Trooper is required to submit a two-page computerized report on hours spent and activities engaged in. Altogether, 58 items (including identification and location) are required. Reports were available for 158 of the 169 Troopers and Trooper-Trainees (62nd Basic Course) who participated in the validation study.

The second involved observation of the job in a sample of eleven full tours of duty, distributed among the three shifts and in varied locales across the state.

The third involved collection, from a sample of 686 Troopers, of 1431 critical incidents, in which the demands of the situation

***The height and weight requirements were waived for the 62nd Basic Course recruits and subsequent recruits.**

(confrontation with an armed criminal, an overturned automobile with injured persons, a court trial, a very high-speed chase) pointed to significant selection dimensions.

The fourth involved ratings by supervisors and other cognizant experts (e.g., sergeants supervising Troopers, training instructors, higher level personnel) of the tasks and attributes significant for Trooper performance.

Work-Time Distribution

The basic observation period for Work-Time analysis was the twenty-six (26) weeks following graduation from the 62nd Basic course: May 1, 1977 through October 29, 1977. For the 158 Troopers for whom data became available (the remaining eleven dropped out of school before graduation or were terminated before the observation period), 147 completed the twenty-six week period.

The distribution of weeks reported was as follows:

Number of Weeks	Number of Troopers
6-10	1
11-15	2
16-20	2
21-25	6
26	147

Reduced numbers of weeks occurred as a result of extended illness absence, other leaves, or termination between May 1 and October 29, 1977.

Collectively, these Troopers worked for a total of 161,684 hours, and drove on patrol 2,678,215 miles.

Put into more manageable perspective, the average Trooper in this group

...worked a total of 25.52 weeks
...worked an average of 40.08 hours per week
...drove an average of 663.91 miles per week, or almost 133 miles per day.

The distribution of the "average" Trooper's time is shown below. It must be noted, however, that these averages reflect the reality to only a limited extent. For example, the correlation between hours on patrol and hours on criminal investigation is negative (-0.63): while involved in an investigation a Trooper is not on patrol. The average profile therefore reflects the distribution of all time for all Troopers, but not necessarily the profile for any single Trooper for any single week.

Activity	Percent of Total Hours
Patrol	45.18%
Traffic Control	1.6 %
Accident Investigation	5.44%
Criminal Investigation	9.86%

Activity	Percent of Total Hours
Other Investigation	2.81%
Civil Disturbances Control	0.06%
Size and Weight Control	5.67%
Radar Enforcement	6.59%
Inspection Supervision*	1.28%
Other Special Duty	6.44%
Breathalyzer Testing	0.19%
Preparation for Instructing	0.04%
Instructing	0.13%
Safety Education	0.06%
Checking Squad	1.17%
Receiving Training	4.25%
In Office Working on Reports	9.10%
Office Administration Duties	0.10%

Road patrol is thus clearly the major task engaged in by the Trooper. If traffic control and radar enforcement are added to basic patrol work, over half of all hours available are devoted to work on the road. Investigatory work (accident, criminal, and other) account for over 18 percent of time available, and office work just under 10 percent.

Road work imposes significant cognitive, personality, and physical strength, agility, dexterity demands discovered in the subsequent analyses reported below. The investigatory and office work impose primarily cognitive and personality demands.

On-the-Job Observation

On-the-job observation of a job such as that of State Trooper provides an understanding of the basic, routine work-day of the Trooper. It affords a baseline or a frame of reference for the evaluation of less frequent, and frequently unobserved, tasks and events. On-the-job observation in this setting has, however, significant limitations. For example, duties such as guarding of dignitaries or fishing drowned persons out of bodies of water, while critical, are of infrequent occurrence.

The observer rode on patrol with STATE TROOPERS for eleven tours of duty.** These tours covered all hours of the day and a variety of areas within the Commonwealth of Virginia. The tours did not cover special assignments such as "working undercover" or "guarding dignitaries." It may also be noted that the state police are most busy on holidays and on Friday and Saturday nights. No major holiday took place during the eleven tours; however, two tours took place on weekend

*Supervision of automobile inspection stations.

**Brief descriptions of eleven tours are given in Appendix A. In addition, the observer was transported by police relay and airplanes, sometimes ate meals with TROOPERS in addition to the assigned and therefore entered into numerous discussions of the work of the state police. Note: where specific times are missing in the observation reports, the TROOPER was cruising the highways of Virginia.

nights. Thus, the observational period may be considered as a brief sampling of the usual in the Troopers work-day as opposed to the unusual represented in the critical incidents.

Critical Incidents Analysis

The critical incident technique is an out-growth of the studies in aviation psychology conducted during World War II by John Flanagan and his associates (Flanagan, 1954). The technique has since demonstrated its versatility in a variety of occupations. (Barnes, 1950; Hardin, 1955; Fivars, 1975; Cates, 1965). The data obtained are descriptions of behavior, but unlike other forms of job description, the technique addresses the "critical" level of behavior. It is a technique suited for occupations in which the unusual occurs frequently --as in war time flying or in the state police. The underlying premise of the technique is that many people are suited for, or can be trained for, the routine aspects of the job. However, if the job also demands non-routine performance, then these extraordinary demands are critical to selection. The TROOPERS were asked to give specific examples of critical job demands: "...describe any incidents up to a maximum of three (3) that occurred in the last six months in which you were involved in a situation calling for somewhat more skill and experience or physical strength and agility than the average experience during a patrol." Over fourteen hundred (1431) incidents were obtained from 686 TROOPERS.

Examples of critical incidents along with the observer's comments are shown in Appendix B. The incidents are presented in major categories in Table 3.1. Analysis of the incidents suggests that the three main categories of non-routine demands are in the areas of Investigation (22 percent), Exercise of Physical Strength (27 percent) and Driving and Traffic (22 percent). Situations or incidents involving primarily Interpersonal Relations accounted for about 17 percent of all the reports. Eight percent of the incidents could not be classified for one reason or another; four percent involved relatively infrequent tasks such as administering first aid, aiding motorists in trouble, piloting, and so forth. While this distribution is probably not a statistically random sample, the general order of magnitude of the kinds of situation in which Troopers find themselves is, it is believed, reasonably representative.

The data indicate that the exercise of physical strength and agility (386 incidents) is critically important in the Trooper position. The largest subcategory involved exercise of strength to subdue a resisting subject (190 incidents, or 13 percent of all incidents reported). These incidents ranged from roping a 450-pound Black Angus steer to subduing armed resisters to arrest. The second largest subcategory involved exercising strength with a passive object, like an inert human being. The remaining incidents involved primarily endurance and agility, as in pursuit on foot through uneven and difficult terrain.

The second major area of physical demands involved driving and traffic control, particularly in the pursuit of speeders. This category

(277 incidents, 19 percent of the total) included very high-speed driving in very difficult traffic situations, calling for very high levels of vigilance, motor coordination, very short reaction time, very fast speed of perception, and probably a high level of courage and emotional stability.

The third major area adumbrated by the critical incidents analysis involved investigations of a variety of kinds. In these incidents, observational and cognitive skills predominate: reasoning, keenness of perception, ability to dissimulate, skill in interviewing, ability to work undercover, attention to detail, etc.

Interpersonal situations (241 incidents, 17 percent of the total) included such diverse activities as guarding dignitaries, appearing as a witness in court, control of crowds (frequently hostile), exercising tact and persuasion as in family disturbances or in dealing with non-English speakers, and public speaking and conducting training programs. Implied abilities include a high level of verbal facility and ability to "think on one's feet", patience, emotional stability, and a commanding presence.

"Other Incidents" include skill in first aid (e.g., involving the Heimlicher maneuver to help a choking person, mouth-to-mouth resusitation, application of advanced first-aid techniques to stop bleeding), aiding motorists with automobile problems, administering the breathalyzer to assess DWI drivers. Implied aptitudes and attributes include emotional stability in the face of stress, cognitive skills to master specific techniques, leadership, and a genuine concern for others.

Ride-along job observation and critical incident analyses are task-oriented. They imply, but do not point out directly, testable attributes on the basis of which untrained applicants can be screened. The substantive content of the job behavior of experienced Troopers implies selection attributes, but does not identify them in aptitudinal form. To accomplish that transition involves (a) informed judgment based upon the inferences that may be derived from observed behavior and (b) systematic analysis of the judgments of "experts"--supervisors, trainers, and others--of aptitude requirements themselves.

Task and Attribute Analysis

To focus in on task and attribute requirements, a third job analysis technique was employed: expert judgment of pre-training attributes that are contributory to success in training and subsequent job performance.

This technique has a long history in job analysis. It was originally proposed, at the turn of the century by Loren Witmer as a technique to group all work in the United States on the basis of similarity of aptitude requirements. Witmer did not have the data, however, to implement his proposals. His student, Morris Viteles, elaborated the technique (Viteles, 1922) and developed the Job Psychograph, which involved the creation of job profiles to compare and group jobs. His work was continued by Beatrice Dvorak at the University of Minnesota,

and became, when she joined the Occupational Research Section of the then-created (1935) United States Employment Service, the basis of the Worker Characteristics Form, a checklist of 45 worker tasks and attributes that was a job grouping instrument in the creation of the first edition of the Dictionary of Occupational Titles (Stead & Shartle, 1940; Stead & Masincup, 1941). During World War II the technique was widely and successfully used to identify aptitudes required for war occupations and to provide counselors and employment service personnel with tools to transfer people from "non-defense" occupations into war-related occupations. At war's end, the technique provided a basis for the transition from military occupational specialties and war jobs (e.g., in ammunition and armaments) back into civilian employment.

After World War II, task and attribute analysis became a principal focus of job study. Among the many efforts in this area, the work of three investigators became central: continuation in the USES of the use of the Worker Characteristics Checklist, the studies of Ernest J. McCormick (a former member of the USES research team) leading to the Position Analysis Questionnaire (McCormick, Mecham, & Jeanneret, 1973), the studies of S. A. Fine leading to Functional Job Analysis (Fine & Wiley. 1971), and the work of Ernest J. Primoff (another graduate of the USES program) leading to the J-coefficient and job element examining (Primoff, 1971, 1973).

In all of these studies, "experts" (individuals cognizant of the aptitude requirements of specific jobs) rate the extent to which each aptitude is required.

The technique has been very widely used, to identify requirements for jobs as diverse as motor mechanics, bus drivers, bank tellers and clerks, state troopers, (Tordy et al., 1976) police personnel (Baehr et al., 1968) and others.

Basically, the "experts" are given a list of tasks, attributes and aptitudes which they rate for importance in the target job. In this analysis, experience and practice are essentially "washed out." The ratings are supposed to reflect the aptitudes required for successful acquisition, through training and on-the-job practice, of the specific skills and knowledges evinced in effective job performance.

The list of elements included in the evaluation of the Trooper position is given in the Task and Attribute Form (Appendix C). Judgments were collected from 55 supervisors -- sergeants, officers, training personnel -- who were familiar with the Trooper position.

Two analyses were undertaken.

In the first, the job attributes were ranked by average importance ratings. Importance was rated on a 5-point scale, ranging from 0 to 4. On this basis, a rating of 2 or above indicated an attribute of average or above average importance for successful performance.

Table 3.2 lists the eighty (80) rated attributes in rank order of average rating, showing both the average rating and the standard deviation of the ratings. A small standard deviation (roughly one-third of the mean) indicates an element on which there is substantial agreement among the judges. A large standard deviation reflects limited agreement among raters.

In the second analysis, the ratings for the eighty (80) attributes were intercorrelated, and subjected to a factor analysis (principal components extraction rotated to a varimax solution to reduce the elements to a manageable set of attribute clusters. Twenty-two factors emerged (Table 3.3), but only eight (8) of them, constituting 73.2 percent of the variance, were retained. The remaining factors each accounted for 3 percent or less of the variance of the ratings, and were essentially uninterpretable. Their Eigenvalues (a measure of significance) were all 2.0 or less. The main factor, accounting for 32.9 percent of the variance, involved perceptual-motor skills. The second factor (10.1 percent of the variance) involved communications skills.

Table 3.4 exhibits the job attributes clusters that make up the eight (8) major factors in the Trooper job:

I. Perceptual-motor skills
II. Communications skills
III. Understanding technical materials
IV. Administrative or supervisory responsibility
V. High speed driving
VI. Perceptual acuity
VII. Working conditions
VIII. Cognitive apprehension

This analysis, together with the more qualitative data available from the on-the-job ride-along and the critical incidents data, led to the identification of four (4) major dimensions and twenty-three (23) subdimensions suitable for testing. Factor IV, Administrative or Supervisory Ability, was eliminated on the basis that it was a dimension occurring only after substantial job experience.

While some tasks, and performance in some critical incidents, depend primarily upon one narrow aptitude or ability, the majority typically involve several abilities in complex interrelationships. Similarly, most of the tests are not "pure factor" tests, but tap a complex of aptitudes and skills.

JOB ACTIVITIES AND THE SCHOOL CURRICULUM

The Department of State Police Training Program extends about 22 weeks and involves over 1000 hours of instruction. For example, in the 61st Session (February 2, 1976-July 2, 1976) 169 subjects were covered in 1052 hours of classroom and field work; in the 62nd Session (November

1, 1976-April 15, 1977), 162 subjects were covered in 1081 hours.*

It should be pointed out that this 1000-plus hours program is equivalent to the "related training" part of a four-year craft apprenticeship, and includes as many hours of instruction as a two-year college degree (Arts Associate). An AA degree, under the quarter system, involves 90 credit hours. Since each credit hour represents 10 hours of instruction over a quarter, an AA degree represents 900 hours of instruction.

Instruction is given in four broad areas:**

A. Employee Orientation Courses, dealing with employee benefits, expense accounts, rules and regulations of the school, reporting requirements, etc. Such instruction extends over 26.5 hours, in 15 units.

B. Background Courses, dealing with the history and origin of policing, human behavior, social problems of various sorts, functions of various state departments, Virginia history and the organization of Virginia government, relations of the State Police to other State and Federal agencies, relevant constitutional law, etc. These topics are covered in 142 hours, in 44 units.

C. Basic General Skills Training Courses, with heavy emphasis on practice and exercise of the skills, dealing with such topics as the use of audio-visual aids, automotive maintainance, use of State Police communications equipment (radio, teletype, radar), photography, physical training (133 hours), swimming and water safety, typing, etc. These topics are covered in 317 hours, in 23 units.

D. Specific Police Procedures, Regulations and Laws Courses. This area includes the police-specific courses (although a few of those included above might also be included here). This area includes three broad types of courses, although some individual courses mix all types. The first comprises lectures and class work on specific laws it is the responsibility of the Department to enforce: laws of arrest, criminal law, drug laws, search and seizure laws, etc. The second includes lectures on problem areas and techniques: investigatory techniques, ambush attacks, bomb threats, court testimony, characteristics and effects of particular drugs, inmate confrontation, raids, terrorist activities, etc. The third includes field exercises and practice in such activities as: motor vehicle accident investigation, criminal investigation, defensive tactics, fingerprint lifting and classification, use of firearms, riot control formations and tactics, pursuit driving, etc. These topics are covered in 78 units over 580 hours, over fifty percent of the total program. The roster of courses, classified into the preceding four broad areas, is given in Appendix D,

*One subject was a 15.5-hour unit devoted to administration of the experimental Trooper selection battery. That is omitted from the following analysis, leaving 161 subjects over 1065.5 hours.

**The classification of a few of the 161 units is sometimes arbitrary, by the authors but the general structure is not particularly affected thereby. The courses are listed in Appendix D.

on the basis of the Course summaries included in the syllabus for the Basic Course for the 62nd Session.

To assess the relevance of the Training Program to the job of State Trooper, a comparison was made to one index of job duties--the critical incident job analysis conducted in connection with development of the experimental Trooper Selection Procedure, supplemented by the Observational Job Analysis Reports of eleven complete tours of duty on road patrol.

It must be pointed out that such matching is a complex undertaking, and does not lend itself to any simple quantification or correlation statistic.

Tour observation or the critical incidents, for example, does not reflect the contents of employee orientation courses, such as use of employee benefits like insurance, and rules and regulations of the Training School, but there can be little doubt that Troopers do complete expense accounts, apply for insurance benefits, take notes and study, fill out their weekly reports, etc.

Furthermore, most incidents on any tour of duty, and most of the critical incidents (1431 reported) involve knowledges and skills derived from several of the training units, in complex interaction. Even the simplest and most frequent observation unit on the tours, and the most frequent source of critical incidents--the pursuit of a speeding vehicle (critical incident pursuits are a minority of all pursuits, and typically involve pursuing a car going 100 miles an hour or more)--involves the learnings of several training units:

Weekly Report Preparation (write-up after event)
Communications (radio and radar)
Patrol Techniques
Physical Training (to handle a patrol car at speeds in excess of 100 mph)
Typing (to fill out reports)
Arrest, Laws of
Arrest, Techniques and Mechanics of
Motor Vehicle Code
Pursuit Driving
Traffic Summons Preparation

Finally, the benefits of some major training courses, such as Communications, Physical Training, Observation and Flash Recognition, Typing, Report Preparation, knowledge of various laws, various investigatory techniques, etc. extend over almost all incidents in which Troopers become involved.

To illustrate the relationship between the training courses and the critical incidents reported, in Appendix E the original Critical Incidents study has been used to show, for each critical incident category, the main training courses that prepared Troopers to handle that type of incident. It is to be noted that, in the illustrations selected before this comparison was even contemplated, Troopers volunteered the relevance and usefulness of particular training courses in their descriptions of critical incidents.

This analysis clearly shows the relevance of the training to the activities Troopers are called upon to engage in. These activities are many and varied, and adequate discharge of the duties and responsibilities entailed can be acquired only by intensive training. Some training courses do not appear, or appear rarely, in connection with the reported incidents or on-the-job observations, but they are related to high priority but low frequency events. Training in the use of firearms is an example. The use of firearms is the subject of four training units, involving 31 hours of guided training and 24 hours on various ranges. In Virginia, however, troopers rarely draw their firearms. Drawn firearms played a part in only a limited number of incidents (e.g., see Incident 00826, under Crowd Control).

Overall, the content of the training conforms closely to the requirements of the incidents in which Troopers become involved, and there is a rough match between the degree of emphasis on training in a particular area with the likelihood of having to call upon that training. For example, the largest number of incidents occurred in the group "II. Physical Strength" (386 incidents), and the longest single training unit was "Physical Training" (133 hours) plus "Defensive Tactics" (20 hours). The next two most frequent types of incidents--"Driving and Traffic" (320 incidents) and "Investigation" (319 incidents)--are also reflected in the number and length of the training units devoted to these areas. This kind of data does not lend itself to the establishment of any single quantitative index of relationship, but on a qualitative basis it is clear that the Basic Course has a high level of content validity for the work of State Troopers, and that the aptitudes and other personal attributes significantly required for success in the field are also required for success in the Training School.

CONCLUSION

The job description for the state police officer provided by the United States Government in the Dictionary of Occupational Titles and that provided by the State of Virginia are similar in content. In both descriptions, "highway patrol" assumes a position of primary importance.

The specific job analyses undertaken in Virginia also highlight road patrol as the sine qua non of the trooper's job. For instance, in analysis of the distribution of the trooper's work-time, nearly one-half was spent on patrol, and in the critical incident study incidents relating to driving and traffic assumed prominence along with those relating to investigative work and the use of physical strength. In the ranking of tasks and attributes important to the job of the trooper, supervisors were in high agreement with regard to many characteristics necessarily involved in highway patrol.

Nevertheless, the trooper's job cannot be narrowly defined as one merely requiring driving skills. The trooper is called upon to perform duties beyond those expected of taxi-drivers, truck and bus drivers. The trooper is an officer of the law. The broad ramifications of that position are illustrated in the critical incident study and also shown in the task and attribute analysis. Lastly, the curriculum of the police academy shows recognition of the variety of the trooper's job. It is

assumed that the curriculum reflects the wisdom of experienced troopers and the increments of knowledge required to do the job in the 1970's.

CHAPTER FOUR

DESIGN AND CONDUCT OF THE STUDY

This part of the report includes a description of the experimental test battery, and descriptions of the school and job performance criteria that were developed or used to assess the validity of the test battery. Both the tests and the criteria were derived from the extensive analysis of the Trooper's job.

THE SAMPLE

An ideal sample would have included a sufficient number of male and female Black and White recruit Trooper trainees who would be tested before training, put through the Basic Course, and followed up after graduation. The logistics of the State Police Training Program, difficulty in recruiting Blacks and females, and the limitation to the size of a class imposed by the space available at the Training School, all militated against such a theoretical ideal.

A sample was therefore constructed of four subsamples.

62 Basic Trainees. The first comprised the members of the 62nd Session of the Basic Course. It had been planned to start this session on July 1, 1976, but the difficulty encountered in recruiting Blacks in sufficient number postponed the opening of the session until November 1, 1976. The members of this course had been screened only by a background investigation and a medical exam. As they were accepted for the Basic Course, they were put into a Ride-Along status until a sufficient number of recruits had been assembled. This group included 21 Black males, 47 White males, and 1 White female. They were in training from November 1, 1976 through April 15, 1977. The first two days of the Basic Course, November 1-2, were devoted to the administration of the experimental test battery. After graduation on April 15, and subsequent assignment, a period of six months elapsed before collection of on-the-job criterion data. These data were collected as of November 1, 1977, for the period May 1, 1977-October 31, 1977 inclusive.

Troopers. To augment the size of the sample and increase the number of Black males, a sample including all currently employed Black male Troopers and White male Troopers with less than three years of service were tested on February 7-8, 1977. This group seven Black male Troopers and 93 White male Troopers. Criterion data were collected for this group at the same time that it was collected for the Trainees.

63 Basic Trainees. Members of the 63 Session of the Basic Course attended the training program from September 12, 1977 through February 3, 1978. This group comprised 5 Black males, 39 White males, and 1 White female. No criterion data could be collected in time for analysis, but the performance of members of this group on the predictors was studied.

WACs. In view of the unavailability of predictor data, particularly on the physical strength and agility tests, for female Troopers, the 1st WAC Battalion, 80th Division, U.S. Army Reserves at Fort Belvoir, Virginia were recruited to provide norm data. The members of the WAC battalion, including 34 Blacks, 23 Whites, and 4 Others, went through the experimental test battery on July 9-10, 1977.

Demographic and other characteristics of the samples are described in Chapter 5, below.

In addition, a separate sample of 103 applicants took the Reid Report, a measure of honesty, before they were subjected to a field investigation. A few of this sample were ultimately hired and entered the Basic Course, but most did not. The data for this sample were analyzed separately, comparing the Reid Report recommendations with the outcomes of the field investigations. This sample included one White female, 84 White males, and 18 Black males. The results of this sub-study are included in Chapter 5, below.

DESIGN OF THE EXPERIMENTAL TEST BATTERY

On the basis of the job analyses, an experimental test battery was assembled to measure the salient aptitude and attribute dimensions of the Trooper job.

To meet the needs of the project, new tests were developed--a Physical Activities Inventory, a Biographical Inventory Blank, and a package of cognitive tests including sub-tests of reasoning, mathematical reasoning, arithmetic, verbal comprehension, clerical perception (comparing names, numbers and patterns), and understanding communications (reading). Other measures (of personality, emotional stability, and honesty) were purchased. In the physical domain, an extensive strength and agility test program was devised. The tests relate to the job as represented by a collapse of the factors derived from the task and attribute analysis as follows:

Physical Strength and Agility:	Factor I, Factor V
Perceptual:	Factor I, Factor V, Factor VI
Cognitive Abilities:	Factor II, Factor III, Factor VIII
Emotional and Attitude Attributes:	Factor VII

Physical Strength and Agility

These measures included a paper-and-pencil PHYSICAL ACTIVITIES INVENTORY (Figure 7) and a battery of PHYSICAL PERFORMANCE MEASURES (Figure 8).

The PHYSICAL ACTIVITIES INVENTORY is a self-report inventory of sports activities the individual engaged in. Individuals report (1) whether they ever engaged in each sport, (2) when (in school, college, now) and (3) level of expertise attained. The final scoring key deleted all items on which there was a significant race difference.

Physical strength and agility has been established, in all the analyses, as a central requirement of the Trooper position. To measure the capacities involved, a small battery of tests, based upon careful perusal of the literature (e.g. Fleishman, 1964) and other police selection studies was devised to measure the significant aspects of physical activity. Following Fleishman's classifications, they measure the following attributes:

a. Static strength (the ability to exert sustained physical force) was measured by three tests: dynamometer hand grip, which is highly correlated with overall body strength (Fleishman, 1964), flexed arm hang (the examinee chins on a bar to eye-level and holds on until his/her arms give out), and body removal and carry (a simulation involving running to an automobile and dragging a dummy--150 lbs-- out and back to the starting line.

b. Explosive strength (reacting forcibly in an emergency) was measured in a Scramble and Pursue exercise simulating the chase of a culprit, and in an Obstacle Course run.

c. Dynamic flexibility (ability to twist the body in emergencies).

d. Endurance, a measure of maximum oxygen utilization, reflecting ability to sustain strenuous physical activity, was measured by the Master's Step Test. MOU can also be measured by exercises such as running a measured mile, etc., but more physical space than was available is required. The Step Test is a good surrogate (Romasnko et al., 1974).

e. Gross body equilibruim (the ability to traverse uneven terrain). This is measured primarily by one of the subtests--the ladder run--of the Obstacle Course.

f. Agility and coordination. Hot pursuit calls upon a wide variety of physical skills. The Obstacle Course simulates most of them: stepping through tires, jumping over a gym horse, diving through a window, wiggling through a tunnel, running bent-over on the stringers of a ladder.

In Total, the PHYSICAL PERFORMANCE BATTERY included seven tests: Dynamometer Hand Grip Strength, Flexed Arm Hang, Body Removal and Carry, Scramble and Pursue, Dynamic Flexibility, Master's Step Test, and Obstacle Run. It is a combination of simulation and standard gym type tests (see Table 2.2).

Perceptual Abilities

Perceptual abilities were measured by the Press Test (Figure 3), the Closure Flexibility Test (Figure 2), and by a subtest in the Aptitude Battery, Comparing Names, Numbers and Patterns (Figure 1).

Cognitive Measures

These measures included a specially-developed battery, Tests of Aptitude measuring reasoning ability, mathematical reasoning, verbal comprehension, arithmetic, perceptual acuity (comparing names, numbers

and patterns) and understanding communications (reading comprehension), and Closure Flexibility. These tests are described in Figures 1 (TESTS OF APTITUDE) and 2 (CLOSURE FLEXIBILITY).

Personality Measures

These measures included the PRESS TEST (Figure 3), the GORDON PERSONAL INVENTORY (Figure 4), the GORDON PERSONAL PROFILE (Figure 5) a BIOGRAPHICAL INVENTORY BLANK (Figure 6), and the REID REPORT as a measure of integrity (Figure 9).

Figure 1

TESTS OF APTITUDE, State Trooper Selection Procedures (1976)

Authors: Philip Ash and Judith N. Cates,
Ash, Blackstone and Cates, Chicago, Illinois

Measures: The Tests of Aptitude measure six (6) cognitive abilities useful in police work, and provides an Aptitude Index, which is the sum of the six raw scores.

REASONING: 15 multiple-choice (four-choice items calling for common-sense judgment in police-action situations.)

MATHEMATICAL REASONING: 10 constructed-response items involving verbal presentation of arithmetical problems.

VERBAL COMPREHENSION: 50 five-choice vocabulary definition items in which the word to be defined is included in a sentence or phrase.

ARITHMETIC: 15 constructed-answer arithmetic items involving +, -, x, ÷ with whole numbers, decimal numbers, and fractions.

COMPARING NAMES, NUMBERS, AND PATTERNS: 120 "identical" or "different" comparisons of items including numbers, addresses, names, and symbol strings. Measures clerical and perceptual speed and accuracy.

UNDERSTANDING COMMUNICATIONS: Measures reading comprehension. Each of five (5) paragraphs extracted from police manuals is followed by four (4) four-choice multiple choice items on the content of the paragraph.

Time Limits:
Reasoning - 15 minutes
Math Reasoning - 15 minutes
Verbal Comprehension - 10 minutes
Arithmetic - 10 minutes
Comparing - 6 minutes
Understanding Communications - 20 minutes

Scoring: Number right on each test. The Aptitude Index equals the sum of the test scores.

Reliability: KR-21 reliabilities are as follows:

Aptitude Index	0.82
Reasoning	0.27
Math Reasoning	0.70
Verbal Comprehension	0.85
Arithmetic	0.57
Comparing	0.63
Understanding Communications	*

Validity: This is a new test. The analysis of the validity of this test is part of the body of this report.

*KR-21 yields upper bound estimates for the various groups tested in the range of 0.9 to over 1.00, and is essentially indeterminate.

Figure 2

CLOSURE FLEXIBILITY (Concealed Figures) (1965)

Authors: L. L. Thurstone and T. E. Jeffrey, The Psychometric Laboratory, University of North Carolina

Measures: This is an objective test of the ability to keep a figure in mind in the face of distraction, that is, to see a given figure which is hidden, or embedded in a larger, more complex drawing or diagram. The subject is given a figure followed by four drawings, and asked to indicate in which of the drawings the figure is concealed. It may be concealed in more than one of the four drawings.

Time Limits: 10 minutes.

Scoring: The score is Rights minus Wrongs.

Reliability: Reported for two studies, both employing split-half reliability: .78 (Thurstone, 1944), .94 (Pemberton, 1951).

Validity: Studies showed that the test is correlated with reasoning and analytical ability (Yela, 1949; Botzum, 1950; Pemberton, 1951; Thurstone, 1949) and mechanical aptitude. The test was used in several police selection studies (Furcon & Froemel, 1973; Baehr, Furcon, & Froemel, 1969). In the first-cited study, "positive validity" was reported, but the test was not included in the final battery. In the second study, correlations of the order of 0.3 were found with a tenure criterion.

Figure 3

THE PRESS TEST

Authors: M. E. Baehr and R. J. Corsini, Industrial Relations Center, University of Chicago.

Measures: This is an objective test of personality, designed to measure an individual's ability to work under stress. It yields three main and two derived scores:

Part I. Speed of reaction to verbal stimuli
Part II. Speed of reaction to color stimuli
Part III. Speed of reaction to color stimuli in a stress situation caused by the interference of distracting verbal stimuli
Part I. - Part II.
Part II. - Part III.

Time Limits: 90 seconds for each part.

Scoring: Score on each part is the number of items attempted.

Reliability: The following test-retest reliabilities were found for a sample of 58 industrial personnel (Baehr & Corsini, 1967, p. 11): Part I. - 0.72; Part II. - 0.82; Part III. - 0.80; Part I. minus Part II - 0.17; Part III. - Part II. - 0.52.

Validity: Positive correlations were found between Press Test scores and scores on the Temperament Comparator for stability vs unstability, controlled vs outgoing, and sociable vs solitary. The Press Test was included in the final state-wide battery developed for police departments in the State of Illinois (Furcon & Froemel, 1973).

Figure 4

GORDON PERSONAL INVENTORY (1963a)

Author: L. V. Gordon, U. S. Army Personnel Research Office, Washington, D.C.

Measures: The Inventory measures four personality traits: Cautiousness (C), Original Thinking (O), Personal Relations (P), and Vigor (V). It is in a forced-choice format. It consists of 20 sets of four descriptive phrases, among which is included one for each of the four traits. The subject is to check two phrases: the phrase most like himself and the phrase least like himself.

Time Limits: Untimed, 10-15 minutes.

Scoring: Each item marked Most Like is scored two points, each unmarked item one point, each Least Like no points, with a possible maximum of 40 points on each scale. The weighting is accomplished through the design of the scoring stencil, and requires no computations.

Reliability: Reliabilities (corrected split-half) were computed for 168 college students (.80 - .83 for the four scales), 103 high school seniors (.77 - .83) and 124 college students (.79 - .84).

Validity: Significant validities against a wide variety of criteria were found (Gordon, 1963a, p. 12-14) for one or more of the scales for diverse occupations and activities, including SCUBA diver trainees (O and V), frogman trainers (O and P), Navy radio school recruits (O and V), incarcerated Naval and Marine prisoners (O), public utility directory advertising salesmen (V), consumer product salesmen (V), low-level public utility supervisors (O and V). Mulder (1971) compared employees (N = 1205) having records of penalties for violating formal company rules, non-violators, criminals, and psychopaths. Violators scored lower than nonviolators on cautiousness, vigor, responsibility, and emotional stability.

Figure 5

GORDON PERSONAL PROFILE (1963b)

Author: L. V. Gordon, U.S. Army Personnel Research Office, Washington, D.C.

Measures: The Profile measures four aspects of personality: Ascendancy (A), Responsibility (R), Emotional Stability (E) and Sociability (S). (See Gordon Personal Inventory for format).

Time Limits: Untimed, 10-15 minutes.

Scoring: (See Gordon Personal Inventory)

Reliability: Reliabilities are reported for four groups: 140 college students - corrected split-half, .84 - .88; 200 college freshmen - KR Case III. - .74 - .85; 84 college students - test-retest, .84 - .87; 88 high school students - test-retest, .80 - .87 (Gordon, 1963b, p. 21).

Validity: Mulder (1971) found that the emotional stability scale differentiated between violators and nonviolators of company rules. Correlations between job performance measures and various scales on the Profile are also reported for diverse sales, supervisory, and military occupations. Bass et al. (1954) found a significant correlation of .50 between Responsibility and peer ratings of deputy sheriffs, and correlations of .21 to .34 for the other scales (A, E, S).

Figure 6

BIOGRAPHICAL INVENTORY BLANK, State Trooper Selection Procedures (1976)

Authors: Philip Ash and Judith N. Cates, Ash, Blackstone and Cates, Chicago, Illinois

Measures: Eleven (11) dimensions of adjustment, attitude, and motivation were selected out of an item analysis/factor analysis of a pool of 125 multiple-choice items which were reduced to 85 to eliminate those which had significant race differences in response pattern.

The scales are: autonomy, emotional adjustment, family adjustment, financial responsibility, health, interpersonal relations, leadership and motivation, mobility, school adjustment, vigor, and work attitudes and goals.

Time Limits: Untimed, about 1 hour.

Reliability: Cronbach Alpha reliabilities were all unacceptably low (0.60 or less) and the BIB was dropped from the study.

Figure 7

PHYSICAL ACTIVITIES INVENTORY (1976)

Authors: Philip Ash and Judith N. Cates,
Ash, Blackstone and Cates, Chicago, Illinois

Measures: The Inventory provides a measure of physical vigor on the basis of participation in a wide variety of sports. A try-out list of 59 items was reduced to 24 by eliminating all items that (a) were only rarely participated in or (b) reflected significant differences in rate of participation by Blacks and Whites.

Time Limits: Untimed, 15-20 minutes.

Reliability: Estimated KR-21 reliability equals 0.82.

Validity: Significant validities ($p < 0.05$ or less) for the Trooper and Trainee sample were found for the following criteria:

Completed Training	0.16
Graduated	0.16
Rank in Class	0.14
Miles Driven	0.19
Hours on Radar Enforcement	0.22
Vehicles Checked	0.21
Arrests and Summons, Traffic	0.22
Arrests and Summons, Total	0.22

Details are in the body of the report.

An analysis of variance of race group and sex group differences showed that no significant difference exists on either dimension (sex difference F-ratio = 0.018, p = 0.895; race difference F-ratio = 0.090, p = 0.914).

Figure 8

THE PHYSICAL STRENGTH AND AGILITY TESTS

FLEXED ARM HANG

Candidate jumps up to chinning bar and grasps bar palms facing out. Candidate raises self to position where eyes are on level with bar. Score is number of seconds this position is maintained.

Reliability: A study of 201 male Great Lakes Naval Station trainees yielded a reliability of 0.77. (Fleishman, 1964, p. 59).

Validity: The test is a measure of dynamic strength, with high loadings on a dynamic strength factor (-0.73) (Fleishman, 1964, p. 64) correlating with pull-ups, push-ups, dips, and rope climb.

HAND GRIP STRENGTH

Candidate squeezes a hand dynamometer three times in each hand. Score is average of reported preferred hand.

Reliability: Test-retest reliability is about 0.91 (Fleishman, 1964, p. 59).

Validity: Hand grip is a good measure of static strength, with a primary factor loading on static strength measures of 0.72 (Fleishman, 1964, p. 128). It correlates with height (0.25) and weight (0.49) as well as with a variety of strength tests such as arm pull (0.55) trunk pull (0.41), and medicine ball put (0.51).

SCRAMBLE AND PURSUE (SHUTTLE RUN)

Candidate runs a 150-foot three-leg path with sharp turns at the end of each of the three legs.

Reliability: Test-retest reliability for 201 Navy trainees was 0.85.

Validity: The shuttle run is a measure of explosive strength, loading 0.77 on this factor and correlating highly with push-ups (0.47) dips (0.46), standing broad jump (0.69) 10-yard dash (0.67), pull-ups (0.57), and soft-ball throw (0.50).

BODY CARRY AND REMOVAL

Candidate runs to an automobile, drags out a weighted dummy, and carries or drags it to the starting point. No generic data are available. See section on Physical Testing.

DYNAMIC FLEXIBILITY (TWIST AND TOUCH TEST)

Candidate alternately twists body to touch a mark on the wall behind him/her, and a mark between his/her legs on the floor. Score is number of cycles completed in twenty (20) seconds.

Figure 8 (continued)

Reliability: Test-retest reliability is 0.92 (Fleishman, 1964, p. 128).

Validity: No generic validity data are available. The ability to make repeated, rapid flexing movements is, however, required in such activities as hot pursuit, unarmed combat, and fire-fighting (Romashko et al., 1974).

MAXIMUM OXYGEN UTILIZATION (STEP TEST)

Candidate steps up onto 12-inch high bench, and then steps down, alternating right and left foot as the lead foot. Steps as many cycles as possible in five minutes.

Reliability: Various measures derived from this test -- e.g., number of cycles completed in fixed time, pulse ratio (resting pulse after exercise divided by pulse before exercise), time to exhuastion in paced stepping -- yield reliabilities of the order of 0.80 (Henry & Farmer, 1938; Kelley, 1941; National Education Association, 1950).

Validity: Probably the most widely accepted measure of physical working capacity over time is maximum oxygen intake, which is a basic measure of endurance. Four general types of test have been developed: running, stepping on a bench, walking on a treadmill, and riding a bicycle ergometer (Romashko et al., 1974, p. 3). The step test shows moderate correlations with MOU (e.g., of the order of 0.5 with other endurance indexes) (National Education Association, 1950, p. 9; Romashko et al., 1974, p. 40).

OBSTACLE COURSE

This test consists of six exercises taken in sequence by running through a fixed route approximately 225 feet long: step through three tires, jump over horse, dive through a window-frame, describe a figure-8 around three pylons, crawl through a 12-foot tunnel, and step along the stringers of a ladder.

Reliability: None have been reported.

Validity: Since this particular combination of exercises is used only by a few agencies, there is no independent validity data available. Validities in the Virginia study are reported in the body of this report.

Figure 9

THE REID REPORT (1967, 1971)

Authors: John E. Reid, John E. Reid and Associates, Chicago, Illinois.

Measures: The REPORT measures proneness to theft. It consists of three main sections. The first section (called the REID REPORT INVENTORY) comprises a yes-no questionnaire including two sets of items. The first set (35 items) yields a measure of punitiveness as reflected in attitudes toward punishment for crimes of theft (e.g., "Do you believe there are some cases where a person has a right to steal from an employer?"; "An Employer discovers that a long-service, trusted employee has been taking a few dollars out of the cash register each week. Should the employer have him arrested?"). The second set of questions (35 items) is intended to measure the individual's own attitude and behaviors relating to theft (e.g., "Did you ever think about committing a burglary?"; "Are you too honest to steal?").

The second section of the REID REPORT consists of a detailed biographical data blank covering previous employment, education, personal history, financial history and indebtedness, and medical and social history (use of alcohol and drugs, psychotherapy, experience with police including questioning about arrest* for and conviction of a variety of theft related crimes, and gambling practices.)

The third section includes a list of questions about one's own honesty ("How honest are you?", with alternatives ranging from "Far Below Average" to "Far Above Average"), and questions to which a "yes" response constitutes an admission of a committed theft or other defalcation (e.g., "Did you write a check knowing there was not enough money in the bank more than three times?", "Did you make a false insurance claim for personal gain?").

Time Limits: Untimed, about 45 minutes.

Scoring: Test is scored and interpreted by the Reid Report/Reid Survey affiliate of John E. Reid and Associates. A numerical score on Part I is combined with an analysis of the responses in Parts II and III.

*Recent court decisions prohibit questioning of employment applicants about arrests. These questions are no longer included in the REID REPORT.

Figure 9 (continued)

Reliability: Internal consistency (Cronbach Alpha) reliability coefficients were computed in a sample of 1519 job applicants and in another sample of 1230 job applicants. Results were as follows (Ash, 1970a, 1973):

	1519 Sample	1230 Sample
Total	-	0.92
White Males	0.91	0.93
Black Males	0.92	0.92
White Females	0.80	0.91
Black Females	0.82	0.93

Validity: Six validity studies show that the current version of the REPORT has a validity of 0.6 against verified previous theft history (based upon polygraph examination), predictive validity against actual theft acts, and construct validity against an "incarceration for theft" criterion.

1. 1519 employment applicants. Criterion was admission of defalcation under polygraph examination - 0.44 (Ash, 1970a).

2. 1230 employment applicants. Criterion was admission of defalcation under polygraph examination - 0.62 (Ash, 1973).

3. 154 employees of a drug company. Criterion as above - 0.43 (Ash, 1971).

4. 140 bank employees tested before hire. Criterion was detected theft or other defalcation after hire - multiple regression of RR scores against the theft criterion yielded a multiple R of 0.70.

5. 25 warehouse security guards tested before hire. Criterion was subsequent detection of defalcation. Chi-square significant at the 0.01 level.

6. Comparison of 187 convicted incarcerated felons with a sample of 1030 male employment applicants. The felons scored at the first percentile of the employment applicants (Ash, 1974a).

PERFORMANCE CRITERION MEASURES

Critical to meaningful validation of a selection procedure is the identification or development of performance measures, or criteria. The agenda of this research included the development of a selection procedure that would predict performance in both the school and on the job after graduation. In the predictive validity design used, school performance measures were collected upon graduation or termination from the program. Job performance measures were collected approximately six months after graduation.

Preliminary to developing criteria, eighteen previously published police validation studies were reviewed. Of these, five studies used one criterion, six used two criteria, three used four, and one study each involved five, six, seven, eleven and twenty-nine criteria (Mandel, 1970) respectively.

The criteria used are listed below, except for Mandel's study, which used most of those used by anyone else.

DuBois & Watson (1950): Academy grades, achievement test, marksmanship, service ratings.

Mullineaux (1955): Final academy grades, final training scores, report writing, spelling.

Mills et al. (1965): Academy rank.

Hess (1972): Academy score, commendations, supervisory ratings, disciplinary actions, peer evaluations.

Friedland (1973): Academy average, first year ratings, complaints, days off with pay.

Bass et al. (1954): Supervisor ratings, buddy ratings.

Furcon et al. (1971): Paired comparison ratings, departmental ratings, awards, complaints, disciplinary actions, arrests, absences.

Marsh (1962): Performance ratings, auto accidents.

Azen et al. (1973): Employment status, rank status, job type, supervisor ratings, performance ratings, auto accidents.

Sterne (1960): Supervisor ratings.

Humm & Humm (1950): Termination vs. success.

Kates (1950): Job satisfaction.

Mormon et al. (1965, 1966): Academy performance, overall performance.

Mormon et al. (1967): Supervisor ratings, supervisor rankings.

Hogan (1971): Academy staff ratings, supervisor evaluations.

Hogan in Megaree (1972): Acceptance as police recruit, academy standing.

Rand & Wagner (1973): Supervisor ranking.

Blum (1964): Status (active, voluntary termination, involuntary termination), assignment progression, incidents leading to injury, sickness days lost, numbers of illness absences, public commendation, departmental commendation, serious misconduct, serious (formal) charges, minor recorded charges, vehicle accidents.

The most common criteria were grade or standing in the training academy, and/or a supervisory rating. Few behavioral criteria were used, and administrative criteria such as length of service or employment status occurred only infrequently.

In the present study, an attempt was made to identify and use multiple criteria that would more fully reflect the complexity of the Trooper's job.

Five categories of criteria were utilized:

1. A pre-school assessment rating based upon observation of the candidate during a period in which he/she rode along with a Trooper to experience the reality of the Trooper's position.

2. Measures of performance in the Basic Course including rank in class, overall course grade, and others.

3. Administrative measures including length of service on the force and current status (active vs. terminated).

4. Supervisory evaluations of job performance including paired comparison ratings and ratings of performance on job-related behaviors.

5. Indices of on-the-job performance as reflected in weekly self-report summaries of actual job activities (time spent on various activities, number of arrests, convictions obtained, conviction rate, etc.).

The various criteria are described below.

Ride-Along Ratings

After a person is conditionally hired as a Trooper, and before he/she enters the Basic Course at the Training School, he/she rides along with a seasoned Trooper for a period ranging from a couple of

weeks to a month or more. The length of the ride-along is determined by two dates: (1) date of hire after initial screening and (2) the date the Basic Course begins. Early hires therefore have longer ride-along experience than later hires. The ride-along is designed to accomplish two purposes: for the potential Trooper it is an exposure to the reality of the job and an experience on the basis of which he/she can decide whether this is, in fact, a desirable occupation. For the Department, it is an opportunity to observe the candidate in an on-the-job situation. Almost no one who elects to go to the School (i.e., survives the ride-along) is rejected by the Department, but individuals do self-select that the reality of the job is not for them, and they drop out before the school.

For each survivor who entered the school a Ride-Along pre-school evaluation was available. Until 1977, when a structured rating form was developed and used, this evaluation was a discursive letter written by the cognizant sergeant on the basis of information from the Troopers who rode with the Trainee and describing the Ride-Along's attitudes and effectiveness in situations in which the Ride-Along "took charge" under the Trooper's surveillance.

The Ride-Along evaluations were rated on a scale of 1 (Excellent) to 5 (Unsatisfactory) on an overall basis by two independent reviewers. The Evaluation Letters do not reflect a symmetrical distribution of ratings, with a mode in the middle and equal "good" and "poor" tails. Rather, the distribution is skewed toward the high end: most trainees are rated Average or above.

The rating scheme used five (5) categories, as follows:

Category 1 is defined negatively. There must be no negative comment (this includes faults that are now corrected or presumed to be easily correctible), unless a corrected fault is counter-balanced by words such as "excellent", "outstanding", or "flawless".

Category 2. A question is raised with regard to one area of competency, or if with regard to two areas is compensated by the notion that he/she will be "above average".

Category 3. Questions are raised in at least two areas of competency, or the same area of competency is raised several times in different contexts. However, the letter generally ends with the thought that the individual will be a "good" trooper or has been "entirely satisfactory".

Category 4. Competency in several areas is raised, but not the question of whether the individual will satisfactorily complete the basic course.

Category 5. Serious doubts are raised concerning the individual's ability to complete the Basic Course or to become an asset to the department if the course is completed. Competency in several areas is questioned.

Taking all aspects of performance into account, the correlation of the judgments of the two reviewers was 0.92, indicating very substantial concurrence in the judgment of the likelihood of a person, on the basis of his/her ride-along experience, to get through the School and to become a successful Trooper.

The distribution of the ratings is given below. Since the ratings were made in five (5) broad categories, the zero-order correlation was corrected for broad categories following the model of Peters and VanVoorhis (1940, p. 393-399).

$$r_{xy}' = \frac{r_{xy} S_x S_y}{\sqrt{S^2x - (1/12)} \quad \sqrt{S^2y - (1/12)}}$$

The uncorrelated inter-rater agreement (two readers) was 0.792. The broad-categories corrected inter-correlation was 0.846. This coefficient (0.846) appropriately applies to these ratings. The reliability (S-B) of the average rating in the reliability subsample was 0.916. In other words, the Ride-Along evaluation is a highly reliable measure of the performance of the potential Trooper on this pre-training experiment.

Scatter-Plot of Two Raters on Ride-Along Letters

Rating	Rating: 1 (best)	2	3	4	5 (worst)
1	26	5			
2	1	21	2	1	
3		5	6	2	1
4			2	4	1
5					3

Basic Course Performance Measures

A large number of Basic Course School measures were available for the validation sample, including:

Grades in the individual courses
Overall grade point average
Rank in class
Notebook rating - an evaluation of the student's course notebook for completeness and neatness
Firearms rating, based upon performance on the firing range
Pursuit driving rating, based upon performance on the "skid-pan," driving on a very slippery surface such as ice-covered roads

Whether the candidate completed training (Yes or No)
Weeks in school
Whether the candidate graduated (Yes or No)
Reason dropped from school (Voluntary or Involuntary)
Specific reasons for involuntary drop from school
- Driving skill
- Rules violation
- Inadequate ability
- Unsatisfactory physical condition
- Other

Altogether, over thirty school performance measures were initially available. They were simply too numerous to handle in a reasonable fashion. Two reduction techniques were employed to reduce the school measures to more manageable proportions. The first was rational: is this criterion really important in assessing success in school? The second was statistical: is this criterion significantly related to other school criteria (as measured by the intercorrelation matrix), and is it significantly related to the test predictors?

On the basis of this analysis, three school measures were retained among the twelve (12) criteria:

1. Whether graduated or not -- which was almost perfectly correlated with such related variables as weeks in training, completed training or not, and reason for termination.

2. Grade point average -- which absorbed both specific course grades and such collateral ratings as Notebook Rating, Firearms Rating, and Pursuit Driving Rating.

3. Converted Rank in Class -- rank in class is a rectangularly-distributed variable, with 1 being the "best" or highest rank and n (the last number in the group) being the worst score. To equate for different size classes and to reverse the continuum so that "best" is also highest (producing positive correlations), actual observed ranks were converted in a standard two-step process

(1) $p = 1 - \frac{R + 0.5}{N}$, where R is the observed rank, N is the number of persons ranked, and p is the percentile of that rank.

For example, consider a person ranked second among 30 people:

$$p = 1 - \frac{2 + .05}{30} = 0.917$$

This individual is in the top percentile or the individuals ranked.

Consider a person ranked second among 500 people:

$$p = 1 - \frac{2 + .05}{500} = 0.996$$

This individual is in the top 99.6 percentile of all individuals ranked.

(2) The second step is to convert the percentile to a normalized standard score. The table of the normal curve is entered for the observed percentile, and the related z-score is converted to a standard score with an arbitrary mean (100) and standard deviation (20) by the relation

$Z = 100 + z\,(20)$, where Z designates the converted rank.

In the examples given above

$p = 0.917 \qquad z = +1.386$
$Z = 127.72$

$p = 0.996 \qquad z = +2.705$
$Z = 154.10$

In other words, a high rank in a large group yields a higher score than a high rank in a small group. In the conversion, decimals of Z-scores were rounded off.

Administrative Measures

A variety of administrative measures were initially available for consideration. These measures reflect collateral aspects of job performance: job tenure and survival, absenteeism, accidents, etc. An analysis of the data available for such measures led to the retention of two, both of which have high reliability (0.9 and above) and seem to have a rational relationship to job demands. These two are:

Length of service on the State Trooper Police Force, measured by the difference (in days) between date of hire and date of termination. To create a standard measure, a terminal date of October 31, 1977 was assigned to all cases not terminated by that date.

Status: for each person originally tested one of two statuses was assigned as of the terminal date for the collection of criterion data: active or terminated. This criterion had a reliability in excess of 0.95. The deviation from perfect reliability was due to one case whose status was ambiguous.

Supervisory Evaluations of Performance

Two different methods of supervisory evaluation were employed.

The first, a paired comparison analysis, was designed primarily to evaluate Troopers one to the other. It constituted an overall judgment of who was better than whom. The technique was, however, applicable only where several Troopers could be compared by the same supervisors. It was not applicable to unique jobs, as, for example, in personnel or investigations, where only one Trooper may be involved. Several investigators of the validity of test selection batteries

have found the paired-comparison to be more reliable and predictable than other rating schemes (e.g., Baehr et al., 1968, Baehr et al., 1971; Furcon & Froemal, 1973).

The second approach to supervisory evaluation is by means of a behaviorally-oriented checklist, on which each supervisor can rate each Trooper against a set of job-relevant behaviors.

Paired Comparison Ratings

Paired comparison ratings were collected on all 62nd Basic Trainees and Troopers who were in areas where at least eight other Troopers (whether tested or not) were assigned. Such ratings are not available for four (4) investigators or administrative personnel because comparisons could not be made. In areas where tested Troopers or 62nd Basic Trainees were fewer than nine in number, a random selection was made of incumbent Trooper staff to increase the paired-comparison group to nine. In areas where more than nine tested individuals were assigned, randomized lists of nine were created. The result was a standard radix of nine individuals creating a list of thirty-six (36) comparisons in each area or subarea. A table of random numbers was used to distribute the thirty-six (36) pairs in a random order on each list. The same random order was used to create the forty-one (41) lists (Appendix F includes an example of a list.)

The basic "score" for a paired comparisons rating is the number of times an individual is chosen over others in the group. Thus, for a group of nine, the times chosen can range from 0 (never chosen over anyone) to 8 (chosen over everyone). This score, however, has a number of undesirable metric properties--e.g., it assumes that counts at the extremes (0 versus 1 or 8 versus 7) are equal to differences in the middle (5 versus 6). To deal more realistically with the choice count, it is converted to a normalized standard score, in three steps.

First, the rank count is converted to a percentile rank (PR) ($PR = \frac{\text{Count} + 0.5}{N} \times 100$) where N is the number judged. Second, the percentile rank is entered into a table of the normal curve, and the equivalent normal deviation (z) score is obtained. Third, to eliminate decimals and negative values, a linear transform of the order of $/500 + 100z/$ was computed. This forces on the distribution a mean of 500 and a standard deviation of 100. Normalized standard scores for paired comparison ratings have been computed by C. L. Lawshe, and are given in many texts. The table used here, with linear interpolation for non-integral values and multiplication by 10 to eliminate decimals is in Guion (Guion, 1965, p. 557). The paired comparison ratings here have a standardized mean of 500, and a standard deviation of 100.

Three statistics were computed for each area list: (1) a consistency measure for each of the one hundred (100) sergeant raters who participated in the paired comparisons exercise, (2) an average reliability (R_{11}) where two or more raters participated, and (3) a

Spearman-Brown projected reliability of the average (r_{ave}) where two or more raters were involved.

The internal rater consistency evaluations and the r_{1I} and r_{ave} data are presented in Table 4.2. Distribution data on the r_{1I} correlations are given in Table 4.3.

Consistency is defined as absence of reversals in ratings. For example, consider individuals A, B, C. There are three pairs to be rated: AB, AC, BC. A completely consistent rating pattern is: A > B, A > C, C > B (or B > C). It would be inconsistent to rate A > B, C > A, B > C. This would imply that A is better than B, and that B is better than C, but C is better than A

$$A > B > C > A$$

A consistency check readily reveals such contradictions. In a list of 36 pairs, inconsistencies are likely to occur. However, as Table 4.1 shows, in 66 of the 100 ratings the consistency score was 1.00 (no inconsistencies). On the average, in the remainder of the comparisons, only one or two inconsistencies, and none more than three were found. The mean consistency score was 0.9695, indicating highly consistent ratings.

Inter-rater reliability was also very high. The inter-rater average correlation technique outlined by Peters and VanVoorhis (1940, p. 196-201) was used to compute the intercorrelations among the ratings for each area where there was more than one rater. It is readily shown that

$$r_{1I} = \frac{(s_i^2/s_s^2) - a}{a^2 - a}$$

where a = number of raters.

s_i^2 = average within-rater variance.

s_s^2 = variance of the sum of the ratings.

Then, $r_{ave} = \frac{ar_{1I}}{1 + (a-1)r_{1I}}$ where all the terms are defined as above.

The mean average inter-rater reliability was 0.84, and the reliability of the average of ratings where two or more raters participated was 0.93, a very high index of agreement. This reliability may be projected to the eleven (11) areas where only one rater was

available. The relevant statistics are as follows:

	r_{1I}	r_{ave}
M_r	0.84[a]	0.93[a]

Single ratings = 11 areas
Two ratings = 10 areas
Three ratings = 11 areas
Four ratings = 9 areas

The data clearly show that the paired comparison ratings are internally consistent over the 100 raters, and highly reliable as measured by interrater agreement.

Behavioral Checklist Rating

As Landy and Farr (1975) point out, one historical trend in the literature of performance appraisal research is the failure of such research to keep up with the increasing complexity and psychometric sophistication brought to bear on the selection process. A second trend has been the adherence to a global or unitary view of behavior, most clearly reflected in man-to-man ranking, rank ordering, and paired comparison approaches. While these approaches, and particularly the last, have significant merit in assessing relative performance, and good psychometric properties, they have two disadvantages. First, they have only limited applicability when the rater has to rate a group that is too small or too large (a paired comparison evaluation of a group of 25, for example, involves 300 comparisons). Second, such global rankings do not provide for a common set of dimensions shared by all the raters. To meet these objections, a wide variety of attribute or behavior checklists and scales have been developed (Ash, 1974b; Guion, 1965, p. 90-123).

The four most extensive research undertakings to develop a behavioral checklist technique and instrument for the evaluation of police personnel were those of Landy and Farr (1975); Heckman, Groner and Dunnette (1972) and Dunnette and Motowidlo (1975); and Barrett (1975). All four used behaviorally-anchored ratings. That is each rating dimension is "fleshed out" by statements of actual behavior, although specific rating and scoring procedures differred among the four.

Landy and Farr, for example, obtained supervisory ratings of eight dimension anchored by examples of high (good), average and low (poor) behavior. The eight dimensions were: Job Knowledge Judgment, Initiative, Dependability, Demeanur, Attitude, Relations with Others, and Communication.

For Judgment, for example, following are typical examples of behavior:

[a]The relevant values in Table 4.2 were converted to Fisher's Z, averaged, and reconverted to the equivalent Pearson r.

High: Upon arrival at the scene of a fire, sees the need for additional help and calls for it.

Average: Endangers himself by jumping into a river to rescue a person.

Low: Approaches a car stopped for a traffic violation without checking the stolen-car list.

For the Virginia study it was decided to build upon the previous research, and construct a behavioral checklist, one that would yield a single score based upon a set of 80 items that seemed relevant to the Trooper's job (Appendix G).

The rater's task was to check for each Trooper rated just those statements that described the Trooper. The statements were assigned weights, based on the previous research, in a range from 82 (very high) to 12 (very low). The score was the sum of the weights of the items checked, divided by the number of items checked.

Two homogeneity analyses yielded Cronbach Alpha estimates of the internal consistency reliabilities of the instrument for Trainees and Troopers separately. The first was based upon the assignment of unit weights to the items checked, while the second used the assigned differential weights. In both analyses the internal consistency reliabilities were acceptably high:

	Unit Weights	Differential Weights
Trainees	0.86	0.88
Troopers	0.81	0.86

These reliabilities are of the order of magnitude of those found by Guion and Alvarez (1977) in a study of behavioral checklist rating coefficient alpha reliabilities in an assessment center for the selection of police officers (range of reliabilities: 0.64-0.93). They are appreciably higher than inter-rater reliabilities (range: 0.20-0.52 for their eight scales) reported by Landy and Farr (1975).

For the sample of 169 Trainees and Troopers, there were 158 for whom ratings were available. The remaining eleven were not rated because they had terminated, in most cases before completing the Basic Course. For each of the 158, an average rating was computed, based upon the one to four ratings available for him or her.

Work Performance Measures

The fifth group of measures designed to assess Trooper performance were work performance measures (Appendix H: Objective Job Performance Data).

Two kinds of data were collected on this form: Descriptive Data, including age, sex, education, school history, and current status (described above), and On the Job Performance data.

The On-the-Job Performance data has already been referred to in the section on job analysis. Briefly, each week each Trooper reports the number of days he worked in the week, miles driven, hours spent on a variety of patrol and various types of investigation, and work volume expressed as numbers of safety talks given, number of vehicles checked, arrests and summonses by category, and so forth--a total of 55 items. Data were retrieved from the Department's computer for the 158 members of the sample who completed the Basic Course and were given assignments, for the 26-week period Sunday, May 1, 1977 through Saturday, October 29, 1977. To equalize for differing numbers of weeks of service, a weekly average of each item was computed for each Trooper, and means were computed for the group as a whole. In addition, certain data were reduced to indexes (e.g.):

$$\text{Conviction Rate} = \frac{\text{Convictions Not Appealed}}{\text{Total Court Cases}}$$

$$\text{Overtime Index} = \frac{\text{Hours Total}}{40}$$

Many activities involved only negligible amounts of time or negligible numbers of events (e.g., two hours average per week on accident investigation, 0.15 arrests and summonses per week for improper legal documents such as vehicle registration). The 55 original and three or four derived variables were therefore reduced, by adding related categories, to seventeen variables reflecting, for each Trooper, average weekly activity. Following is the list:

Miles Driven
Hours on Patrol
Hours on Accident Investigation
Hours on Criminal Investigation
Hours on Radar Patrol
Hours on Special Duty
Office Hours
Vehicle Inspection
Assists to Motorists
Conviction Rate
Overtime Index
Worktime Index
Total Arrests and Summons
Arrests and Summons - Traffic Violations
Arrests and Summons - Criminal
Arrests and Summons - Legal Documents
Charges Complied with Law

Analysis of the resulting 17 x 17 correlation matrix indicated that four summated variables would adequately account for most of the variance in the hours and activities breakdowns, and provide indexes of the main Trooper activities: Road Activity, including all types of patrol; Investigations of all types; Conviction Rate; and Worktime, essentially an index of committment to duty. The means, standard deviations, and intercorrelations of these indexes are given below:

	Road Activity	Investigation	Conviction Rate	Work Time
Mean	20.0	20.0	86.1	90.7
S.D.	2.5	2.2	17.0	10.7
Correlations				
Road Activity	---			
Investigation	-0.19	---		
Conviction Rate	0.46	-0.29	---	
Work Time	0.47	0.24	0.22	---

Time spent on Investigation is at the expense of time on Road Activity, hence the negative correlations.

Many factors--location, whether rural, suburban or metropolitan; kind of highway patrolled, whether limited access, four-lane, or rural two-lane; the passage of many transients from other states or mostly local folk; and other similar factors--all influence work activity measures appreciably. Although work activity measures look like standardized hard data, in a state as large and diverse as Virginia locale to locale comparability, the opportunity of Troopers, given equal skill, ability and effort, to achieve equal results on such indexes is limited. They are a set of criteria to consider. but, all things taken together, cannot be attributed greater reliability and validity than well-conducted judgmental ratings of job performance.

SUMMARY

Predictive and criterion measures were obtained for 69 persons in the 62nd basic class and for 100 troopers. Only predictive measures were available for the 44 persons in the 63rd basic class and for 60 women in a WAC battalion. Tests were devised or purchased which were believed to tap four dimensions of ability to do the job: physical strength and agility, perceptual acuity, intellect, and personality. Criterion measures were: a pre-school ride-along assessment, performance in the school, supervisory evaluations by means of paired comparison technique and a behavioral checklist, and a variety of administrative indices.

CHAPTER FIVE

RESULTS AND CONCLUSIONS

This part of the report describes the results of the statistical analyses.

THE VARIABLES AND VARIABLE STATUS

In all, a total of 153 variables, classified into nine categories, were involved in the analysis. The nine categories of data were as follows:

A. Demographic Variables
B. Pre-School Measures
C. School Measures
D. Cognitive Measures
E. Personality Measures
F. Physical Strength and Agility Measures
G. Administrative Criteria
H. Judgmental Criteria
I. Work Performance Criteria

The variables were classified into three groups (Variable Status, first column, Table 5.1): (1) in the original data set, (2) derived from the original data set, (3) derived from derived scores. These progressive reductions or transforms were designed to produce a positive score manifold and to reduce the total number of variables to a smaller and more manageable set. The nature of the reductions may be illustrated by the SCRAMBLE AND PURSUE exercise.

Level 1: Two independent measures were collected (by two proctors) of an examinee's time on the exercise

Scramble and Pursue Time 1
Scramble and Pursue Time 2

Level 2: These two observations were averaged in the computer program to yield

Scramble and Pursue Average

Level 3: In a time-score array, a "good" score is a low one (short time); a "poor" score is a high one (long time).

Most of the test and criterion measures, however, were otherwise: "good" equalled a high score, "poor" equalled a low score. The correlations with time scores were therefore negative. To produce

CONTINUED

1 OF 4

a positive correlation manifold, the time score was converted to a speed score by the relationship

Scramble and Pursue Speed = 1000 /1 ÷ (Scramble and Pursue Average Time)/.

As a result of this linear transform, the fastest individual received the highest score

e.g., for 5 seconds, the equivalent Speed Score is

1000 (1 ÷ 5) = 200

for 100 seconds, the equivalent Speed Score is

1000 (1 ÷ 100) = 10.

The absolute value of the correlations remain nearly the same, but they all become positive.

Furthermore, if an examinee could not complete an exercise, his/her time score was theoretically infinite, an unuseable datum. But by the conversion, the SPEED SCORE is zero, a useable datum.

The first correlation matrix (In Correlation Matrix, second column, Table 5.1), over all cases, is based upon a data array of 81 variables, resulting from some reductions as indicated above of the total collection of Status I variables. This was an inspection matrix, used to determine further data reductions. If a variable was included, it is indicated with an X; if not, with a zero (0). The same convention is employed in the remaining columns of Table 5.1.

On the basis of a statistical and rational analysis of the first matrix, further reductions were made to achieve a final validity analysis matrix. For this matrix, submatrices were computed for All Cases, Blacks, Whites, Troopers, and Trainees. This set of matrices includes twelve (12) criterion measures and twenty-six (26) predictor measures (In Validity Matrix, third column, Table 5.1).

For each of the 153 variables, Table 5.1 also indicates (last four columns) the groups (62nd Basic, Troopers, 63rd Basic, WACs) for which it was collected or, in the case of derived scores, to which it was relevant. In general, the demographic and predictor scores were available for all groups (with some individual case missing data). Administrative, Judgmental, and Work Performance Criteria data were available only for the 62nd Basic and Trooper groups.

CHARACTERISTICS OF THE SAMPLE

As indicated in Chapter Four, a total of 279 individuals participated in one or more phases of the main validation study.* Of these, 69 were recruits in the 62nd Basic Training Course, 100 were Troopers with two or three years of service, 45 were members of the 63rd Basic Training Course, and 61 were WAC reservist members. Criterion data were available only for the first two groups, but test predictor data were available for most members of all four groups. To the extent possible (i.e., where relevant data were available) information on all four groups was utilized. The sample distribution by test group, ethnic group, and sex is given in Table 5.2.

In addition to sex and ethnic group, the principal descriptors of the samples were height, weight, age, educational level, and years of education completed.

These descriptors are described, by group, race, and sex, in Tables 5.3 (height), 5.4 (weight), 5.5 (age), 5.6 (educational level), and 5.7 (years of education completed).

Analysis of these demographic variables shows that (a) males are significantly taller than females (71+ inches to 64+ inches), and that (b) males weigh more than females (182 lbs to 130 lbs).

Height and weight were dropped as possible predictors in the third-stage analysis, however, since unfavorable court decisions made their retention undesirable.

Females were on the average somewhat older (29.5 years) than male troopers (26.8 years), who were older than male trainees (23.3 years). The WAC battalion, which included all but two of all females, accounted for this disparity.

Age was positively correlated with all the cognitive test scores, except Comparing Names, Numbers and Figures and Closure Flexibility. All the correlations between age and the personality measures were about zero. Age was negatively correlated with the Physical Activities Inventory score (younger persons reported more physical activities than older ones), and positively correlated with Obstacle Course time and Body Removal and Carry time (younger persons were faster than older ones). Since the observed average ages were within the age range required for hire, age was eliminated as a predictor variable. No differences were found on educational level or years of education completed.

No differences by educational level attained or number of years of education completed were found (educational data were available only for Troopers and 62nd Basic Course trainees).

*In addition, data were analyzed for 103 applicants who took the REID REPORT. REID REPORT results were compared with the results of pre-hire field background investigations for this subsample. That sub-study is described below.

TEST SCORE DISTRIBUTIONS FOR PREDICTORS

On the basis of analysis of the intercorrelation matrices of predictors with the demographic and criteria arrays, some predictors were eliminated from further analysis and for others the transforms described above were used. This resulted in a reduced set of twenty-two (22) predictors as follows:

Tests of Aptitude (Cognitive Measures)

1. Reasoning
2. Math Reasoning
3. Verbal Comprehension
4. Arithmetic
5. Names, Numbers and Symbols
6. Communications
7. Aptitude Index (The sum of the six scores)

Measures of Personality

8. Gordon Personal Profile: Ascendancy
9. Gordon Personal Profile: Responsibility
10. Gordon Personal Profile: Emotional Stability
11. Gordon Personal Profile: Sociability
12. Gordon Personal Inventory: Cautiousness
13. Gordon Personal Inventory: Original Thinking
14. Gordon Personal Inventory: Personal Relations
15. Gordon Personal Inventory: Vigor

Measures of Strength and Agility

16. Physical Activities Inventory
17. Scramble and Pursue (in seconds)
18. Flexed Arm Hang (in seconds)
19. Dynamic Flexibility (in cycles)
20. Hand Grip Strength
21. Maximum Oxygen Utilization
22. Obstacle Course

Among the predictor array, the following were dropped:

Cognitive measures: Closure Flexibility
Personality measures: Press Test (DIF 2) and all BIO DATA scores
Physical measures: only subtest scores yielding final measures were retained. For example, a number of measures of Maximum Oxygen Utilization (pulse rates, step rates, etc) were combined into one MOU measure and the components were not analyzed further. Body Removal and Carry was eliminated because the dummy was difficult to maintain, and the remaining tests provided an adequate set of measures.

For the twenty-two (22) retained predictor variables, cumulative percentage distributions are given in Tables 5.8 through 5.29.

DISTRIBUTIONS FOR CRITERIA

The original data array of 153 variables included 74 possible criterion measures, including

Pre-school ride-along score
Fourteen (14) Basic School measures
Four administrative criteria
Two judgmental criterion
Fifty-three work performance criteria

As a result of inspection of the intercorrelation matrices and the results of factor analyses of the criterion data, twelve (12) criteria were used to determine the validity of the final test battery.

These criteria included:

1. Score on Ride-Along before training
2. Graduated from school or not
3. Rank in class (converted)
4. Grade point average
5. Current status (active vs. terminated)
6. Length of service in the State Police
7. Paired comparison rating
8. Behavioral checklist rating
9. Road activity: a summary of work on the road
10. Investigation: a summary of investigation work
11. Conviction rate: an index of convictions for arrests
12. Work time: an index of work beyond requirements

The distributions of these variables for Troopers, the 62nd Basic Course, White males and Black males are given in Tables 5.30 through 5.41.

ETHNIC AND SEX DIFFERENCES ON PREDICTORS AND CRITERIA

An analysis was undertaken to assess the degree to which, if at all, there were ethnic or sex differences on the various predictors and criteria, and also the existence and extent of group differences. For the 22 predictors the whole sample, including WACs and members of the 63rd Basic Course was analyzed; the criteria data were available for the Troopers and 62nd Basic Course only. Furthermore, this sample included only one white female, a member of the 62nd Basic Course.

The analysis was undertaken by use of the Multiple Classification Analysis option of ANOVA (Nie et al., 1975, p. 409-422) in which the three not experimentally manipulated attribute variables -- ethnic group (White or Black), sex (male or female), and group (Troopers, 62nd Basic, 63rd Basic, WACs) -- were the main effects factors. Each of the predictors and criteria were submitted to this MCA procedure, yielding 36 MCA outputs. These outputs are summarized in Table 5.42, in which the F-ratio and significance level is given for each main effect and for the pooled interactions. Since by and large the interaction terms were negligible and non-significant, they may be ignored. The lack of interaction among the ethnic, sex, and group attributes means that, for example, whatever sex difference was found for one ethnic group also obtained for the other sex group. An interaction would be found, for example, if, for a particular predictor, females performed better than males within the black group but males performed better than females within the white group. This would be an example of race x sex interaction.

Predictor Differences. On the attribute Ethnic Group, there were significant differences for each of the seven cognitive tests (the individual aptitude scores and the Aptitude Index). Blacks had significantly lower mean scores on all of these measures. There were no significant ethnic group differences on the personality tests, and only one (Flexed Arm Hang) on the physical tests. This difference is primarily attributable to the much greater variability in black performance (Black SD = 20.2, White SD = 15.7) rather than in average time (Black mean = 36.8 seconds, White mean = 37.9 seconds).

For the attribute Sex Group, there were no significant sex differences on either the cognitive or personality tests, but there were significant sex differences on all but two of the physical measures (Physical Activities Inventory and Dynamic Flexibility). Females were slower than males on all speed tests, and weaker than males on all strength tests.

Criterion Differences. Since the validation groups for which criterion data were available included only one female, the findings with respect to sex differences on the criteria are not interpretable. However, there were significant ethnic group differences on seven of the twelve criteria, including all the ratings, grade point average,

current status and length of service. On Current Status, for example, 26 percent of the original Black validation group had terminated, but only 2 percent of the White group had terminated. The criterion distribution tables show similar differences for most of the criterion variables, even where the difference may not be statistically significant. Performance on the predictors is therefore reflected, by and large, by performance on the criteria. These relationships will be made evident in the regression analyses.

DESIGN AND RESULTS OF THE VALIDATION ANALYSIS

The decision to hire an applicant for a position is, in most cases, an absolute one: Yes or No. This is so even in the case in which a positive decision to hire may be reversed later, as, for example, during a probationary period or a training program.

However, the decision to hire is based upon a variety of bits of information about an applicant that may indicate strengths as well as shortcomings in a large number of areas. Furthermore, such strengths as well as shortcomings may be indicative of ability to meet some job demands well, and others less well or poorly. Particularly where the criteria of adequate performance are many, and frequently not too highly correlated, the reduction of information about the candidate to a go-no go decision is extremely complex.

In the case of the State Trooper, such diversity of job performance demands has been extensively documented in the job analyses.

The Trooper must possess the intellectual capacity to successfully complete the Basic Course, mastering a variety of complex bodies of information and gaining a number of critical physical skills, such as involved in pursuit driving. He or she must be in good health to be able to work on a reliable basis, and must have the physical strength and agility to deal with a variety of frequently strenuous physical demands. He or she should be temperamentally suited to the job, possessed of ability to get along with others, emotional stability to withstand the stresses of police work, have a high level of integrity to ensure faithful discharge of his or her responsibilities to the citizen of the Commonwealth.

Given a large number of criteria of performance on the one hand, and an even larger number of selection measures, a validation strategy must embrace, first, study of the relationships of the selection measures to the performance criteria, and second, a decision procedure and decision rules that take into account these relationships and lead to the necessary choice: to hire or to reject.

The situation is further complicated when the sample on which data are collected may be broken down, as in this study, into overlapping sets of categories: Blacks vs. Whites, Males vs. Females, Troopers vs. Trainees. If the patterns of relationships within the subgroups of interest differ, compromises must be made to yield a common decision rule for all applicants, or to use different decision rules for different groups.

For this situation a number of strategies exist.

The most common strategy involves some form of multiple regression analysis. In the simplest case, if we are given one criterion measure (e.g., a paired-comparison rating) and a number of predictors, the intercorrelations of the predictors with each

other and with the criterion measure are used to determine a set of weights, one for each predictor, so that the multiple correlation (R) between the set of predictors and the criterion measure is a maximum.

This procedure may be modified to drop out predictors that do not contribute significantly to the multiple R. This modification is called stepwise multiple regression. In this modification, the predictors are entered into the regression equation one at a time (forwards stepwise multiple regression) beginning with the predictor that is most highly correlated with the criterion measure, and the procedure is terminated when the next predictor to be added does not contribute significantly to the multiple R.

When a number of criteria are in hand, several options exist in applying the multiple regression model (Ash, 1974b). One is to conduct a multiple regression analysis against each criterion separately, and to combine the results somehow thereafter. This method has the merit of providing an estimate of how well an individual will perform in various aspects of the job. It leaves unresolved the problem of reducing a complex set of findings to one decision rule.

A second method involves reducing criterion measures to one or a smaller subset.

A variety of techniques have been used to reduce the criterion array: add all criterion scores into a total, reduce all criterion scores to standard scores and add the standard scores, weight each criterion score by its reliability and obtain the sum of the weighted criterion scores, apply judgmental weights to the criteria and add the sum of the thus weighted criterion scores. The main defect of all these approaches, however, is that "apples and bacon" are combined. It doesn't seem to make much rational sense, regardless of the weighting scheme, to add measures of ability to get through training school to measures of post-job success or attendance or honesty.

A third method is that of canonical correlation. In this method, all of the criteria are intercorrelated with all of the predictors, and the analysis yields "best weights" for both the criteria and predictors that maximize the correlations between the two sets. The canonical procedure yields a complex solution that shows the extent to which the predictors can maximally predict the criteria, but it does not yield decision rules easily adaptable to a selection-rejection model.

In the analysis of the criterion-predictor relations for the State Troopers, based upon the considerations set forth above a stepwise regression analysis was made of the 22 predictors against each of the 12 criterion measures separately. Separate analyses were made for Blacks, Whites, Troopers, and Trainees (62nd Basic Course members).

Furthermore, to simplify the analysis and implementation of the battery, following a first-cut overall analysis, which merged all predictors and criteria in one large matrix, the subsequent stepwise regressions were computed separately for the cognitive tests, the personality measures, and the physical strength and agility measures.

Cognitive Tests

Table 5.43 presents the intercorrelations of the cognitive tests (including Closure Flexibility, which was subsequently dropped) with the demographic measures and the various groups of criteria. These zero-order correlations, with some scattering, show that the cognitive tests are significantly correlated with most of the various school measures, with length of service, current status and the paired comparison and behavioral checklist ratings. The correlations with work hours and work activity statistics were lower, and not as many were statistically significant. As will be seen shortly, however, the summated work activity variables do yield significant multiple correlations.

Table 5.44 presents a summary of the results of the stepwise multiple regression analysis against each of the twelve final criteria, for the whole sample, for Blacks, Whites, Trainees and Troopers.

It should be noted, first, that for the total sample of 169 a significant multiple correlation for a subset (or all) of the cognitive tests has been found for each of the twelve criteria, ranging from 0.66 for grade-point average to 0.19 for conviction rate.

Second, for every group there is a statistically significant multiple correlation with rank in the Basic Course, grade-point average, current status (except for Troopers, only one of whom terminated from the time of testing until performance data collection approximately ten months later), length of service, and the behavioral checklist and paired comparison ratings (except for the Troopers).

Third, while the absolute values of the multiple correlations vary, approximately the same pattern is found for Whites and for Blacks, and in fact the multiple correlations are higher for the Blacks than for the Whites (which in part at least is attributable to the relatively small size of the Black sample). These data provide no credible evidence that these tests are differentially valid for Blacks versus Whites or Troopers versus Trainees. They are excellent predictors of school success, and generally useful predictors of post-school job performance.

The Aptitude Index. On the basis of an examination of the results for the various groups, it was decided to eliminate the Closure Flexibility Test, which is moderately complicated to score, and to reduce the cognitive tests, which were all moderately correlated with one another, into an Aptitude Index in which the scores of the six

tests (Reasoning, Math Reasoning, Verbal, Arithmetic, Comparing, and Communications) are totalled to one performance score. This composite index was then correlated with each of the twelve performance criterion measures for the Total Sample, Blacks, Whites, Troopers and Trainees. The pattern of the resulting correlations was compared (Table 5.45) with the pattern of the multiple correlations with the criteria. Although there are some differences, and the multiple correlations are generally higher, substantially the same pattern of correlations is found within each group, beginning with the Total Sample. The Aptitude Index may therefore be treated as an adequate surrogate of the individual cognitive tests. In the selection decision rules, the Aptitude Index is treated in this manner.

The Aptitude Index correlations for Black and White subjects for each of the twelve criterion measures are shown in Table 5.46. Of the twelve differences (refer to Table 5.45 for rounded the correlation values), eight were not significantly different, for one the difference was significant at the 0.05 level of confidence, and for three at the 0.01 level of confidence. In the case of the correlation of the Aptitude Index with Converted Rank in class, the correlation was significantly higher for Whites (0.53) than for Blacks (0.07), although the stepwise multiple correlations were about the same (0.60 and 0.66, respectively). In the case of the other three criteria (Current Status, Paired Comparison Rating, Behavior Checklist), the multiple correlations were similar but higher for Blacks; the zero-order correlation with the Aptitude Checklist were all highly significant for Blacks (0.65, 0.56, 0.50) but not significant or only marginally so for Whites. Again, as in the case of the component tests, the data show no credible evidence of differential validity.

Personality Measures

Although the evidence is abundant that personality factors loom large in police work, the demonstration (validation) of the predictive effectiveness of paper and pencil measures of personality for significant aspects of police activity has not been readily achieved. In part, this is a function of the difficulty of measuring personality traits, which are much more elusive constructs than cognitive measures. In part, it is due to the loose fit (at best) between what personality tests measure and performance variables that can be measured. Long-term predictive studies over large groups would be needed to create a validated screen to weed out those most likely to be psychological or psychiatric casualties. The present state of the art permits only the construction of low-level screens that may select out the most extreme problem cases. That is the direction of the results of the present study.

Table 5.47 exhibits the zero-order correlations of the nine personality-dimension scores (the Press Test was subsequently dropped). Most of these correlations are low and insignificant. For a few criteria of interest, however,--Rank in Class, Firearms

Rating (used as a criterion only in the preliminary analysis), length of service, the two ratings, the miles driven and hours on patrol (both absorbed into the variable Road Activity)--low but significant correlations were found with the three or more of the nine personality scores.

The step-wise multiple correlation analysis is summarized in Table 5.48. Here a better picture of the predictability of the twelve criteria from the personality measures is given, for the total and for each group separately. The multiple correlations which are statistically significant range in value from a low of 0.22 to values of the order of 0.6 and higher. The following summary condenses Table 5.48. An "X" means that that particular multiple correlation is statistically significant at, minimally, the 0.05 level of confidence.

Criterion	Total	Blacks	Whites	Trainees	Troopers
Ride-along Score			X	X	X
Graduated		X	X		X
Rank in School	X		X		
Grade Point Average	X	X	X	X	X
Current Status		X			
Length of Service	X	X	X		
Paired Comparison	X	X	X		X
Behavior Checklist	X		X		X
Road Activity	X	X	X	X	X
Investigation	X		X	X	X
Conviction Rate	X	X		X	
Work Time			X		X

Judiciously used, the profile of personality measures can evidently serve as a suitable screen to identify at least extreme cases.

Physical Strength and Agility Measures

The physical strength and agility measures, particularly simulations of actual on-the-job behavior, can clearly be established as content valid under the APA Standards (1974) and the new Uniform Guidelines (Equal Employment Opportunity Commission et al., 1978).

They also stand up well under a predictive validation scrutiny: people who do well on the physical strength and agility tests also do better than others on almost every aspect of school and job performance, overall, except investigatatory work, where cognitive skills and personality attributes probably play a larger role.

Table 5.49 reports the zero-order correlations of the physical strength and agility tests (including height, weight, and body removal and carry, which were subsequently dropped from the battery) with the various criteria, and Table 5.50 reports the results of the multiple correlation analysis. This latter analysis may be summarized as follows. An "X" means that that particular multiple correlation is statistically significant at, minimally, the 0.05 level of confidence.

Criterion	Total	Blacks	Whites	Trainees	Troopers
Ride-along Score	X			X	
Graduated	X	X		X	
Rank	X	X	X	X	X
Grade Point Average	X	X	X		X
Current Status	X	X	X	X	X
Length of Service	X		X		X
Paired Comparison	X	X	X		X
Behavioral Checklist	X	X	X		X
Road Activity	X	X	X	X	X
Investigation					X
Conviction Rate	X	X	X		X
Work Time	X		X		X

It is clear that the measures in the physical strength and agility battery are predictive of success on most school and post-school job performance measures. The job analysis has established that the work of the Trooper frequently calls into play a wide variety of physical skills, and the correlations between performance on physical measures and school and job performance measures underscores this relationship.

Selection Decision Rules

The three selection dimensions--cognitive facility, personality attributes, and physical strength and agility, were assembled into a low-level multiple-hurdles screen that would eliminate, on any one dimension, approximately those who fell below one standard deviation below the mean of the total sample. If applicants are normally distributed on each attribute, about 84 percent will pass. Because of overlap among the three dimensions, the overall acceptance rate should eventually stabilize at about 60-70 percent, which should provide an adequate applicant pool for subsequent screening on the basis of background and related investigations.

The cut-off scores for "Satisfactory", "Questionable" and "High Risk", together with the relevant decision rules, are presented in the Administration Scoring, and Interpretation Manual (Ash & Cates, 1978a) in Appendix F (page 65). They are summarized in Table 5.51.

The following should be noted. First, wherever possible, the cut-offs were based upon the distribution of scores for the total of the four samples, to take into account Black and White, male and female performance.

Second, in the absence of female validity data for the physical strength and agility measures, where substantial sex differences were found, tentative lower cut-off scores were set for females. As the number of females for whom school and job performance data became available increases, so that criterion-related validity studies may be conducted, these tentative cut-off scores should be reexamined. They are lower than the cut-off scores for comparable tests used in other jurisdictions.

Third, although Black-White differences were found on some predictor measures, particularly cognitive measures, no differences in Black-White cut-offs were indicated because these predictor differences were well-correlated with differences in job performance.

Fourth, on some of the personality measures, extreme scores at either end are not desirable, and the "Satisfactory" range is a mid-score range.

Finally, on some of the physical agility tests, a low score, usually a time score, is preferable to a high score (e.g., for scramble and pursue and the obstacle course).

The pass-fail experience of the various sub-groups would have been as shown in Table 5.52. The selection decision model requires that the applicant pass at a SATISFACTORY level the Aptitude Index, five of the eight personality tests, and four out of six (females) or five out of seven (males) physical tests, at the SATISFACTORY LEVEL.

Less than 2 percent of all examinees failed, on these standards, two of the sub-batteries; 22.9 percent failed one, which would have been disqualifying. Employed Troopers did best: 82.9 percent passed the three hurdles. For the two trainee classes, WACs, White females, and White males, pass rates varied from 82.4 percent to 69.0 percent. Black females passed at a rate of 61.1 percent (11 cases), and Black males at a rate of 50.0 percent (26 cases). The lower Black pass rates are principally attributable to the Aptitude Index, passed by over 90 percent of Whites but by about only 60 percent of Blacks. Since the Aptitude Index is the best single predictor of Black or White performance in school or on-the-job, however, it simply reflects the difference in criterion performance.

Validity of the REID REPORT

The published studies of the reliability and validity of the REID REPORT have been described above and will not be repeated here. It has been shown to have high reliability and to demonstrate predictive, concurrent, and construct validity in six or more studies.

Integrity or its lack is, or may be, a generic trait. It does not seem reasonable to expect that a measure of integrity per se would be predictive of the criteria used to test the other tests in the battery: school performance, length of service, job status, performance ratings, or work performance measures. There might be some indirect relationships--for example, detected misconduct could lead to termination and be taken into account in performance ratings. However, the likelihood of occurrence of such situations among employed Troopers who survived a pre-employment background screening seems to be very slight.

Validation of the REID REPORT, therefore, did not fit within the framework of the main validity study. The REPORT is intended for use as a screen before undertaking a background investigation,

to eliminate those who, regardless of potential for success on the job, were likely to be dishonest and act dishonestly. To the extent to which the REPORT could serve this purpose, it could lead to significant savings in the conduct of full background investigations.

To test this use of the REPORT, it was administered to a sample of 103 applicants before they were subjected to the background investigations.

The sample included: 1 White female
84 White males
18 Black males

In the following analyses, the one female was included among the White males.

Results by race and recommendation were as follows:

The two "Qualified" recommendations were omitted from the analysis. Both of these individuals passed the cut-off score, but skipped answering several questions, serving as a flag for further investigation.

The difference in White vs. Black pass rates - 56.6 percent vs. 50.0 percent - is statistically non-significant: the chi-square for the table is 0.263, $p > 0.50$. The test, in other words, has no adverse impact on Black applicants. It should be noted that this pass rate among police applicants is substantially higher than among suburban police applicants. Two studies, one in 1966 and one in 1975, found the pass rates, after a polygraph interview, to be of the order of 43-44 percent (Reid & Inbau, 1977, p. 359).

Although there was a minor score difference between Blacks (Mean = 49.7, SD = 6.4) and Whites (Mean = 53.3, SD = 9.9), this difference was not statistically significant either ($t = 1.459$, $p > 0.15$).

Relationship Between REID REPORT Recommendation and Race

	White		Black		Total	
	N	Percent	N	Percent	N	Percent
Recommended	47	56.6	9	50.0	56	55.4
Qualified	(2)					
Not Recommended	36	43.4	9	50.0	45	44.6

The REID REPORT recommendation was also correlated with the results of the field background investigation conducted by the Virginia State Police. By the time of the analysis, 27 individuals had withdrawn their applications and two were still under investigation. Omitting the two "Qualified" REID REPORT

recommendations (one passed the background investigation and one failed), an evaluation was made of the relationship between the field results and the RR recommendation. The chi-square for this comparison was 2.692 ($p < 0.10$). On this basis, it must be concluded that the REID REPORT has at least marginal utility in predicting the outcome of the background investigation.

REID REPORT Recommendations and Field Background Investigation Results

	RR Recommendation		
Field Results	Recommended	Qualified Recommendation	Not Recommended
Recommended or Qualified for Employment	21	1	11*
Not Recommended	18	1	21
Withdrew Application	15	0	12
Under Investigation	2	0	1

*Six admitted minor thefts on RR.

If the 45 recommended for rejection by the REID REPORT had in fact been rejected, the loss to the Department before field investigation would have been eleven or twelve individuals out of a total of 103 tested. The Recommendeds and Qualified Recommendations would have been investigated in any event. Of the 11 who were Not Recommended by the REID REPORT but passed the field background check, six admitted to minor thefts on the REID REPORT and might have failed a more intense background check on a follow-up of that information.

SUMMARY AND CONCLUSIONS

The research process has identified a valid battery of tests and measures, including cognitive abilities, personality attributes, and physical skills and abilities. These tests and measures have been correlated with a dozen measures of school and job performance, and they have been found to predict such performance effectively and without unfair discrimination on the basis of race. Although it must be recognized that Black examinees did less well on most cognitive tests, they also did less well on school and job performance measures, and in fact the correlations within the Black group were frequently somewhat higher than the comparable correlations within the White group. No sex difference was found on the cognitive tests, and neither sex nor race differences were found on the personality measures. On the physical strength and agility tests no race differences were found, but there were substantial sex differences.

A three-hurdle minimum screening procedure was devised reflecting these results. A multiple-hurdle was dictated by the fact that any simple single overall qualifying score that would add together cognitive ability, personality attributes, and physical strength and dexterity would create a meaningless mixture, trading off physical strength for appropriate personality characteristics for one, cognitive ability for physical dexterity for another, and so on. While the procedure does leave room for some trade-offs, it also assures at least a minimum level of competence in all three areas.

The study also showed that a brief paper-and-pencil test of integrity would probably make a useful screening device, resulting in a significant reduction in the number of field investigations required.

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TABLES

Table 2.1

Cumulative Percent Distribution of Height in Inches for Men and Women

Height in inches	Men	Women
under 55	-	.1
under 56	-	.1
under 57	-	.3
under 58	-	.8
under 59	-	2.1
under 60	-	4.1
under 61	.4	8.5
under 62	.4	16.6
under 63	1.7	28.8
under 64	2.7	45.0
under 65	4.5	60.3
under 66	9.2	76.6
under 67	16.9	86.5
under 68	26.4	93.3
under 69	39.0	96.6
under 70	53.2	98.4
under 71	68.5	99.3
under 72	80.1	-
under 73	87.5	-
under 74	93.9	-
under 75	96.8	-
under 76	97.7	-
76 and over	100.0	-

(Advancedata, HEW, 1976)

Table 2.2

Nineteen States Providing Information About Their Physical Selection Procedure

State	Simulation	Standard Gym	Combination
Arizona	X		
Colorado	X		
Delaware		X	
Kansas	X		
Illinois			X
Maine		X	
Maryland		X	
Massachusetts	X		
Michigan			X
Nevada	X		
New Jersey		X	
New Mexico		X	
New York	X		
Oregon	X		
Pennsylvania		X	
Tennessee		X	
Texas			X
Vermont			X
Wisconsin			X
	7	7	5

Table 2.3

Physical Strength and Agility Tests in Fifteen State Police Jurisdictions

Arizona (Unisex)

Obstacle course--13 obstacles, then run up a hill, then carry 80 lb. sack 30 ft.

Colorado (Unisex)

Obstacle course, 200 lb. stretcher carry with one assistant, firing test.

Delaware

Male: Pull-ups, push-ups, sit-ups, squat thrust, broad jump, agility run, weight lift.

Female: Modified push-ups, sit-ups, squat thrust, standing broad jump, agility run.

Kansas

Tire change, handling of water and full containers (sic), pushing auto 10 ft. by hand, remove 135 lb. dummy from auto and place on ambulance cot, 50-yard run, climb or vault 4 ft. barrier, another 50-yard run, grasp 65 lb. bag, drop to knees, and move bag 4 ft. laterally.

Maine (Unisex)

Standing broad jump, squat thrust, 200 lb. stretcher carry with assistant, bar vault, sit-ups, quarter-mile run, scale two 6 ft. barriers.

Maryland

Male: 10 squat thrusts, 10 push-ups, 10 sit-ups, 5 pull-ups.

Female: 3 cable jumps, 20 squat thrusts (not same as men's), 20 dynamic flexibility cycles, 20 sit-ups, 20 modified push-ups.

Massachusetts (Unisex)

150 lb. dummy removal from car, move it 15 yards, move it 30 yards more with stretcher; climb 6 ft. wall 1-mile run, recovery index test, 150-yard obstacle course.

Michigan (Unisex)

Dummy drag and lift, bent-knee sit-ups, seated stretch test, half-mile shuttle run.

Table 2.3 (continued)

New Jersey (Unisex, but with modifications)

8 bar chins (modified for women), 19 inch standing vertical jump, 23 sit-ups, 7 ft. standard broad jump, 21 ft. throw of medicine ball, 20 push-ups (modified for women), 300 ft. shuttle run, boxing.

New Mexico (unisex with modifications)

15 push-ups (modified for women), 25 sit-ups (modified for women), 1-mile endurance run (8.5 minutes), shuttle run.

Oregon (Unisex)

Trunk flexion, balance beam, revolver operation, drag 150 lb. body 50 ft., agility run, spare tire removal, quarter-mile run.

Pennsylvania

Chin-ups (male = 4, female = 1), push-ups (male = 15, female = 4), sit-ups (male = 15, female = 12), vertical jump (male = 17 in., female = 10 in.), triple jump (male = 20 ft., female = 12 ft.).

Texas (Unisex)

Carry 100 lb. dummy 50 ft., change tire, position shotgun, pistol fire both hands, sit-ups, balance on one foot with eyes closed, squat on hands with feet off floor, push-ups, jump reach, 100-yard run.

Vermont (Unisex)

8 ft. rope climb, 6 ft. standing broad jump, 5 bar chins, 15 push-ups, 15 sit-ups, 1-mile run.

Wisconsin

Squat thrust, sit-ups, deep knee bends, lift 80 lb. portable scale to platform and return to floor, arm flex with 5 lb. dumbbell.

Table 2.4

Physical Performance Test Scores by Sex, New York State
N = 3505 (Eyde et al., 1977 a, p. 41)

	Male n = 3419		Female n = 86	
Subtest	Mean	SD	Mean	SD
Police Foot Pursuit Course	3.8	2.0	.8	1.0
Distance Chase	3.6	2.0	.9	1.2
Attic Opening Climb	2.3	1.2	.4	.7
Drag Dummy From Vehicle	2.0	.1	1.5	.9
Total	26.7	4.4	18.5	2.7

Table 2.5

Intercorrelations of Physical Strength and Agility Tests for 185 Men (Below Diagonal) and 48 Women (Above Diagonal) Police and Fire Applicants in Champaign, Illinois

	Scramble & Pursue	Hand Grip	Body Removal	Flex Arm Hang	Obstacle Course
Scramble & Pursue	--	-09[a]	32*	-33*	37**
Hand Grip	07	--	-40**	17	-14
Body Removal	17*	-22**	--	-26	26
Flex Arm Hang	-25***	-26***	10	--	-11
Obstacle Course	17*	-09	-01	-12	--

Note: The minus signs are due to the fact that a "good" score on Scramble & Pursue, Body Removal, and Obstacle Course is a shorter time than a "poor" score, whereas in Hand Grip and Flex Arm Hang a high score is better than a low one.

[a]Decimal points omitted

*$p < .05$

**$p < .01$

***$p < .001$

Table 2.6

1976 Employment of Women in the State Police

States Employing Women	Number of Sworn Personnel	Number and Percent Female	
Arizona	807	3	0.37%
Arkansas	460	2	0.43%
California	5247	19	0.36%
Connecticut	893	18	2.02%
Delaware	420	2	0.48%
Illinois	1660	5	0.30%
Indiana	971	3	0.31%
Iowa	574	12	2.09%
Louisiana	870	3	0.34%
Maryland	1478	12	0.81%
Massachusetts	1032	3	0.29%
Michigan	1953	9	0.46%
Minnesota	493	3	0.61%
Missouri	780	2	0.26%
New Jersey	1718	1	0.06%
New Mexico	339	2	0.59%
New York	3437	5	0.15%
Oregon	979	9	0.92%
Pennsylvania	3942	25	0.63%
Tennessee	719	1	0.14%
Texas	2089	6	0.29%
Vermont	232	2	0.86%
Wisconsin	367	5	1.36%
	31460	152	0.48%

Table 3.1

Critical Incidents Reported by Troopers Within a Six Month Period

	Category-Subcategory		Frequency
I.	Investigation	319	
	Investigating Auto Accidents		25
	Investigating Applicants		12
	Investigating in Vehicle Inspection Program		10
	Conducting Covert Investigations		39
	Investigating Other Incidents		233
II.	Physical Strength	386	
	Exercise of Strength With Resisting Subject		190
	Exercise of Strength With Passive Object		101
	Pursuit of Fleeing Subject		43
	Tracking		32
	Working With Canines		10
	Diving		10
III.	Driving and Traffic	320	
	Pursuit of Speeders		277
	Apprehending Wrong-Way Drivers		12
	Vehicular and Other Problems		21
	Traffic Control		10
IV.	Interpersonal Situations	241	
	Guarding Dignitaries		53
	Appearing as Witness in Court		49
	Crowd Control		43
	Exercise of Tact and Persuasion		37
	Public Speaking/Training Programs		30
	Emotional Stress of Fatalities		23
	Liaison ré Uniform Crime Reports		6
V.	Other	56	
	Administering First Aid		25
	Piloting		12
	Aiding Motorists, etc.		11
	Administering Breathalyzer		4
	Weighing Trucks		4
VI.	Not Elsewhere Classified	109	
	TOTAL	1431	

Table 3.2

Rank Order of Importance of Trooper Attributes, Based Upon 55 Supervisory Ratings

Rank		Job Attribute	Importance Rating	Standard Deviation
1	10.	Speed of Reaction	3.927	0.262
2	32.	Remembering Instructions	3.873	0.336
3	9.	Eye-hand or Eye-foot Coordination	3.855	0.405
4	50.	Sorting Out Facts	3.818	0.389
5	51.	Making Decisions	3.800	0.404
6	65.	Tact	3.800	0.404
7	67.	Being Part of a Team	3.764	0.429
8	43.	Hearing Comprehension	3.764	0.429
9	48.	Reasoning	3.746	0.517
10	20.	Vigilance	3.727	0.489
11	41.	Compiling-Computing	3.727	0.450
12	42.	Using Words in Speaking	3.709	0.458
13	73.	Dealing With Hostile People	3.709	0.567
14	44.	Verbal Comprehension	3.709	0.567
15	5.	Seeing Nearby Objects	3.673	0.511
16	61.	Safety and Well Being of Others	3.655	0.517
17	64.	Winning Respect	3.655	0.552
18	52.	Staying Alert	3.655	0.584
19	78.	Work Irregular Hours	3.655	0.552
20	71.	Appearance	3.636	0.557
21	80.	Facing Risks	3.636	0.704
22	56.	Enforcing Rules and Procedures	3.636	0.825
23	72.	Restoring Order	3.618	0.527
24	66.	Putting Up With Abuse	3.618	0.623
25	49.	Solving Problems	3.600	0.531
26	34.	Memory For Ideas (Abstract)	3.582	0.658
27	29.	Estimation of Motion	3.564	0.570
28	63.	Cheerfulness	3.527	0.573
29	58.	Working Alone	3.491	0.663
30	39.	Spelling	3.455	0.662
31	70.	Being a Leader	3.418	0.658
32	57.	Being Reliable	3.418	0.917
33	33.	Remembering Details	3.412	0.786
34	6.	Color Vision	3.400	0.656
35	79.	Dealing With Hostile People	3.400	0.735
36	35.	Counting	3.400	0.761
37	53.	Concentrating	3.364	0.703
38	22.	Attention to Details	3.364	0.869
39	4.	Seeing Distant Objects	3.346	0.751
40	69.	Keeping Positive Feelings	3.291	0.685
41	45.	Reference Books	3.273	0.622
42	36.	Simple Arithmetic	3.218	0.832
43	74.	Being a Supervisor	3.218	1.257
44	75.	Outside-Exposure to Weather	3.164	0.764

Table 3.2 (Continued)

45	68.	Persuading People	3.146	0.756
46	55.	Planning	3.109	0.762
47	59.	Understanding	3.109	0.786
48	54.	Showing Initiative	3.036	0.860
49	76.	Temperature and Humidity	3.000	0.923
50	12.	Driving-Controlling	2.964	1.186
51	30.	Estimation of Quantity of Objects	2.855	0.678
52	26.	Comparing Names or Numbers	2.709	1.031
53	27.	Understanding Illustrated Material	2.691	0.767
54	24.	Perceptual Speed	2.655	1.058
55	21.	Perceive Form of Objects	2.618	0.933
56	1.	Sound Discrimination	2.546	0.878
57	28.	Comparing Patterns or Objects	2.546	0.919
58	31.	Estimation of Size of Objects	2.491	0.814
59	77.	Environmental Pollutants	2.473	0.997
60	2.	Odor Discrimination	2.455	0.978
61	11.	Hand Skill	2.436	0.918
62	16.	Staying in the Same Body Position	2.436	1.050
63	60.	Performance Evaluation of Others	2.400	1.355
64	14.	Stamina	2.182	1.020
65	62.	Scheduling	2.182	1.454
66	47.	Compiling-Computing	2.164	1.118
67	37.	Arithmetic Calculations	2.127	0.771
68	18.	Strength	2.109	1.012
69	17.	Dexterity of Feet and Legs	2.073	1.103
70	23.	Space	2.018	1.045
71	25.	Measuring	1.982	1.063
72	7.	Dexterity of Hands and Arms	1.927	0.997
73	3.	Tactual Discrimination	1.836	0.918
74	13.	Dexterity of Fingers	1.818	0.983
75	8.	Work Rapidly for Sustained Periods	1.782	1.031
76	40.	Word	1.781	0.994
77	46.	Alphabetizing	1.709	1.030
78	15.	Agility	1.655	1.174
79	19.	Uncomfortable Body Position	1.564	1.014
80	38.	Technical Arithmetic	1.091	0.986

Table 3.3

Factor Analysis: Eigenvalues and Variance Percents

Factor	Eigenvalue	Percent of Variance	Cumulative Percent
1	21.4	32.9	32.9
2	6.5	10.1	43.0
3	3.7	5.7	48.6
4	3.4	5.2	53.9
5	3.1	4.7	58.6
6	2.6	4.0	62.6
7	2.5	3.8	66.4
8	2.3	3.5	69.9
9	2.1	3.3	73.2
10	2.0	3.1	76.3
11	1.8	2.8	79.1
12	1.7	2.7	81.7
13	1.6	2.5	84.2
14	1.5	2.4	86.6
15	1.5	2.2	88.6
16	1.3	2.0	90.8
17	1.2	1.8	92.6
18	1.1	1.7	94.3
19	1.0	1.5	95.8
20	1.0	1.5	97.4
21	0.9	1.3	98.7
22	0.8	1.3	100.0

Table 3.4

Factor Structure of State Trooper Tasks and Attributes

Factor I: Perceptual-Motor Skills

	Job Attribute	Factor Loading	Importance Rating
1.	Sound Discrimination	34*	2.55
2.	Odor Discrimination	42	2.45
3.	Tactual Discrimination	34	1.84
7.	Dexterity of Hands and Arms	64	1.93
8.	Work Rapidly for Sustained Periods	73	1.78
11.	Hand Skill	37	3.85
12.	Driving-controlling	64	2.96
13.	Dexterity of Fingers	62	1.81
14.	Stamina	77	2.18
15.	Agility	85	1.65
16.	Staying in Same Body Position	53	2.44
17.	Dexterity of Feet and Legs	66	2.08
18.	Strength	73	2.11
19.	Uncomfortable Body Position	77	1.56
21.	Perceive Form of Objects	41	2.62
23.	Space	61	2.01
24.	Perceptual Speed	53	2.85
25.	Measuring	60	1.98
26.	Comparing Names and Numbers	36	2.71
37.	Arithmetic Calculations	50	2.13
38.	Technical Arithmetic	50	1.09
46.	Alphabetizing	47	1.71

Factor II. Communications Skills

41.	Writing Understandably	36	3.72
42.	Use of Words in Speaking	44	3.71
43.	Hearing Comprehension	47	3.76
48.	Reasoning	59	3.75
49.	Solving Problems	35	3.60
53.	Concentrating	32	3.36
55.	Planning	34	3.11
61.	Safety and Well-being of Others	64	3.65
64.	Winning Respect	57	3.65
65.	Tact	82	3.80
67.	Being Part of a Team	54	3.76
68.	Persuading People	52	3.15
71.	Appearance	53	3.64
72.	Restoring Order	57	3.62
76.	Temperature and Humidity	38	3.00

*Decimal point omitted

Factor III. Understanding Technical Materials

	Job Attribute	Factor Loading	Importance Rating
23.	Attention to Details	34	2.02
27.	Understanding Illustrated Materials	43	2.69
35.	Counting	77	3.40
36.	Simple Arithmetic	87	3.22
37.	Arithmetic Calculations	49	2.13
43.	Hearing Comprehension	40	3.76
44.	Verbal Comprehension	58	3.71
45.	Reference Books	40	3.27
73.	Dealing With Hostile People	46	3.71

Factor IV. Administrative or Supervisory Responsibility

56.	Enforcing Rules and Procedures	37	3.64
60.	Performance Evaluation of Others	89	2.40
62.	Scheduling	86	2.18
74.	Being a Supervisor	75	3.22

Factor V. High Speed Driving

9.	Eye-hand or Eye-foot Coordination	67	3.85
10.	Speed of Reaction	95	3.93
20.	Vigilance	53	3.73

Factor VI. Perceptual Acuity

2.	Odor Discrimination	47	2.45
3.	Tactual Discrimination	38	1.83
21.	Perceive Form of Objects	47	2.62
26.	Comparing Names and Numbers	57	2.71
28.	Comparing Patterns or Objects	68	2.55
30.	Estimation of Quantity of Objects	36	2.85
31.	Estimation of Size of Objects	50	2.49
40.	Word	34	1.78

Factor VII. Working Conditions

75.	Outside Exposure to Weather	43	3.16
76.	Temperature and Humidity	32	3.00
77.	Environmental Pollutants	35	2.47
.	Work Irregular Hours	85	3.65
79.	Being Away From Home	57	3.40

Table 3.4 (Continued)

Factor VIII. Cognitive Apprehension

	Job Attribute	Factor Loading	Importance Rating
20.	Vigilance	36	3.73
27.	Understanding Illustrated Material	38	2.69
29.	Estimation of Motion	69	3.56
32.	Remembering Instructions	61	3.87
34.	Memory for Ideas (abstract)	32	3.58
39.	Spelling	57	3.45
41.	Writing Understandably	69	3.73
42.	Using Words in Speaking	41	3.71
43.	Hearing Comprehension	42	3.76
44.	Verbal Comprehension	35	3.71
48.	Reasoning	33	3.75
50.	Sorting Out Facts	33	3.81

Table 4.1

Distribution of Consistency Values for Paired Comparison Ratings for 100 Raters

Consistency	No. Raters
1.000	66
0.999-0.950	2
0.949-0.900	18
0.899-0.895	0
0.894-0.890	0
0.889-0.885	9
0.879-0.875	1
0.869-0.865	1
0.859-0.855	2
0.746-0.750	1

Table 4.2

Analysis of Paired Comparison Ratings

Div.	AR	No. of Pairs	No. of Raters	C/R1*	C/R2*	C/R3*	C/R4*	R_{II}	R_{ave}
1	1	36	4	1.000	.889	1.000	1.000	0.79	0.94
1	2	36	2	0.944	0.944			0.62	0.77
1	3	36	2	1.000	1.000			0.92	0.96
1	5	36	3	1.000	1.000	1.000		0.79	0.92
1	6	36	3	1.000	1.000	1.000		0.95	0.98
1	7	36	3	0.944	0.914	0.889		0.19	0.41
1	8	36	1	0.922				--	--
2	9-1	36	4	0.944	1.000	1.000	0.917	0.93	0.98
2	9-2	36	4	0.917	1.000	1.000	1.000	0.89	0.97
2	9-3	22	4	1.000	1.000	0.857	1.000	0.97	0.99
2	11-1	36	4	0.944	1.000	0.944	1.000	0.79	0.94
2	11-2	36	3	1.000	1.000	1.000		0.86	0.96
2	12	36	3	1.000	1.000	1.000		0.96	0.99
2	13	36	4	0.888	1.000	0.944	1.000	0.66	0.89
2	14	36	2	1.000	1.000			0.68	0.81
2	15	31	1	1.000				--	--
3	16	36	2	1.000	0.944			0.88	0.94
3	17	21	2	0.944	0.889	--		0.83	0.91
3	18	36	3	1.000	0.944	1.000		0.84	0.94
3	19	36	1	1.000				--	--
3	20	36	3	1.000	1.000	0.888		0.85	0.95
3	21	36	1	1.000				--	--
3	22	36	1	1.000				--	--
3	23	36	1	1.000				--	--
4	25	36	1	1.000				--	--
4	27	36	3	1.000	1.000	1.000		0.93	0.98
4	28	36	2	1.000	0.944			0.98	0.99
4	29	36	1	1.000				--	--
4	30	36	1	1.000				--	--
5	31	36	2	1.000	0.888			0.49	0.66
5	32-1	36	4	0.888	1.000	1.000	0.888	0.64	0.88
5	32-2	36	4	0.857	1.000	1.000	1.000	0.65	0.88
5	33	30	1	0.867				--	--
5	34	36	2	1.000	1.000			0.45	0.62
5	35	36	2	1.000	1.000			0.95	0.97
5	36	36	2	1.000	0.944			0.92	0.96
5	37	36	3	1.000	0.888	0.875		0.90	0.96
5	38	36	1	1.000				--	--
6	40	36	4	0.944	0.944	0.944	0.750	0.69	0.90
6	42	36	3	1.000	0.960	0.960		0.68	0.86
6	43	36	3	1.000	1.000			0.77	0.87

*Consistency score, Rater 1 (2,3,4).

Table 4.3

Distribution of Reliabilities

for Paired Comparison Ratings

Correlation	r_{II}
0.16-0.20	1
0.41-0.45	1
0.46-0.50	1
0.60-0.65	3
0.66-0.70	4
0.76-0.85	7
0.86-0.90	4
0.91-0.95	6
0.96-1.00	3

Table 5.1

Table of Variables

Variable List	Variable Status*	In Correlation Matrix	In Validity Matrix	Pertaining to Group 62nd Basic	62nd Troopers	63rd Basic	63rd WACS
DEMOGRAPHIC							
Ethnic or Race	1	X	0	X	X	X	X
Ed Level	1	X	0	X	X	X	X
Ed Year	1	X	0	X	X	X	X
Birth Year	1	0	0	X	X	X	X
Age	2	X	0	X	X	X	X
Sex	1	X	0	X	X	X	X
PRE-SCHOOL MEASURE							
Ride-Along Score	1	X	X	X	X	0	0
SCHOOL MEASURES							
Completed Training	1	X	0	X	X	0	0
Weeks in Training	1	X	0	X	X	0	0
Reason Dropped	1	X	0	X	X	0	0
Driving Skill	1	X	0	X	X	0	0
Rules Violation	1	X	0	X	X	0	0
Inadequate Ability	1	X	0	X	X	0	0
Unsatisfactory Physical Ability	1	X	0	X	X	0	0
Other	1	X	0	X	X	0	0
Graduated	1	X	X	X	X	0	0
Class Rank	1	0	0	X	X	0	0
Converted Class Rank	2	X	X	X	X	0	0
Grade Point Average	1	X	X	X	X	0	0
Firearms	1	X	X	X	X	0	0
Pursuit Driving	1	X	X	X	X	0	0
COGNITIVE MEASURES							
Trooper Aptitude Reasoning	1	X	X	X	X	X	X
Trooper Aptitude Math Reasoning	1	X	X	X	X	X	X
Trooper Aptitude Verbal	1	X	X	X	X	X	X
Trooper Aptitude Arithmetic	1	X	X	X	X	X	X
Trooper Aptitude Comparisons	1	X	X	X	X	X	X
Trooper Aptitude Communications	1	X	X	X	X	X	X
Closure Flexibility	1	X	X	X	X	X	X
Aptitude Index	3	0	X	X	X	X	X
PERSONALITY MEASURES							
Gordon P A	1	X	X	X	X	X	X
Gordon P R	1	X	X	X	X	X	X
Gordon P E	1	X	X	X	X	X	X
Gordon P S	1	X	X	X	X	X	X

Table 5.1 (Continued)

Variable List	Variable Status*	In Correlation Matrix	In Validity Matrix	Pertaining to Group 62nd Basic	62nd Troopers	63rd Basic	63rd WACS
Gordon I C	1	X	X	X	X	X	X
Gordon I O	1	X	X	X	X	X	X
Gordon I P	1	X	X	X	X	X	X
Gordon I V	1	X	X	X	X	X	X
Press Test 1	1	0	0	X	X	X	X
Press Test 2	1	0	0	X	X	X	X
Press Test 3	1	0	0	X	X	X	X
Press 1 (Dif 1)	2	0	0	X	X	X	X
Press 2 (Dif 2)	2	0	0	X	X	X	X
Bio Data 1 Autonomy	1	X	0	X	X	X	X
Bio Data 2 Emotional Adjustment	1	X	0	X	X	X	X
Bio Data 3 Family Adjustment	1	X	0	X	X	X	X
Bio Data 4 Financial Responsibility	1	X	0	X	X	X	X
Bio Data 5 Health	1	X	0	X	X	X	X
Bio Data 6 Interpersonal Relations	1	X	0	X	X	X	X
Bio Data 7 Leadership & Motivation	1	X	0	X	X	X	X
Bio Data 8 Mobility	1	X	0	X	X	X	X
Bio Data 9 School Adjustment	1	X	0	X	X	X	X
Bio Data 10 Vigor	1	X	0	X	X	X	X
Bio Data 11 Work Attitudes	1	X	0	X	X	X	X
Bio Data 12 Miscellaneous	1	0	0	X	X	X	X
PHYSICAL STRENGTH AND AGILITY MEASURES							
Height	1	X	X	X	X	X	X
Weight	1	X	X	X	X	X	X
Scramble & Pursue Time 1	1	0	0	X	X	X	X
Scramble & Pursue Time 2	1	0	0	X	X	X	X
Scramble & Pursue Average	2	X	0	0	0	0	0
Scramble & Pursue Speed	3	0	X	X	X	X	X
Flex Arm Hang in Seconds	1	X	X	X	X	X	X
Preferred Hand	1	0	0	X	X	X	X
Right Hand Trial 1	1	0	0	X	X	X	X
Left Hand Trial 1	1	0	0	X	X	X	X
Right Hand Trial 2	1	0	0	X	X	X	X
Left Hand Trial 2	1	0	0	X	X	X	X
Right Hand Trial 3	1	0	0	X	X	X	X
Left Hand Trial 3	1	0	0	X	X	X	X
Right Hand Average	2	X	0	X	X	X	X
Left Hand Average	2	X	0	X	X	X	X
Preferred Hand Average	3	X	X	X	X	X	X

Table 5.1 (Continued)

Variable List	Variable Status*	In Correlation Matrix	In Validity Matrix	Pertaining to Group: 62nd Basic	Troopers	63rd Basic	WACS
Body Removal Time 1	1	0	0	X	X	X	X
Body Removal Time 2	1	0	0	X	X	X	X
Body Removal Average	2	X	X	X	X	X	X
Body Removal and Carry Speed	3	0	X	X	X	X	X
Obstacle Course Time	1	X	0	X	X	X	X
Obstacle Course Speed	3	0	X	X	X	X	X
Dynamic Flex Cycles	1	X	X	X	X	X	X
A-Pulse (Pulse Before Step Test)	1	0	0	X	X	X	X
Stop Minutes	1	0	0	X	X	X	X
Stop Seconds	1	0	0	X	X	X	X
Step Test Cycles	1	0	0	X	X	X	X
Post-Test Pulse (Pulse After Step Test)	1	0	0	X	X	X	X
Maximum Oxygen Utilization	2	X	X	X	X	X	X
Pulse Ratio	2	0	0	X	X	X	X
Physical Activities Checklist	1	X	X	X	X	X	X
ADMINISTRATIVE CRITERIA							
Hire Date	1	0	0	X	X	X	0
Termination Date	1	0	0	X	X	0	0
Length of Service	2	X	X	X	X	0	0
Current Status	1	X	X	X	X	0	0
JUDGMENTAL CRITERIA							
Paired Comparisons	1	X	X	X	X	0	0
Behavioral Checklist	1	X	X	X	X	0	0
WORK PERFORMANCE CRITERIA							
Days Worked	1	X	0	X	X	0	0
Miles Driven	1	X	0	X	X	0	0
Hours On Patrol	1	X	0	X	X	0	0
Hours Traffic Control	1	0	0	X	X	0	0
Hours Accident Investigation	1	X	0	X	X	0	0
Hours Criminal Investigation	1	X	0	X	X	0	0
Hours Other Investigation	1	0	0	X	X	0	0
Hours Civil Disturbances	1	0	0	X	X	0	0
Hours Size and Weight	1	0	0	X	X	0	0
Hours Radar Enforcement	1	X	0	X	X	0	0
Hours Inspection Supervision	1	0	0	X	X	0	0
Hours Other Special Duty	1	X	0	X	X	0	0
Hours Breathalyzer Test	1	0	0	X	X	0	0
Hours Preparing for Instruction	1	0	0	X	X	0	0
Hours Instructing	1	0	0	X	X	0	0

Table 5.1 (Continued)

Variable List	Variable In Correlation Status*	Matrix	In Validity Matrix	Pertaining to Group 62nd Basic	Troopers	63rd Basic	WACS
Hours Safety Education	1	0	0	X	X	0	0
Hours Checking Squad	1	0	0	X	X	0	0
Hours Receiving Training	1	0	0	X	X	0	0
Hours in Office (Reports)	1	0	0	X	X	0	0
Hours in Office (Adm.)	1	0	0	X	X	0	0
Hours Total	1	0	0	X	X	0	0
Safety and Other Talks	1	0	0	X	X	0	0
Vehicles Measured	1	0	0	X	X	0	0
Vehicles Checked	1	0	0	X	X	0	0
Vehicles Weighed	1	0	0	X	X	0	0
Unsafe Vehicles Removed	1	0	0	X	X	0	0
Vehicles Seized	1	0	0	X	X	0	0
Stolen Vehicles Recovered	1	0	0	X	X	0	0
Total Accidents Investigated	1	0	0	X	X	0	0
Total Arrests Accident Cases	1	0	0	X	X	0	0
Speeding Truces & Buses	1	0	0	X	X	0	0
Total A & S Checking Detail	1	0	0	X	X	0	0
Assists to Motorists	1	X	0	X	X	0	0
Total Warnings	1	0	0	X	X	0	0
Convictions Not Appealed	1	0	0	X	X	0	0
Dismissals	1	0	0	X	X	0	0
Nolle Proposed	1	0	0	X	X	0	0
Complied With Law	1	X	0	X	X	0	0
Total Court Cases	1	0	0	X	X	0	0
Speeding Radar	1	0	0	X	X	0	0
Speeding Pace	1	0	0	X	X	0	0
Reckless Driving	1	0	0	X	X	0	0
Driving Under Influence	1	0	0	X	X	0	0
Pedestrian Violations	1	0	0	X	X	0	0
Other Haz. Moving Violations	1	0	0	X	X	0	0
Other Haz. Trucks & Buses	1	0	0	X	X	0	0
Driving While Suspended or Rev.	1	0	0	X	X	0	0
No O.L. or C.L.	1	0	0	X	X	0	0
Improper Equipment	1	0	0	X	X	0	0
Size and Weight	1	0	0	X	X	0	0
All Other Traffic	1	0	0	X	X	0	0
Total A & S Traffic	1	X	0	X	X	0	0
Total A & S Criminal	1	X	0	X	X	0	0
Total A & S Legal Doc.	1	X	0	X	X	0	0
Total Arrest & Summons	1	X	0	X	X	0	0
Weeks Reported	1	X	0	X	X	0	0

Table 5.1 (Continued)

Variable List	Variable Status*	In Correlation Matrix	In Validity Matrix	Pertaining to Group 62nd Basic	62nd Troopers	63rd Basic	63rd WACS
Percent of Worktime Available	2	X	X	X	X	0	0
Percent Overtime	2	X	0	X	X	0	0
Conviction Rate	2	X	X	X	X	0	0
Office Hours Per Week	2	X	0	X	X	0	0
Road Activity	3	0	X	X	X	0	0
Investigations	3	0	X	X	X	0	0

*1 = In original data collection set
2 = Derived from original variable(s)
3 = Derived from previously derived scores

Table 5.2

Sample Distribution by Test Group, Ethnic Group, and Sex

Test Group	62 Basic Troopers	63 Basic	WACs	Total
Male				
Black	21	7	5	0	33
White	47	93	39	0	179
Other	0	0	0	0	0
Total	68	100	44	0	212
Female				
Black	0	0	0	34	34
White	1	0	1	23	25
Other	0	0	0	4	4
Total	1	0	1	61	63
Black Total	21	7	5	34	67
White Total	48	93	40	23	204
Other Total	0	0	0	4	4
Total	69	100	45	61	275*

*Partial data, unclassified by ethnic group and/or group was collected on four (4) additional cases, for a total of 279 cases. In most of the analyses, the four (4) "Other" ethnics were eliminated also, leading to an effective sample of 271.

Table 5.3

Percent Distribution of Height by Group, Race, and Sex

Variable Intervals	Total	Troopers	62nd Basic	63rd Basic	WACS	White Females	Black Females	White Males	Black Males
Mean	69.5	71.3	70.7	71.0	64.2	64.7	63.7	71.1	71.0
Standard Deviation	3.6	1.9	2.0	2.7	2.4	2.1	2.5	2.1	2.2
Median	70.0	71.0	70.1	71.0	64.0	64.1	63.9	71.0	70.3
Inches									
57-58	.37	.00	.00	.00	1.69	.00	3.23	.00	.00
59-60	1.12	.00	.00	.00	5.08	4.17	6.45	.00	.00
61-62	3.72	.00	.00	.00	16.95	12.50	19.35	.00	.00
63-64	8.18	.00	.00	.00	37.29	33.33	41.94	.00	.00
65-66	5.95	.00	1.52	4.55	22.03	33.33	16.13	.56	.00
67-68	11.90	7.00	15.15	13.64	15.25	12.50	12.90	11.30	9.68
69-70	28.62	37.00	42.42	25.00	1.69	4.17	.00	35.03	45.16
71-72	24.91	38.00	24.24	29.55	.00	.00	.00	33.33	25.81
73-74	10.41	11.00	13.64	18.18	.00	.00	.00	14.12	9.68
75-76	4.46	7.00	3.03	6.82	.00	.00	.00	5.08	9.68
77-78	.37	.00	.00	2.27	.00	.00	.00	.56	.00
No. of Cases	269	100	66	44	59	24	31	177	31
Missing Data	10	0	3	2	5	1	3	2	2
Total N	279	100	69	46	64	25	34	179	33

Table 5.4

Percent Distribution of Weight by Group, Race, and Sex

Variable Intervals	Total	Troopers	62nd Basic	63rd Basic	WACS	White Females	Black Females	White Males	Black Males
Mean	171.0	191.2	174.5	172.9	131.5	128.9	134.3	182.9	180.7
Standard Deviation	29.6	18.4	21.6	18.0	19.8	19.4	20.3	19.8	24.7
Median	175.6	189.7	171.5	172.5	128.3	127.5	128.3	183.9	180.3
Pounds									
95-114	3.35	.00	.00	.00	15.25	16.67	12.90	.00	.00
115-124	5.95	.00	1.52	.00	25.42	29.17	22.58	.00	.00
125-134	4.83	.00	3.03	.00	18.64	16.67	22.58	1.13	.00
135-144	4.83	.00	3.03	4.55	15.25	20.83	9.68	.56	6.45
145-154	7.06	1.00	7.58	11.36	13.56	8.33	16.13	4.52	9.68
155-164	10.78	5.00	15.15	22.73	6.78	4.17	9.68	12.43	9.68
165-174	11.90	10.00	24.24	13.64	.00	.00	.00	15.82	12.90
175-184	15.61	22.00	13.64	18.18	5.08	4.17	6.45	18.08	22.58
185-194	14.13	22.00	15.15	13.64	.00	.00	.00	19.21	12.90
195-204	11.90	20.00	10.61	11.36	.00	.00	.00	15.25	16.13
205-214	5.20	10.00	3.03	4.55	.00	.00	.00	7.34	3.23
215-224	2.97	7.00	1.52	.00	.00	.00	.00	4.52	.00
225-over	1.49	3.00	1.52	.00	.00	.00	.00	1.13	6.45
No. of Cases	269	100	66	44	59	24	31	177	31
Missing Data	10	0	3	2	5	1	3	2	2
Total N	279	100	69	46	64	25	34	179	33

Table 5.5

Percent Distribution of Age by Group, Race, and Sex

Variable Intervals	Total	Troopers	62nd Basic	63rd Basic	WACS	White Females	Black Females	White Males	Black Males
Mean	26.0	26.8	23.3	23.8	29.5	29.5	29.7	25.2	24.1
Standard Deviation	3.9	2.3	2.0	2.1	5.1	6.1	4.3	2.7	2.6
Median	25.3	26.2	22.8	23.5	28.8	28.3	30.5	24.9	23.4
Years									
1-25	51.65	34.00	86.96	81.82	18.33	16.66	15.63	57.54	81.25
26-30	36.63	57.00	13.04	18.18	43.33	58.33	34.38	38.55	12.50
31-35	9.83	9.00	.00	.00	30.00	16.66	43.75	3.91	6.25
36-over	1.83	.00	.00	.00	8.33	8.33	6.25	.00	.00
No. of Cases	273	100	69	44	60	24	32	179	32
Missing Data	6	0	0	2	4	1	2	0	1
Total N	279	100	69	46	64	25	34	179	33

Table 5.6

Percent Distribution of Educational Level by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	3.8	3.8	3.8	3.8	3.8
Standard Deviation	.7	.7	.7	.7	.7
Median	3.8	3.8	3.9	3.8	3.9
Educational Levels					
Some High School	3.57	3.03	4.35	2.86	7.14
H.S. Graduate	25.00	27.27	21.74	27.14	14.29
Some College	61.90	60.61	63.77	60.00	71.43
College Graduate	9.52	9.09	10.14	10.00	7.14
No. of Cases	168	99	69	140	28
Missing Cases	1	1	0	1	0
Total N	169	100	69	141	28

Table 5.7

Percent Distribution of Years of Education by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	13.2	13.2	13.2	13.2	13.2
Standard Deviation	1.4	1.5	1.4	1.4	1.5
Median	12.9	12.8	12.9	12.8	13.0
Years of Education					
under 12	2.38	3.03	4.35	2.86	7.14
12	37.50	40.40	33.33	40.00	25.00
13	23.21	20.20	27.54	20.71	35.71
14	8.93	17.17	13.04	17.14	7.14
15	9.52	8.08	11.59	7.86	17.86
16	10.71	11.11	10.14	11.43	7.14
No. of Cases	168	99	68	140	28
Missing Data	1	1	0	1	0
Total N	169	100	69	141	28

Table 5.8

Cumulative Percent Distribution of Predictors

1. Tests of Aptitude: Reasoning

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	10.90	9.12	11.53	11.30	9.51	10.87	11.77
S.D.	2.34	2.40	2.00	1.96	2.99	2.02	1.76
Score							
15	100		100	100		100	100
14	99	100	98	98	100	97	99
13	89	98	85	88	92	90	85
12	74	95	66	71	85	79	62
11	53	80	43	48	70	59	36
10	39	72	26	33	59	43	22
9	25	55	14	18	48	25	11
8	13	35	6	8	13	12	4
7	9	25	4	5	25	7	3
6	4	12	1	1	15	1	1
5	2	6	1		10		
4	1	3	1		7		
3	1	3	1		5		
2	1	2	1		3		

Table 5.9

Cumulative Percent Distribution of Predictors

2. Tests of Aptitude: Math Reasoning

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	5.76	4.66	6.14	5.85	5.46	5.35	6.41
S.D.	3.38	5.82	2.02	2.09	6.07	2.00	2.02
Score							
10	100		100	100	100	100	100
9	95		94	95	95	96	93
8	89		86	88	93	92	83
7	80	100	74	78	89	87	68
6	67	91	59	64	77	76	50
5	50	77	41	45	67	51	38
4	30	60	20	26	46	32	18
3	20	48	10	16	36	23	7
2	7	22	2	4	15	6	2
1	1	2	1	1	2	1	

Table 5.10

Cumulative Percent Distribution of Predictors

3. Tests of Aptitude: Verbal Comprehension

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	30.10	23.20	32.36	30.61	28.34	27.88	33.71
S.D.	10.79	11.05	9.67	9.74	13.78	10.06	8.43
Score							
46-48	100		100	100	100	100	100
43-45	95	100	94	96	92	98	94
40-42	87	94	85	89	77	93	85
37-39	77	91	73	80	67	87	72
34-36	66	86	59	67	62	75	57
31-33	56	80	48	56	56	65	45
28-30	50	75	42	49	54	61	35
25-27	37	63	29	35	46	47	21
22-24	31	55	23	28	39	39	17
19-21	24	49	15	20	38	30	9
16-18	19	38	11	14	33	22	6
13-15	13	29	7	10	25	15	4
10-12	7	23	2	4	18	8	2
7-9	3	9	1	1	10	2	1
4-6	2	8	1	1	1	1	
1-3	1	1	1			1	

Table 5.11

Cumulative Percent Distribution of Predictors

4. Tests of Aptitude: Arithmetic

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	11.46	9.86	12.06	11.70	10.64	11.11	12.37
S.D.	2.74	2.70	2.47	2.52	3.34	2.73	2.03
Score							
15	100	100	100	100	100	100	100
14	87	98	83	87	89	89	84
13	72	92	65	71	75	75	68
12	57	77	50	56	59	64	48
11	44	69	35	42	52	53	29
10	32	57	24	28	46	39	16
9	24	46	15	21	34	31	9
8	17	32	11	13	30	19	6
7	10	23	5	7	23	11	2
6	7	12	4	4	16	6	1
5	3	6	1	1	10	3	
4	1	1	1		2		

Table 5.12

Cumulative Percent Distribution of Predictors

5. Tests of Aptitude: Names, Numbers, Symbols

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	66.83	67.43	66.60	64.09	76.36	63.36	64.99
S.D.	11.85	14.77	10.57	9.46	14.36		8.93
Score							
113-116	100	100			100		
109-112	100	100			98		
105-108	99	99	100		97		
101-104	99	97	100		95		
97-100	99	97	100		93		
93-96	99	97	99	100	93		100
89-92	98	94	99	100	92		99
85-88	95	91	97	99	82	100	98
81-84	92	89	93	98	70	98	97
77-80	87	85	89	95	61	96	94
73-76	81	78	83	90	51	90	89
69-72	75	71	77	84	44	82	86
65-68	61	60	62	71	28	69	72
61-64	43	49	41	49	23	51	47
57-60	29	35	26	34	11	39	28
53-56	17	26	14	20	7	25	14
49-52	9	14	8	11	3	15	7
45-48	4	3	4	5	2	6	3
41-44	2	2	1	2	1	4	1
37-40	1	1	1	1		1	

Table 5.13

Cumulative Percent Distribution of Predictors

6. Tests of Aptitude: Communications

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	61	114	100
Mean	11.76	9.54	12.51	12.02	10.87	11.40	12.72
S.D.	2.81	2.93	2.31	2.65	3.22	2.98	1.98
Score							
20	100						
19	100		100	100		100	
18	100		100	100		99	
17	100		100	100	100	99	100
16	97		96	97	97	98	95
15	94	100	92	94	92	96	93
14	85	98	81	85	85	87	84
13	73	95	65	70	84	75	64
12	57	86	49	54	69	61	46
11	41	65	34	37	52	47	26
10	28	60	17	24	41	33	13
9	18	46	8	14	31	22	5
8	13	37	5	10	26	17	2
7	7	22	1	5	15	9	1
6	5	17	1	3	11	6	
5	3	9	1	2	8	4	
4	1	5	1	1	2	3	
3	1	3		1	1	2	
2	1	2				1	
1	1	2				1	

Table 5.14

Cumulative Percent Distribution of Predictors

7. Tests of Aptitude: Aptitude Index

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	275	65	202	212	63	114	100
Mean	136.82	123.82	141.20	135.57	141.02	129.97	141.97
S.D.	22.17	24.21	19.51	19.67	28.84	21.36	15.19
Score							
195-199	100	100			100		
190-194	99	98			98		
185-189	99	98			98		
180-184	99	98	100	100	97	100	100
175-179	98	98	98	99	95	98	99
170-174	95	98	93	98	86	98	96
165-169	94	98	92	97	84	97	96
160-164	91	97	89	95	78	97	95
155-159	86	95	83	90	73	92	88
150-154	80	92	77	85	65	88	82
145-149	72	85	68	77	54	84	69
140-144	61	80	56	66	51	75	54
135-139	53	74	46	55	46	67	42
130-134	44	65	37	48	41	56	33
125-129	34	58	26	33	37	46	20
120-124	27	49	19	25	30	38	13
115-119	20	45	12	19	24	30	7
110-114	16	40	7	14	22	24	3
105-109	13	37	5	12	19	21	1
100-104	11	26	5	10	15	18	
95-99	5	17	1	4	10	8	
90-94	4	14		2	10	4	
85-89	2	6		1	5	3	
80-84	1	3			2	2	
75-79	1	2			2	1	

Table 5.15

Cumulative Percent Distribution of Predictors

8. Gordon PP: Ascendancy

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	20.71	21.14	20.68	20.39	21.79	20.19	20.64
S.D.	6.10	5.49	6.31	4.48	9.25	4.79	4.91
Score							
33-34	100	100		100	100	100	
31-32	99	97	100	100	97	100	100
29-30	97	95	98	99	97	99	98
27-28	95	94	95	96	93	98	94
25-26	89	83	90	92	79	93	90
23-24	79	74	81	83	69	84	80
21-22	63	60	64	66	56	65	66
19-20	47	46	46	48	43	51	44
17-18	28	22	28	26	31	27	26
15-16	18	14	19	18	21	18	17
13-14	12	10	12	11	17	10	12
11-12	9	9	8	8	15	9	6
9-10	5	8	4	5	7	4	5
7-8	2	5	2	2	3	3	2
5-6	1	2	1	1		2	1

Table 5.16

Cumulative Percent Distribution of Predictors

9. Gordon PP: Responsibility

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	26.86	26.28	27.05	27.23	25.64	28.18	26.08
S.D.	4.72	5.33	4.57	4.44	5.48	4.15	4.50
Score							
35-36	100	100	100	100		100	100
33-34	98	97	98	97	100	97	98
31-32	91	91	91	91	93	87	95
29-30	77	77	76	74	87	65	85
27-28	60	66	58	57	67	50	67
25-26	43	48	41	41	48	30	54
23-24	29	29	29	27	34	19	37
21-22	16	18	15	14	21	10	20
19-20	8	12	7	6	16	3	10
17-18	5	8	4	3	11	2	4
15-16	4	6	3	2	10	2	2
13-14	2	5	2	1	5	1	1
11-12	1	3	1	1	3	1	1
9-10	1	2	1		2		1

Table 5.17

Cumulative Percent Distribution of Predictors

10. Gordon PP: Emotional Stability

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	26.56	25.63	26.87	27.08	24.75	27.51	25.56
S.D.	5.04	5.27	4.99	4.77	5.63	4.55	4.95
Score							
37-38	100	100		100		100	
35-36	100	98	100	100		99	100
33-34	99	98	99	98	100	98	98
31-32	91	95	89	89	98	86	92
29-30	78	83	75	75	87	72	87
27-28	61	66	58	57	70	54	62
25-26	43	51	40	40	52	37	34
23-24	28	35	26	24	39	23	26
21-22	20	25	18	16	33	15	17
19-20	12	14	11	10	18	9	11
17-18	8	9	7	6	15	3	9
15-16	4	7	3	3	10	2	4
13-14	3	6	2	1	8	1	2
11-12	1	2	1	1	5		1
9-10	1	1	1	1	2		1

Table 5.18

Cumulative Percent Distribution of Predictors

11. Gordon PP: Sociability

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	19.12	22.15	18.18	19.14	19.08	19.65	18.52
S.D.	5.57	5.55	5.60	5.72	4.88	5.89	5.92
Score							
33-34	100	100		100		100	
31-32	99	99	100	99		98	100
29-30	98	97	99	98	100	97	99
27-28	95	94	96	95	97	96	94
25-26	92	89	93	92	95	93	90
23-24	84	78	85	83	89	81	84
21-22	74	71	74	72	79	70	74
19-20	58	54	59	56	64	53	60
17-18	45	37	46	46	38	40	54
15-16	29	22	32	30	26	23	38
13-14	19	14	22	19	18	15	24
11-12	13	9	15	14	10	10	19
9-10	6	5	7	6	5	6	7
7-8	3	3	3	3	2	3	3
5-6	2	2	2	2	2	3	2
3-4	1	2	1	1	1	1	1

Table 5.19

Cumulative Percent Distribution of Predictors

12. Gordon PI: Cautiousness

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	26.41	26.29	26.46	27.03	24.13	28.30	25.62
S.D.	5.79	5.61	5.94	5.57	6.06	4.94	5.90
Score							
39-40	100	100		100		100	
37-38	100	100	100	100		99	
35-36	99	98	99	99	100	97	100
33-34	96	97	96	96	98	95	97
31-32	86	89	85	85	92	80	90
29-30	74	78	72	71	87	65	77
27-28	59	60	58	55	74	44	67
25-26	45	49	43	40	62	30	51
23-24	34	32	33	29	51	20	39
21-22	22	17	25	20	31	13	28
19-20	15	12	17	13	23	9	18
17-18	11	12	12	9	20	6	12
15-16	8	9	7	6	13	3	10
13-14	3	5	3	2	8	1	4
11-12	2	3	1	1	5		3
9-10	1	1	1	1	2		1

Table 5.20

Cumulative Percent Distribution of Predictors

13. Gordon PI: Original Thinking

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	23.86	24.19	23.72	23.60	24.74	24.23	22.91
S.D.	5.18	5.51	5.07	5.00	5.68	4.94	5.03
Score							
37-38	100		100	100			100
35-36	100	100	100	100		100	99
33-34	99	98	99	99	100	99	98
31-32	96	91	97	97	92	97	98
29-30	92	89	94	94	87	91	97
27-28	81	78	82	83	74	79	87
25-26	68	69	68	70	62	63	77
23-24	52	51	53	56	39	50	62
21-22	39	37	39	42	28	39	45
19-20	27	23	29	29	20	27	31
17-18	16	15	16	15	16	12	19
15-16	8	12	7	7	13	4	9
13-14	5	9	3	4	8	3	5
11-12	2	3	1	1	3	2	2
9-10	1	1	1	1	1	1	1

Table 5.21

Cumulative Percent Distribution of Predictors

14. Gordon PI: Personal Relations

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	23.95	23.23	24.13	24.38	22.39	25.80	22.77
S.D.	5.66	5.06	5.90	5.65	5.56	4.81	6.07
Score							
37-38	100		100	100		100	
35-36	100		100	100		99	
33-34	99		99	99		97	100
31-32	96	100	95	95	100	86	98
29-30	87	97	84	85	93	82	89
27-28	76	88	72	73	87	70	78
25-26	62	66	61	59	74	53	65
23-24	50	54	49	47	59	41	55
21-22	36	38	36	34	46	22	47
19-20	26	26	27	24	34	14	35
17-18	19	17	21	18	25	10	26
15-16	12	11	12	10	18	6	19
13-14	7	9	7	6	13	2	10
11-12	3	5	2	2	5		5
9-10	1	2	1	1	2		1

Table 5.22

Cumulative Percent Distribution of Predictors

15. Gordon PI: Vigor

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	276	65	203	213	61	115	100
Mean	24.90	24.46	24.98	24.98	24.67	25.37	24.48
S.D.	5.78	6.76	5.48	5.54	6.66	5.31	5.74
Score							
37-38	100	100	100		100		
35-36	99	98	100	100	97	100	100
33-34	97	97	98	98	95	98	98
31-32	92	94	92	93	89	95	95
29-30	83	78	85	85	79	84	85
27-28	72	65	75	72	72	70	75
25-26	57	54	59	58	52	57	60
23-24	43	45	43	42	46	42	44
21-22	31	37	30	29	38	27	32
19-20	22	29	21	20	31	17	23
17-18	12	18	10	10	20	8	13
15-16	9	15	7	8	13	5	10
13-14	5	9	4	5	7	3	7
11-12	4	6	3	3	5	3	4
9-10	3	5	2	3	2	3	2
7-8	1	1	1	1		1	

Table 5.23

Cumulative Percent Distribution of Predictors

16. Physical Activities Inventory

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	274	65	201	211	61	115	100
Mean	115.49	123.99	113.78	115.12	115.69	136.59	90.60
S.D.	108.49	146.78	94.84	97.67	141.53	109.87	73.46
Score							
631-665	100	100	100	100		100	
596-630	99	100	100	99		100	
561-595	99	100	100	99		100	
526-560	99	100	100	99		99	
491-525	99	98	99	99		98	
456-490	98	98	99	99		97	
421-455	98	98	99	99		97	
386-420	98	98	99	99		97	
351-385	98	97	99	99	100	97	100
316-350	97	95	98	98	95	97	100
281-315	95	94	98	96	92	94	98
246-280	95	93	95	95	92	92	98
211-245	89	90	91	90	89	87	93
176-210	88	82	87	86	89	82	92
141-175	80	77	81	81	79	73	90
106-140	71	72	71	70	75	60	83
71-105	61	64	60	60	66	52	69
36-70	43	49	41	43	48	32	52
21-35	17	25	14	14	30	9	21
11-20	8	11	6	6	13	3	9
1-10	1	2	1	1	3	1	1

Table 5.24

Cumulative Percent Distribution of Predictors

17. Scramble and Pursue (In Seconds)

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	272	63	203	211	59	113	100
Mean	12.34 (sec.)	12.30	12.37	12.33	12.03	12.16	12.49
S.D.	1.19	1.08	1.21	1.07	1.46	1.01	1.16
Seconds							
21	100		100	100			100
20	100		100	100			99
19	100		100	100			99
18	100		100	100			99
17	100		100	100			99
16	100	100	100	100	100	100	99
15	99	98	99	100	97	99	99
14	97	95	96	99	88	98	99
13	89	90	87	90	81	90	91
12	59	62	56	55	68	65	57
11	21	17	22	19	31	29	10
10	1	3	1	1	5	1	1

Table 5.25

Cumulative Percent Distribution of Predictors

18. Flexed Arm Hang (In Seconds)

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	258	54	196	211	46	113	100
Mean	37.43	36.81	37.94	41.26	20.59	39.36	43.01
S.D.	16.72	20.20	15.66	14.37	15.84	12.77	16.17
Seconds							
96-100	100	100		100			100
91-95	100	100		100			100
86-90	99	100	100	100			99
81-85	99	98	99	99			96
76-80	98	98	99	98			96
71-75	98	96	98	98		100	95
66-70	97	94	98	96		98	94
61-65	96	94	96	94	100	95	92
56-60	92	91	92	91	100	94	88
51-55	90	89	91	90	98	93	85
46-50	83	83	82	80	93	84	76
41-45	67	67	67	62	91	67	57
36-40	58	57	57	51	87	54	48
31-35	43	41	42	35	78	35	35
26-30	30	35	28	21	72	23	19
21-25	22	33	19	12	70	14	10
16-20	14	20	12	6	52	6	6
11-15	10	15	8	2	46	4	1
6-10	7	11	6	1	35	1	
1-5	3	6	3	1	17	1	
Could Not Do	21	13	6		18		

Table 5.26

Cumulative Percent Distribution of Predictors

19. Dynamic Flexibility (In Cycles)

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	272	63	203	211	59	113	100
Mean	13.19	11.92	13.62	13.83	10.95	13.55	14.11
S.D.	2.71	2.27	2.12	1.93	2.00	2.07	1.71
Cycles							
19	100		100	100		100	100
18	99		99	99		99	99
17	97		96	96		98	94
16	95	100	93	93	100	95	92
15	85	94	83	82	98	82	81
14	71	84	67	64	97	64	64
13	56	73	51	46	92	51	41
12	34	63	24	21	81	28	13
11	21	43	12	10	59	15	4
10	12	29	7	5	37	9	1
9	5	11	3	1	20	2	
8	4	10	2	1	15	1	
7	1	2	1	1	3		
6	1	1	1		2		

Table 5.27

Cumulative Percent Distribution of Predictors

20. Hand Grip Strength

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	271	63	202	211	60	113	100
Mean	49.64	43.69	51.97	54.73	31.75	53.22	55.88
S.D.	11.88	13.45	10.46	7.54	5.05	8.02	7.77
Pounds							
76-78	100		100	100			100
73-75	100		100	100		100	99
70-72	99	100	99	99		99	98
67-69	97	98	97	96		97	95
64-66	95	94	95	93		95	92
61-63	90	90	90	88		91	85
58-60	83	84	83	79		85	72
55-57	69	76	66	61		68	53
52-54	62	75	56	51		58	43
49-51	52	67	47	39		46	32
46-48	37	64	26	18		23	15
43-45	32	60	20	12	100	15	11
40-42	24	51	13	3	98	5	3
37-39	22	48	11	1	93	3	1
34-36	19	43	10	1	85	3	1
31-33	14	27	8		63	2	
28-30	9	17	6		42	1	
25-27	4	6	2		17	1	
22-24	2	3	1		10	1	
19-21	1	2	1		5		

Table 5.28

Cumulative Percent Distribution of Predictors

21. Maximum Oxygen Utilization (Step Test)

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	272	63	203	211	61	113	100
Mean	30.14	28.62	30.66	31.16	26.62	30.38	31.85
S.D.	6.38	6.30	6.40	6.62	3.18	8.30	4.06
Step Cycles							
46-48	100		100	100		100	
43-45	100		100	100		99	
40-42	99	100	99	99	100	97	100
37-39	94	94	94	93	98	91	95
34-36	86	86	85	82	98	78	87
31-33	69	75	64	60	98	69	68
28-30	48	65	42	38	84	38	39
25-27	33	56	26	24	66	29	21
22-24	17	25	14	14	26	25	2
19-21	10	10	10	12	3	23	1
16-18	5	3	7	7	3	14	
13-15	2	1	2	2	2	5	
10-12	1		1	1		2	
7-9			1	1		1	

Table 5.29

Cumulative Percent Distribution of Predictors

22. Obstacle Course (In Seconds)

	Total	Blacks	Whites	Males	Females	Trainees	Troopers
N	272	63	203	211	59	113	100
Mean	111.63	125.51	106.49	102.04	145.19	96.74	108.65
S.D.	26.05	36.56	19.46	13.63	31.60	12.57	12.68
Seconds							
266-275	100	100			100		
256-265	100	100			98		
246-255	100	100			98		
236-245	100	98			98		
226-235	99	98			97		
216-225	99	98			97		
206-215	99	98			97		
196-205	99	97	100		97		
186-195	99	96	100		95		
176-185	98	95	99		92		
166-175	97	92	99		86		
156-165	96	87	99		80		
146-155	95	81	98		76		
136-145	92	81	97	100	64	100	100
126-135	86	70	93	99	44	99	97
116-125	79	56	88	96	24	98	92
106-115	67	46	75	83	14	94	69
96-105	46	32	52	59	5	76	38
86-95	24	21	25	30	3	46	12
76-85	10	8	11	13	1	21	4
66-75	1	1	2	2	1	3	1

Table 5.30

Percent Distribution of Ride Along Score by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	41.0	41.9	39.7	42.2	34.8
Standard Deviation	10.5	9.6	11.6	9.6	12.5
Median	42.3	42.5	41.8	46.0	37.9
Scores					
10	1.79	2.00	1.47	1.42	3.70
15	.60		1.47	.71	.00
20	6.55	3.00	11.76	3.55	22.22
25	2.38	1.00	4.41	1.42	7.41
30	11.31	14.00	7.35	11.35	11.11
35	4.17	3.00	5.88	4.26	3.70
40	24.40	27.00	20.59	24.82	22.22
45	3.67	4.00	2.94	3.55	3.70
50	45.24	46.00	44.12	48.94	25.93
No. of Cases	168	100	68	141	27
Missing Data	1	0	1	0	1
Total N	169	100	69	141	28

Table 5.31

Percent Distribution Graduated by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Graduated	94.05	100.00	85.51	96.43	82.14
Not Graduated	5.95	0	14.49	3.57	17.86
Number of Cases	169	100	69	141	28

Table 5.32

Percent Distribution of Converted Rank by Group and Race

Variable Intervals	Troopers	62nd Basic	White Males	Black Males
Mean	105.8	108.9	107.6	104.0
Standard Deviation	16.6	19.5	16.4	24.9
Median	103.3	106.0	106.8	95.5
Converted Rank Score				
51-60	1.02	.00	.75	.00
61-70	.00	.00	.00	.00
71-80	3.06	1.69	2.99	.00
81-90	12.24	13.56	9.70	31.82
91-100	27.55	20.34	22.39	36.36
101-110	20.41	23.73	23.13	13.64
111-120	18.37	20.34	21.64	4.55
121-130	8.16	10.17	9.70	4.55
131-140	6.12	5.08	2.99	.00
141-150	3.06	1.69	.00	.00
151-160	.00	.00	.00	.00
161-170	.00	1.69	.00	4.55
171-180	.00	.00	.00	.00
181-190	.00	1.69	.00	4.55
No. of Cases	98	59	134	22
Missing Data	2	10	7	6
Total N	100	69	141	28

Table 5.33

Percent Distribution of Grade Point Average by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	92.2	93.9	89.3	92.9	88.3
Standard Deviation	3.4	2.2	3.1	3.0	2.6
Median	92.9	93.8	89.2	93.1	88.0
Grade Point Average					
80-82	0.62	0	1.69	0.74	0
83-85	5.03	0	13.56	2.22	21.74
86-88	13.84	2.00	33.90	8.15	43.48
89-91	20.13	16.00	27.12	20.00	21.74
92-94	40.25	51.00	22.03	45.19	13.04
95-97	19.50	30.00	1.69	22.96	0
98-100	0.62	1.00	0	0.74	0
No. of Cases	159	100	59	135	23
Missing Cases	10	0	10	6	5
Total N	169	100	69	141	28

Table 5.34

Percent Distribution of Current Status by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	2.9	2.9	2.8	3.0	2.5
Standard Deviation	.5	.3	.6	.3	.9
Median	2.9	3.0	2.9	3.0	2.6
Current Status					
1: Terminated	5.70	3.03	10.17	2.22	26.09
3: Active	94.30	96.97	89.83	97.78	73.91
No. of Cases	158	99	59	135	23
Missing Cases	11	1	10	6	5
Total N	169	100	69	141	28

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Table 5.35

Percent Distribution of Length of Service (in Months) by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	30.1	41.7	13.4	33.1	15.4
Standard Deviation	17.7	13.8	3.7	17.2	11.3
Median	24.4	43.0	15.0	35.8	13.3
Months					
1-5	3.55	.00	8.70	2.13	10.71
6-10	5.33	3.00	8.70	2.13	21.43
11-15	18.93	.00	46.38	14.89	39.29
16-20	18.34	6.00	36.23	19.15	14.29
21-25	5.92	10.00	.00	7.09	.00
26-30	2.37	4.00	.00	2.13	3.57
31-35	2.37	4.00	.00	2.13	3.57
36-40	9.47	16.00	.00	11.35	.00
41-45	7.69	13.00	.00	9.22	.00
46-50	6.51	11.00	.00	6.38	7.14
51-55	10.65	18.00	.00	12.77	.00
56-60	7.69	13.00	.00	9.22	.00
61-65	.00	.00	.00	.00	.00
66-70	.59	1.00	.00	.71	.00
71	.59	1.00	.00	.71	.00
No. of Cases	169	100	69	141	28
Missing Data	0	0	0	0	0
Total N	169	100	69	141	28

Table 5.36

Percent Distribution of Paired Comparison Scores by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	459.9	489.0	412.6	471.3	387.0
Standard Deviation	122.5	119.2	113.7	119.9	116.6
Median	479.8	508.0	430.3	485.2	378.0
Scores					
250 and under	11.61	10.42	13.56	10.45	19.05
251-300	3.23	1.04	6.78	3.24	9.52
301-350	3.87	1.04	8.47	1.49	19.05
351-400	10.97	9.38	13.56	9.70	19.05
401-450	12.90	8.33	20.34	14.93	.00
451-500	18.71	18.75	18.64	19.40	14.29
501-550	18.71	22.92	11.86	20.90	4.76
551-600	10.32	14.58	3.39	10.45	9.52
601-650	4.52	6.25	1.69	4.48	4.76
651-700	2.58	3.13	1.69	2.99	.00
701-750	2.58	4.17	.00	2.99	.00
No. of Cases	155	96	59	134	21
Missing Data	14	4	10	7	7
Total N	169	100	69	141	28

Table 5.37

Percent Distribution of Behavioral Checklist Scores by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	62.7	62.8	62.4	63.3	59.1
Standard Deviation	7.2	6.2	8.5	6.7	8.6
Median	65.8	65.1	66.5	66.1	63.1
Scores					
30-34	.63	.00	1.69	.75	.00
35-39	.00	.00	.00	.00	.00
40-44	3.80	2.02	6.78	2.99	8.33
45-49	4.43	4.04	5.08	2.24	16.67
50-54	6.96	8.08	5.08	7.46	4.17
55-59	10.76	13.13	6.78	10.45	12.50
60-64	18.35	21.21	13.56	17.16	25.00
65-69	53.80	49.49	61.02	57.46	33.33
70-74	1.27	2.02	.00	1.49	.00
No. of Cases	158	99	59	134	24
Missing Data	11	1	10	7	4
Total N	169	100	69	141	28

Table 5.38

Percent Distribution of Road Activity Scores by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	20.0	18.9	21.8	19.8	21.3
Standard Deviation	2.5	2.1	2.0	2.4	2.7
Median	19.9	19.4	21.8	19.8	21.8
Scores					
11-15	6.33	10.10	.00	6.67	4.35
16-20	51.84	67.68	25.42	57.04	21.74
21-25	40.51	22.22	71.19	35.56	69.57
26-30	1.27	.00	3.39	.74	4.35
No. of Cases	158	99	59	135	23
Missing Cases	11	1	10	6	5
Total N	169	100	69	141	28

Table 5.39

Percent Distribution of Investigation Scores by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	20.0	20.0	20.0	20.0	19.0
Standard Deviation	2.2	2.4	2.0	2.3	1.8
Median	19.4	19.2	19.4	19.6	18.9
Scores					
16-20	65.19	62.63	69.49	60.74	91.30
21-25	32.28	34.34	28.81	36.30	8.69
26-30	2.53	3.03	1.69	2.96	.00
No. of Cases	158	99	59	135	23
Missing Data	11	1	10	6	5
Total N	169	100	69	141	28

Table 5.40

Percent Distribution of Conviction Rate by Group and Race

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	86.1	84.0	89.6	85.7	88.0
Standard Deviation	17.0	20.7	5.6	18.0	9.0
Median	90.0	89.1	90.5	89.9	90.7
Conviction Rate Per 100					
0.0	3.16	5.05	0	3.70	0
60-69	2.53	4.04	0	1.48	8.70
70-79	6.33	5.05	8.47	7.41	0
80-89	37.34	39.39	33.90	37.78	34.78
90-99	50.63	44.44	57.63	48.15	56.52
100	1.27	2.02	0	1.48	0
No. of Cases	158	99	59	135	23
Missing Data	11	1	10	6	5
Total N	169	100	69	141	28

Table 5.41

Percent Distribution of Available Worktime

Variable Intervals	Total	Troopers	62nd Basic	White Males	Black Males
Mean	90.7	88.3	94.8	90.2	93.6
Standard Deviation	10.7	12.5	4.8	11.2	6.5
Median	92.3	90.8	95.4	92.3	95.4
below 59	1.27	2.02	0	1.48	0
60-69	.63	1.01	0	.74	0
70-79	1.90	2.02	1.69	1.48	4.35
80-89	25.32	36.36	6.78	27.41	13.04
90-99	65.19	56.57	79.66	65.93	69.57
100-109	5.70	2.02	11.86	4.44	13.04
No. of Cases	158	99	59	135	23
Missing Cases	11	1	10	6	5
Total N	169	100	69	141	28

Table 5.42

Multiple Classification Analysis ANOVA for
ALL VARIABLES (F-Ratios and Significance Levels)

Effects D.F.	Total D.F.	Ethnic 1	Sex 1	Group 1*/3**	Interactions
Predictors					
Reasoning	270	17.0/.001	0.3/ns	1.4/ns	0.7/ns
Math Reasoning	270	3.7/.03	.01/ns	1.1/ns	0.7/ns
Verbal Comprehension	270	22.9/.001	0/ns	8.3/.001	4.5/.001
Arithmetic	270	13.6/.001	.09/ns	2.9/.03	0.3/ns
Names, Numbers, Symbols	270	4.2/.02	0.2/ns	1.0/ns	0.8/ns
Communications	270	24.1/.001	0/ns	3.0/.03	1.0/ns
Aptitude Index	266	53.7/.001	0.0/ns	5.0/.002	2.0/ns
Gordon Ascendancy	271	2.2/ns	0.2/ns	0.2/ns	2.2/ns
Gordon Responsibility	271	0.6/ns	1.4/ns	4.3/.006	1.2/ns
Gordon Emotional Stability	271	0.5/ns	0.2/ns	0.9/ns	0.6/ns
Gordon Sociability	271	1.2/ns	0.2/ns	0.6/ns	2.2/ns
Gordon Cautiousness	271	0.2/ns	0.2/ns	8.8/.001	2.1/.08
Gordon Original Thinking	271	0.4/ns	0.6/ns	3.7/.01	0.9/ns
Gordon Personal Relations	271	1.5/ns	.00/ns	8.2/.001	0.2/ns
Gordon Vigor	271	0.7/ns	0.3/ns	1.2/ns	0.7/ns
Physical Activities Inventory	269	.09/ns	.02/ns	3.3/.02	1.5/ns
Scramble & Pursue	265	1.8/ns	4.9/.02	31.7/.001	0.8/ns
Flexed Arm Hang	254	4.2/.02	5.0/.03	1.9/ns	1.1/ns
Dynamic Flexibility	268	0.6/ns	1.0/ns	9.1/.001	0.8/ns
Hand Grip Strength	264	0.7/ns	28.0/.001	2.1/ns	0.9/ns
Maximum Oxygen Utilization	265	1.2/ns	4.9/.02	18.6/.001	1.2/ns
Obstacle Course	265	1.2/ns	14.7/.001	31.9/.001	1.5/ns
Criteria					
Ride-Along Rating	167	10.7/.001	1.4/ns	.05/ns	.82/ns
Graduated	167	3.4/ns	.27/ns	11.3/.001	1.5/ns
Converted Rank	156	1.6/ns	0.9/ns	2.2/ns	0.2/ns
Grade Point Average	158	29.5/.001	1.4/ns	92.7/.001	.08/ns
Current Status	157	20.0/.001	.03/ns	.49/ns	.47/ns
Length of Service	168	8.9/.003	.06/ns	232/.001	6.8/.01

Table 5.42 (Continued)

	Total D.F.	Ethnic	Sex	Group	Interactions
Paired Comparison Rating	154	3.9/.05	0/ns	10.1/.002	4.1/.04
Behavior Checklist	157	7.2/.008	0.2/ns	0.1/ns	4.2/.04
Road Activity	157	0.9/ns	0.3/ns	59/.001	1.1/ns
Investigation	157	6.3/.01	0.4/ns	0.6/ns	.07/ns
Conviction Rate	157	.01/ns	.04/ns	3.5/ns	.32/ns
Work Time	157	.18/ns	.00/ns	12.4/.001	.16/ns

*1 d.f. for validity variables - Trainees vs Troopers

**3 d.f. for predictors - 62 Basic, Troopers, 63 Basic, WACS

Table 5.43

Correlations of Cognitive Tests with Demographic and Criterion Measures

	Reasoning	Math Reasoning	Verbal	Arithmetic	Comparing Names, Numbers and Figures	Communications	Closure Flexibility
Demographic							
Race (1=Black, 2=White, 3=Other)	.46**	.44**	.32**	.34**	.16*	.48**	.31**
Sex (1=Male, 2=Female)	-.01[a]	.00	-.12**	.00	-.03	.03	.07
Age	.27**	.23**	.19**	.25**	.02	.26**	.08*
Group (1=Trainee, 2=Trooper)	.30**	.26**	.21**	.24**	.08	.34**	.15*
Ed Level	-.04	.06	.09*	.10	.01	.02	.09
Ed Years	-.03	.11	.13*	.10	.03	.05	.03
Pre-School							
Ride-Along Rating (1=Best, 5=Poor)	-.11	-.14*	-.01	-.08	-.02	-.19**	-.10
School							
Completed Training (1=Yes, 2=No)	-.28**	-.09	-.14*	-.12	.00	-.29**	-.04
Weeks	-.05	-.36	-.50*	-.25	.10	-.65**	.45
Graduated (1=Yes, 2=No)	-.28**	-.09	-.14*	-.12	.00	-.28**	-.04
Reason Dropped (1=Vol, 2=Involl)	-.49	-.76**	-.72**	-.28	-.19	-.70**	.31
Driving Skill	-	-	-	-	-	-	-
Rules Violation	-	-	-	-	-	-	-
Inadequateability	-.54*	-.58*	-.44	-.15	-.12	-.26	-.17
Unsat Physical Condition	-	-	-	-	-	-	-
Other	-.03	-.39	-.52	-.24	-.12	-.73**	-.70**
Converted Rank	.28***	.30***	.36***	.33***	.17**	.26***	.32***
Grade Point Average	.43***	.47***	.44***	.41**	.21**	.57**	.37***
Notebook Rating	.25	.25	.30	.19	.21	.23	.30
Firearms Rating	.09	.13	.06	.10	.07	-.02	.21
Pursuit Driving	.13*	.18**	.12	.02	.04	.13	.15
Administrative							
Length of Service in Months	.36***	.27***	.21**	.26***	.07	.34***	.22**
Current Status (1=Active, 2=Lo, 3=Term)	-.27***	-.13	-.22**	-.22**	-.29***	-.22***	-.17**
Ratings							
Paired Comparison	.32***	.13*	.07	.13*	.15*	.24**	.14*
Behavioral Checklist	.23**	.16*	.13	.23**	.25***	.21**	.18**

Table 5.43 (Continued)

Activities	Reasoning	Math Reasoning	Verbal	Arithmetic	Comparing Names, Numbers and Figures	Communications	Closure Flexibility
Miles Driven	-13*	-03	-14*	-30	-13	-15*	-07
Hours Patrol	-15*	-07	-04	-06	-10	-12	-08
Hours Accident Investigation	07	09	-07	10	05	-03	05
Hours Criminal Investigation	08*	16	12**	11	03	12**	12
Hours Radar Enforcement	-15*	-17*	-19**	-07	07	-21**	-02
Hours Special Duty	-02	-15*	-02	-05**	10	-07	01
Vehicles Checked	07*	07**	-07**	22*	06	07**	09
Assists to Motorists	-14*	-26**	-20**	-14*	-04	-29**	-10
Complied With Law	03	-06*	-09	-02	05	-13**	-05
A & S Traffic	-05*	-17*	-12*	-07**	03	-22**	-11
A & S Criminal	14*	14*	18*	20**	00	12*	18
A & S Legal Documents	07	-16*	-04	-09	-10	-18*	-07
A & S Total	-04	-17*	-11	-07	03	-22*	-10
Percent Available Worktime	-06	-14*	-12	-07	09	-18*	-02
Percent Overtime	02	11*	-02*	10	00	04	03
Conviction Rate	00	-15*	-17**	-11	-07	-08	-08
Office Hours Per Week	12	02	-20**	11	-04	-02	-04

[a]Decimal points omitted

*Significant at the 5% level

**Significant at the 1% level

***Significant at the 0.1% level

Table 5.44

Rank Order of Significant Predictors of Twelve Criteria for Cognitive Tests

	CRITERIA											
Total Sample (N = 169)	Ride Along Score	Graduated	Converted Rank	Grade Point Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Reasoning		2	4	3	2	1	1	2	5			
Math Reasoning	3	3		5	5	7	6	6	4	1	2	3
Verbal	2	7	1	4	3	6	3		2		1	
Arithmetic	4	6	3	6	4	5	5	3	3	2		
Comparing		4	6	7	1	4	4	1	6			2
Communications	1	1	5	1	7	2	2	3	1			1
Closure Flex		5	2	2	6	3	7	5				
Multiple R	0.24*	0.37**	0.43**	0.66**	0.39**	0.44**	0.36**	0.34**	0.30**	0.23*	0.19*	0.24*
Black Males (N = 28)												
Reasoning	(4)	(3)	1	3	6	(5)	3					
Math Reasoning	(3)	(6)	(5)	2	7	(4)						
Verbal	(7)	(5)	(6)	1	2	1	1	4				
Arithmetic	(2)	(4)	(4)	6	5	3						
Comparing	(6)	(7)	(7)	7	1	2	2	3				
Communications	(5)	(1)	3	5	4		4	1				
Closure Flex	(1)	(2)	2	4	3			2				
Multiple R	0.46	0.48	0.66*	0.78**	0.79**	0.53*	0.63*	0.60*	0.68	0.57	0.48	0.49
Whites (N = 141)												
Reasoning		1	4	3	5	1	1	2				
Math Reasoning		4	7	2	4	7						
Verbal			1	4		6	2		1		1	
Arithmetic		5	5	6	3	4	4	3				
Comparing		3	6	7	2	3		1				
Communications		2	3	1	1	2	3					
Closure Flex			2	5		5						
Multiple R	0.19	0.28*	0.60**	0.57**	0.30*	0.32**	0.33**	0.24*	0.25*	0.19	0.22	0.24

Table 5.44 (Continued)

	CRITERIA											
Trainees (N = 69)	Ride Along Score	Graduated	Converted Rank	Grade Point Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Reasoning	(6)	1	3	6	3	1	1	2	(7)	3	2	3
Math Reasoning	(4)	3		4	4	3	5	5	(5)	1	3	(7)
Verbal	(5)	5	6	3	2	5	3	6	(6)	2	1	(4)
Arithmetic	(3)	6	2		7	4	4	7	(1)	5	(7)	(6)
Comparing		4	5	5	1	7	2	1	(4)		6	1
Communications	(1)	2	4	1	5	2		4	(2)	(6)	5	2
Closure Flex	(2)	7	1	2	6	6		3	(3)	4	4	5
Multiple R	0.33	0.46*	0.58**	0.71**	0.62**	0.51**	0.41*	0.56**	0.40	0.46*	0.45*	0.39*
Troopers (N = 100)												
Reasoning	5	a	3	2	(1)	1	(1)	(3)		(7)	(3)	
Math Reasoning				3		(7)	(7)	(4)	(3)	(2)	(2)	(4)
Verbal	2		1	4		(5)	(4)	(7)	(1)	(4)	(1)	(3)
Arithmetic	4		5	6	(3)	(6)	(3)	(1)	(4)	1	(6)	(5)
Comparing	6		6	7		(4)	(5)	(2)		(3)	(4)	(2)
Communications	3		4	1	(2)	(3)	(2)	(6)		(5)	(5)	(1)
Closure Flex	1		2	5	(4)	2	(6)	(5)	(2)	(6)	(7)	(6)
Multiple R	0.36*		0.59**	0.58**	0.22	0.25*	0.29	0.22	0.18	0.20*	0.19	0.21

[a]All Troopers graduated. Correlations are indeterminate.

*Significant at the 0.05 level of confidence.

**Significant at the 0.01 level of confidence.

Table 5.45

Multiple R for Cognitive Test Predictors[a] and Correlation with Aptitude Index (Sum of Aptitude Test Scores) for the Twelve Criteria

	Total Sample		Blacks		Whites		Trainees		Troopers	
	r with Multiple		r with Multiple		r with Multiple		r with Multiple		r with Multiple	
Criterion	AI	R	AI	R	AI	R	AI	R	AI	R
Ride Along	0.08**	0.24*	-0.06	0.46	-0.04	0.19	0.11	0.33	--	0.36
Graduated	0.17**	0.37**	0.15	0.48	0.04	0.28*	0.12	0.46*	--	-0.02
Converted Rank	0.41**	0.43**	0.07	0.66*	0.53**	0.60**	0.39**	0.58**	0.51**	0.59**
Grade Point Average	0.56**	0.66**	0.57**	0.78**	0.44**	0.57**	0.61**	0.71**	0.46**	0.58**
Current Status	0.35**	0.39**	0.65**	0.79**	0.01	0.30*	0.56**	0.62**	0.02	0.22
Length of Service	0.29**	0.46**	0.42**	0.53*	0.11	0.32**	0.31**	0.51**	0.10	0.25*
Paired Comparison	0.21**	0.36**	0.56**	0.63*	0.04	0.33*	0.24	0.41*	0.07	0.29
Behavior Checklist	0.29**	0.34**	0.50**	0.60*	0.16*	0.24*	0.44**	0.56**	0.14	0.22
Road Activity	0.20**	0.30**	0.28	0.68	0.09	0.25*	0.00	0.40*	0.11	0.18
Investigation	0.13*	0.23*	0.16	0.57	0.09	0.19	0.14	0.46*	0.15	0.20*
Conviction Rate	0.17*	0.19	0.23	0.48	0.16*	0.22	0.25*	0.45*	0.14	0.19
Work Time	0.07	0.24*	0.08	0.49	0.04	0.24	0.10	0.39*	0.02	0.21

[a] The Multiple Correlation Analysis Includes The Closure Flexibility Test; the Aptitude Index does not.

Table 5.46

Significance of the Difference Between Black and White Subjects' Correlations of the Aptitude Index with Each of the Twelve Criteria

Criterion	Difference Between Correlations on Black Group and White Group	s.e. of Difference	t-ratio
Ride-along Score	.019	.2094	<1
Graduated	.102	.2032	<1
Converted Rank	.453	.2210	2.050*
Grade Point Average	.131	.1569	<1
Current Status	.639	.1471	4.344***
Length of Service	.317	.1759	1.802
Paired Comparison Ratings	.520	.1724	3.016**
Behavior Checklist	.342	.0985	3.472***
Road Activity	.196	.2106	<1
Investigation	.066	.2031	<1
Conviction Rate	.070	.2147	<1
Percent of Work Time	.044	.2242	<1

Table 5.47

Correlations of Personality Measures with Demographic and Criterion Measures

	GORDON PERSONAL PROFILE				GORDON PERSONAL INVENTORY				
	Ascendant	Responsible	Emotional Stability	Sociability	Cautious	Originality	Personal Relations	Vigor	Press Test
Demographic									
Race (1=Black, 2=White, 3=Other)	-12[a]	-01	03	-02	-02	-10	-10	-08	05
Sex (1=Male, 2=Female)	10	-08	-03	09	-02	11	03	-04	-12
Age	08	-03	06	-04	-09	02	-06	02	08
Group (1=Trainee, 2=Trooper)	02	-23**	-07	-12	-37**	-23**	-33**	-13*	13*
Ed Level	23**	12	11	12	08	11*	04	07	-10
Ed Years	21**	09	09	12	03	14*	07	06	01
Pre-School									
Ride-Along Rating (1=Best, 5=Poor)	-02	-07	-06	-10	-04	-02	-07	00	-04
School									
Completed Training (1=yes, 2=No)	02*	15*	04	12	13*	10	11	02	-07
Weeks	63*	30	40	42	-37	-13	-46	-20	-32
Graduated (1=Yes, 2=No)	02	15*	05	12	13*	10	11	02	-07
Reason Dropped (1=Vol, 2=Invol)	67**	-41	-06	59*	-34	-46	-42	-36	-69**
Driving Skill	-	-	-	-	-	-	-	-	-
Rules Violation	-	-	-	-	-	-	-	-	-
Inadequateability	11	-80**	-54**	17	-07	-38	-30	-38	-62*
Unsat Physical Condition	-	-	-	-	-	-	-	-	-
Other	88**	44*	63**	67**	-42*	-20**	-40	-04*	-22
Converted Rank	13	15*	18**	00*	14*	20**	07*	14*	00
Grade Point Average	05	01**	10	-13*	-08	-06	-16*	-06*	07
Notebook Rating	00**	24**	10**	-10	11**	03**	-06**	15**	01
Firearms Rating	18**	26**	27**	09	20**	17**	18**	18**	00
Pursuit Driving	06	-02	00	02	-03	00	-03	05	-11
Administrative									
Length of Service in Months	-08	-24**	-10	-18**	-27**	-24**	-31**	-13*	09

Table 5.47 (Continued)

	GORDON PERSONAL PROFILE				GORDON PERSONAL INVENTORY				
	Ascendant	Responsible	Emotional Stability	Sociability	Cautious	Originality	Personal Relations	Vigor	Press Test
Current Status (1=Active, 2=Lo, 3=Term)	06	-05	02	11	-08	05	02	-10	-02
Ratings									
Paired Comparison	19**	12	08	13*	-01	04	-11	34**	09
Behavioral Checklist	16*	14*	18**	03	21**	12	10	19**	-09
Activities									
Miles Driven	-08	22**	05	-11	29**	05	14**	14*	-06
Hours Patrol	-03	17**	11	-04	22**	11	23**	06	02
Hours Accident Investigation	-13*	-02	-13*	-13*	03	-03	-02	-06	-13
Hours Criminal Investigation	15*	-06	06	13*	-13*	-09	-15	06	-08
Hours Radar Enforcement	-08	15*	00	-01	23**	06	14*	05	10
Hours Special Duty	-03	00	-06	-08	06	-07	-02	-10	-02
Vehicles Checked	-09	03	04	-14*	07	02	01	04	06
Assists to Motorists	13	13	04	17*	15*	14*	07	16*	-07
Complied With Law	02	01	-17*	00	00	09	-09	18**	18
A & S Traffic	05	08	-14*	-07	10	20**	-01	22**	12
A & S Criminal	13	-04	03	09	-07	05	-07	08	-09
A & S Legal Documents	23**	19**	14*	24**	11	24**	05	27**	03
A & S Total	06	09	-13	08	10	21**	-02	23**	11
Percent Available Worktime	-08	08	00	-11	15*	-06	03	07	02
Percent Overtime	17*	10	06	12	-04	01	-05	20**	-05
Conviction Rate	-06	03	-09	-11	15	06	06	06	13
Office Hours Per Week	-05	07	-01	03	-02	04	-06	06	-02

[a]Decimal points omitted

*Significant at the 5% level

**Significant at the 1% level

***Significant at the 0.1% level

Table 5.48

Rank Order of Significant Predictors of Twelve Criteria for Personality Measures

	CRITERIA											
Total Sample (N = 169)	Ride Along Score	Grad-uated	Conver-ted Rank	Grade Point Average	Current Status	Length Of Service	Paired Compar-ison	Behavior Check List	Road Act-ivity	Inves-tiga-tion	Con-viction Rate	Work Time
Gordon PP												
Ascendancy			4	4		8	3	2			5	
Responsibility						5		7	4			
Emotional Stability			2	2		6	7	6	3		2	
Sociability			3	3		2	6	3	5		4	
Gordon PI												
Cautiousness				8		3		1	1		1	
Originality			1	7		7	5	8	6	3		
Personal Relations				1		1	2	9	7	2		
Vigor			5	6		9	1	4	2		6	
Press Test				5		4	4	5	8	1	3	
Multiple R	0.18	0.26	0.28*	0.32*	0.23	0.43**	0.40**	0.34*	0.35*	0.22*	0.25*	0.24
Black Males (N = 28)												
Gordon PP												
Ascendancy	(6)		(6)	3			5	(2)	4	(6)		
Responsibility	(3)	2	(2)	5			4		5		4	
Emotional Stability		4	(8)	1			3	(4)	9	(4)		
Sociability	(7)		(1)		3		6	(1)	1	(3)		
Gordon PI												
Cautiousness	(5)		(4)		1	3			8		1	(2)
Originality	(8)		(7)				7		2	(5)		(5)
Personal Relations	(1)	3	(5)	2		1	1	(3)	6	(2)	5	(1)
Vigor	(2)		(3)	4	4	4	2		3	(1)	3	(4)
Press Test	(4)	1			2	2		(5)	7	(7)	2	(3)
Multiple R	0.32	0.57**	0.60	0.63*	0.55*	0.59*	0.75*	0.64	0.88**	0.52	0.63**	0.60

Table 5.48 (Continued)

	CRITERIA											
Whites (N = 141)	Ride Along Score	Graduated	Converted Rank	Grade Point Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Gordon PP												
Ascendancy			4	1		8	2	2	6			
Responsibility		2	1			2	5	6	3			
Emotional Stability		3	8	5		4		5	4			
Sociability	1		3	2		6		8	2			
Gordon PI												
Cautiousness			6	7		5	7	3	1			
Originality			2	6		9	6	7		2		
Personal Relations		1	7	4		1	3	9	5	3		
Vigor			5			7	1	1	8			
Press Test			9	3		3	4	4	7	1		
Multiple R	0.18*	0.22*	0.36**	0.32*	0.21	0.42**	0.46**	0.41**	0.40*	0.24*	0.29	0.27
Trainees (N = 69)												
Gordon PP												
Ascendancy	(3)	(5)	(3)	6	(5)	(5)	(6)	(4)	3	(7)	(7)	(4)
Responsibility	6	(3)	(1)	2	(9)	(4)	(5)	(7)	(8)	(4)	8	(8)
Emotional Stability	(8)		(8)	8	(6)	(8)	(4)		2	2	5	(5)
Sociability	4	(1)	(4)	4	(1)	(1)	(2)	(8)	4	(6)		(6)
Gordon PI												
Cautiousness	1	(8)	(2)	1	(2)	(8)	(1)	(1)	6	(5)	3	(1)
Originality	5	(7)	(7)	9	(3)	(6)	(3)	(5)	(9)	3	4	(9)
Personal Relations	9	(4)	(5)	7	(7)	(3)	(8)	(6)	(7)		1	(2)
Vigor	7	(2)	(6)	3	(4)	(2)	(9)	(3)	1	(8)	6	(7)
Press Test	2	(6)		5	(8)	(7)	(7)	(2)	5	1	2	(3)
Multiple R	0.42*	0.31	0.28	0.68**	0.30	0.31	0.45	0.35	0.48*	0.47*	0.55**	0.38

Table 5.48 (Continued)

	CRITERIA											
Troopers (N = 100)	Ride Along Score	Graduated	Converted Rank	Point Grade Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Gordon PP												
Ascendancy	7	a	(8)	(7)		(1)	2	5	(5)		(5)	(4)
Responsibility	8		5	(2)	4	(4)	6	8	(3)	2	(6)	(6)
Emotional Stability	5		2	(1)	3	(8)	5	2	(4)		(4)	(7)
Sociability	1		4	(6)	(6)	(7)	9	6	1	(7)	(1)	(2)
Gordon PI												
Cautiousness	4		(7)	(5)	2	(3)	7	4	(7)	(6)	(3)	(9)
Originality	6		1	(3)	(7)	(9)	4	9	(6)	(5)		1
Personal Relations	3		3		(8)	(2)	3	7	(8)	1		1
Vigor	(9)		6	(4)	1	(6)	1	1	(9)	(4)	(7)	(3)
Press Test	2		(9)		(5)	(5)	8	3	2	(3)	(2)	(5)
Multiple R	0.38*		0.34*	0.23	0.30*	0.28	0.60**	0.52**	0.25*	0.26*	0.31	0.24*

[a]All Troopers graduated. Correlations are indeterminate.
*Significant at the 0.05 level of confidence.
**Significant at the 0.01 level of confidence.

Table 5.49

Correlations of Physical Tests with Demographic and Criterion Measures

	Height	Weight	Physical Activities Inventory	Scramble & Pursue (sec)	Obstacle Course (sec)	Maximum Oxygen Mobilization	Body Removal & Carry	Grip Strength (lbs)	Dynamic Flex Cycles	Flex Arm Hang (sec)
Demographic										
Race (1=Black, 2=White, 3=Other)	02[a]	07**	-14*	05***	13***	-03**	23***	-02***	15*	-22***
Sex (1=Male, 2=Female)	-24**	-24**	01***	24***	24***	-17*	32**	-33	-07	--
Age	04	22**	-24***	-02	33***	16	18**	-02	13	-01
Group (1=Trainee, 2=Trooper)	16*	38**	-24***	-10	27***	32***	14*	15*	33***	07
Ed Level	-05	-04	21**	-04	-07	03	-13*	00	05	-10
Ed Years	02	00	28**	02	00	-01	-08	01	02	-06
Pre-School										
Ride-Along Rating (1=Best, 5=Poor)	-02	02	00	01	-03	-08	-16	-15*	08	-04
School										
Completed Training (1=Yes, 2=No)	00	-20**	16*	00*	-01	17**	-09	-10	-21**	-01
Weeks	04	-05	65*	-58*	40	41**	-30	-34	-70**	-05
Graduated (1=Yes, 2=No)	00	-20	16*	00	-10	17**	-09	-10	-21**	-01
Reason Dropped (1=Vol, 2=Invol)	-42	-56	42	-05	11	00	00	-26	-87***	21
Driving Skill	-	-	-	-	-	-	-	-	-	-
Rules Violation	-	-	-	-	-	-	-	-	-	-
Inadequateability	-36	-53	13	33	-41	25	05	08	-37	-35
Unsat Physical Condition	-	-	-	-	-	-	-	-	-***	-
Other	-15**	-13	46*	-51	38	-33*	-07	-50*	-83***	-16
Converted Rank	-23**	-12*	14*	00	-07*	16***	-03	-17*	10**	02
Grade Point Average	-06	14*	-11	-05	17*	06	06	-06	23**	-01
Notebook Rating	04	08*	-02	-08	06	08*	02	02	07	-04
Firearms Rating	-11	-15*	03	00**	-13*	15**	-03	02	11***	05
Pursuit Driving	08	09	00	-28**	-17*	20**	-08	13	25***	01
Administrative										
Length of Service in Months	18**	36***	-16*	-14	16**	21**	12*	21**	22**	00
Current Status (1=Active, 2=Lo, 3=Term)	02	-13	08	07	23**	-05	-04	-05	-03	17**

Table 5.49 (Continued)

	Height	Weight	Physical Activities Inventory	Scramble & Pursue (sec)	Obstacle Course (sec)	Maximum Oxygen Mobilization	Body Removal & Carry	Grip Strength (lbs)	Dynamic Flex Cycles	Flex Arm Hang (sec)
Ratings										
Paired Comparison	-03	05	07	-23**	-12	18**	01	04	13	07
Behavioral Checklist	-10	-12	07	-16*	-03	05	05	-11	00	03
Activities										
Miles Driven	-15*	-17*	19**	-13*	-06	-21**	00	-12	-23**	-18*
Hours Patrol	-06	-13*	03	-05	-09	-13*	03	-03*	-13**	10
Hours Accident Investigation	-02	-14*	01	-02	03	-16*	07	-15*	-19**	-09
Hours Criminal Investigation	-01	09	07**	-10	-05*	10*	-07	14*	14*	01*
Hours Radar Enforcement	-07	-13	22**	00	-14*	-14*	03	-04*	-08	-14*
Hours Special Duty	-02	-09*	-11**	-03**	09*	00**	09	-14*	-05	17*
Vehicles Checked	-04	-14*	21**	-19**	-15*	19**	-07	-07	11*	14*
Assists to Motorists	-06	-18*	22**	-12	-14*	-04	-11	-12	-17*	15*
Complied With Law	-07	00	07**	-12	-04*	07	00	-09	02	-05
A & S Traffic	-11	-08	22**	-10	-14*	00	-09	-12	-06	-05
A & S Criminal	-05	-01	03	-10	03	00	00	02	-06	-07
A & S Legal Documents	07	-02	09**	-10	-06*	00	00	00	07	-04
A & S Total	-11	-08	22**	-11	-14*	00	-09	-12	-06	-05
Percent Available Worktime	00	-08	10	-37***	-08*	-13	00	-07	-14*	-08*
Percent Overtime	-15	-05	09	-05**	-15*	03	-05	-02	03	-17*
Conviction Rate	-14	-04*	-05	-27*	-12	-02	03*	-10*	-04	-14*
Office Hours Per Week	01	-18*	-04	-13*	05	-12	15*	-19*	-11	-05

[a] Decimal points omitted

* Significant at the 5% level

** Significant at the 1% level

*** Significant at the 0.1% level

Table 5.50

Rank Order of Significant Predictors for Twelve Criteria for Physical Strength and Agility Tests

	CRITERIA											
Total (N = 169)	Ride Along Score	Grad-uated	Conver-ted Rank	Grade Point Average	Current Status	Length Of Service	Paired Compar-ison	Behavior Check List	Road Act-ivity	Inves-tiga-tion	Con-viction Rate	Work Time
Height		6	1	4	7	8	4		9		4	7
Weight		4	7	3	6	1	5	3	2			6
Physical Activities List		3	3	7	5	7	6		1		5	8
Scramble & Pursue Speed	3	8	8	8	1	4	1	1	4		1	1
Obstacle Course Speed		7	6	2	3	3		4	6		6	9
Maximum Oxygen Utilization		2	2	1	4	2	2		3		8	2
Body Removal Speed												
Grip Strength	1		4	6		5		2	7		3	3
Dynamic Flexibility	2	1	5	5		6	3		8		7	4
Flex Arm Hang	4	5	9	9	2	9			5		2	5
Multiple R	0.23*	0.42**	0.35**	0.49**	0.31**	0.53**	0.29**	0.23*	0.43**	0.18	0.34**	0.39
Black Males (N = 28)												
Height		6			2	(6)	7	2	5		(6)	
Weight		4	3	5		(5)	1	3	4		(7)	
Physical Activities List		5	2	2		(2)	4	5	1		(3)	
Scramble & Pursue Speed		3	6	4			3	8	8		(5)	
Obstacle Course Speed		7	4	1		(3)	8	1	3		(8)	
Maximum Oxygen Utilization		2	8	3		(7)	2	4	2		(4)	
Body Removal Speed												
Grip Strength			5	7		(4)		9	7		2	
Dynamic Flexibility		1	1	6	1	(1)	5	6	6		1	
Flex Arm Hang		8	7			(7)	6	7			(9)	
Multiple R	0.52	0.70**	0.80**	0.77**	0.51*	0.60	0.84**	0.78*	0.80**	0.54	0.52*	0.5

Table 5.50 (Continued)

CRITERIA

	Ride Along Score	Graduated	Converted Rank	Grade Point Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Whites (N = 141)												
Height			1	4	5	6	4		8		6	5
Weight			6	3	8	1		1	1		7	4
Physical Activities List			5	9	4	8	2	3	2		4	6
Scramble & Pursue Speed			8	7	1	4	1	2	4		1	1
Obstacle Course Speed			2	3	7	3	7	8	7		5	9
Maximum Oxygen Utilization			4	1	6	2	3	7	9			8
Body Removal Speed			3	8	9			4	6		2	7
Grip Strength			9	6	3	7	6	5	5			2
Dynamic Flexibility			7	5	2	5	5	6	3		3	3
Flex Arm Hang												
Multiple R	0.30	0.28	0.35**	0.53**	0.50**	0.58**	0.33**	0.37**	0.43**	0.21	0.36**	0.46**
Trainees (N = 100)												
Height	5	3	5	(4)	(3)	5	(5)	(3)	8	(6)	(2)	
Weight	4	5	4	(5)	(6)	6	(4)	(4)	6	(5)	(1)	(1)
Physical Activities List	8	6	7	(8)	(4)	3	(7)	(5)	1	(4)	(3)	(6)
Scramble & Pursue Speed	3	7		(7)	(8)	4	(2)		9		(7)	(8)
Obstacle Course Speed	6	8		(3)		7		(6)	5	(1)	(5)	(5)
Maximum Oxygen Utilization	7	1	1	(2)	(5)	1	(3)	(2)	2	(3)		(7)
Body Removal Speed	1	8	3	(6)	(7)	8	(6)		4	(7)	(4)	(3)
Grip Strength	9	2	2	(1)	(1)	2			3	(2)	(6)	(2)
Dynamic Flexibility	2	4	6		(2)	9	(1)	(1)	7			(4)
Flex Arm Hang												
Multiple R	0.48*	0.49**	0.60**	0.40	0.28	0.48**	0.28	0.22	0.62**	0.38	0.25	0.29

Table 5.50 (Continued)

	CRITERIA											
Troopers (N = 100)	Ride Along Score	Graduated	Converted Rank	Grade Point Average	Current Status	Length Of Service	Paired Comparison	Behavior Check List	Road Activity	Investigation	Conviction Rate	Work Time
Height	(3)	a	1	1	4	(7)	4	7	(7)		7	7
Weight	(4)		8	8	5	(9)		2	6	4	8	6
Physical Activities List	(1)		2	5	7	3	5	4	(8)	1	3	9
Scramble & Pursue Speed	(7)			7	1	(6)	3	1	1	2	1	1
Obstacle Course Speed	(6)		4	3	8	(8)	1	9	2	7		3
Maximum Oxygen Utilization			5	9	9	5		8	4	5	5	5
Body Removal Speed												
Grip Strength			3	2	6	(1)	6	3		6	2	8
Dynamic Flexibility	(2)		7	4	3	2	7	6	3	(8)	6	1
Flex Arm Hang	(5)		6	6	2	4	2	5	5	3	4	4
Multiple R	0.23		0.41**	0.46**	0.57**	0.32*	0.45**	0.50**	0.37*	0.36*	0.45**	0.50**

[a]All Troopers graduated. Correlations are indeterminate.

*Significant at the 0.05 level of confidence.

**Significant at the 0.01 level of confidence.

Table 5.51

Cut-Off Scores and Pass-Fail Requirements

	Satisfactory	Questionable	High Risk
COGNITIVE TESTS			
Aptitude Index	114+	100-113	0-99
To Pass: SATISFACTORY			
PERSONALITY MEASURES			
Ascendancy	16+	13-15	0-12
Responsibility	22+	18-21	0-19
Emotional Stability	21+	19-20	0-18
Sociability	14+	11-13	0-10
Cautiousness	21-30	31-32, 16-19	0-15,33-40
Original Thinking	19+	17-18	0-16
Personal Relations	18+	16-17	0-15
Vigor	19+	17-18	0-16
To Pass: 5 of 8 SATISFACTORY			
PHYSICAL MEASURES			
Physical Activities Inventory			
Male	35+	0-34	--
Female	20+	0-19	--
Scramble & Pursue (sec.)			
Male	13 or less - 16 or more		
Female	14 or less - 16 or more		
Flexed Arm Hang (sec.)			
Male	25+	20-24	14 or less
Female	5+	--	--
Dynamic Flexibility			
Male	11+	--	9 or less
Female	8+	--	7 or less
Hand Grip Strength (kilo.)			
Male	46+	33-34	32 or less
Female	27+	21-26	20 or less
MOU (Step Test)			
Male	24+	19-23	18 or less
Female	20+	17-19	16 or less
Obstacle Course (sec.)			
Male	115 or less	116-120	121+
Female	170 or less	171-190	191+
To Pass:			
Male	5 out of 7 SATISFACTORY		
Female	4 out of 6 SATISFACTORY		

Table 5.52

Pass-Fail Experience on the Proposed Cutting Scores for the Three Subtest Batteries, By Race, Sex, and Group

	Total		Troopers		62nd Basic		63rd Basic		WACS		White Females		Black Females		White Males		Black Males	
Physical Tests	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Passed 3 tests (Failed)	1	0.4	1	1.3	0	0	0	0	0	0	0	0	0	0	1	0.6	0	0
Passed 4 tests (Female passes, Male Fails)	5	2.2	1	1.3	2	3.2	0	0	2	5.0	1	5.9	1	5.6	3	1.9	0	0
Passed 5 tests (Passed)	30	13.5	12	15.4	11	17.7	1	2.3	6	15.0	2	11.8	2	11.1	19	12.2	5	19.2
Passed 6 tests (Passed)	83	37.2	12	15.4	29	46.8	10	23.3	32	80.0	14	82.4	15	83.3	38	24.4	12	46.2
Passed 7 tests (Passed)	104	46.6	52	66.9	20	32.3	32	74.4	0	0	0	0	0	0	95	60.9	9	34.6
Personality Tests																		
Failed																		
Passed 0	4	1.4	1	1.0	0	0	0	0	3	4.9	1	0.4	2	6.3	1	0.6	0	0
Passed 1	4	1.4	2	2.0	1	1.4	1	2.2	0	0	0	0	0	0	4	2.2	0	0
Passed 2	4	1.4	1	1.0	1	1.4	0	0	2	3.3	0	0	2	6.3	1	0.6	1	3.0
Passed 3	4	1.4	3	3.0	1	1.4	0	0	0	0	0	0	0	0	3	1.7	1	3.0
Passed 4	18	6.5	8	8.0	2	2.9	2	4.3	6	9.8	3	12.5	3	9.4	12	6.7	0	0
Passed																		
Passed 5	13	4.7	8	8.0	2	2.9	3	6.5	0	0	0	0	0	0	12	6.7	1	3.0
Passed 6	38	13.8	12	12.0	8	11.6	7	15.2	11	18.0	5	20.8	4	12.5	23	12.8	3	9.1
Passed 7	90	32.6	33	33.0	27	39.1	14	30.4	16	26.2	5	20.8	10	31.3	64	35.8	10	30.3
Passed 8	101	36.6	32	32.0	27	39.1	19	41.3	23	37.7	10	41.7	11	34.4	59	33.0	17	51.5
Aptitude Test																		
Failed	42	15.3	2	2.0	14	20.3	12	26.7	14	23.0	1	4.2	12	37.5	13	7.3	14	42.4
Passed	233	84.7	98	98.0	55	79.7	33	73.3	47	77.0	23	95.8	20	62.5	165	92.7	19	57.6
Overall Pass Level																		
Failed 2 Subbatteries	3	1.4	0	0	1	1.7	0	0	2	5.0	0	0	2	11.1	1	0.7	0	0
Failed 1 Subbattery	50	22.9	13	17.1	15	25.0	13	31.0	9	22.5	3	17.6	5	27.8	28	18.5	13	50.0
Passed all 3 Subbatteries	165	75.7	63	82.9	44	73.3	29	69.0	29	72.5	14	82.4	11	61.1	122	80.8	13	50.0

APPENDICES

APPENDIX A

Form ABC-27 (4-76) Tour 1

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Falls	613	613	4 p.m.-12	Saturday May 22, 1976

Description of Patrol or Observation Locale

Scott County. 1 stretch of 4 lane. Rural and Hilly. On Tennessee border. Gate City-2,500.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
3:50	Picked observer up at her motel in Tennessee.
3:55	Entered Scott County.
4:17	Sighted car with no inspection sticker. Stopped. Driver also did not have Virginia Operator's license. Had recently moved to Virginia. Issued summons.
4:25	Left scene.
4:31	Sighted truck hauling car with passenger. Warned that there should be no one in the car.
4:35	Left scene.
5:00	Turned to check on slow driver. Driver pulled off to turn car over to husband before 4-lane. A new driver.
5:03	Left scene.
5:35	Turned around to check inspection. It was alright. Did not stop the car.
5:45	Arrived at restaurant for dinner.
7:15	Left restaurant.
8:40	Sighted car parked in 1 lane of 4 lane. People said they wanted to visit cemetary. Warned they could not block traffic lane and told where to enter cemetary.
8:45	Left scene.
9:20	Car pulled off. Trooper thought driver might be evading him. Pulled off to see if car would come by--it did. Stopped car. Found that one headlight did not work on dim. Warned. All other equipment was alright. Driver had turned off to adjust radio.
9:30	Left scene.
9:33	Dispatcher called to ask Trooper to go to drive-in movie.
9:40	Arrived at drive-in. Nothing out of the ordinary.
10:00	Arrived at Jail. Talked with Sheriff's deputies. Observer given tour of the Jail.
10:30	Left Jail.
10:33	Sighted car with no left turn signal. Issued summons although the driver was from Tennessee because she had close relatives in Scott County.
10:45	Left scene.
11:15	Dispatcher called asking for help for another trooper.
11:17	Arrived at scene. The other trooper had stopped two cars in rapid succession--out-of-state speeder and one out-of-state DWI. Trooper Falls took charge of the DWI suspect. Administered Alcolyzer test. It was positive.

APPENDIX A

CONTINUATION OF

Tour 1

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
11:30	Arrived at jail. Suspect decided on blood test rather than breathalyzer.
11:45	Left jail.
11:50	Sighted car approaching fast and occasionally crossing lanes. Turned and pursued. Gave alcolyzer test. Negative. Driver claimed to be thinking about girlfriend. Driver's friends (app. 6) in a jeep came along and stopped. One of them approached carrying something like a belt in his hand. The driver was warned.
12:00	Left scene.
12:10	Left observer at motel.

APPENDIX A

Form ABC-27 (4-76)

Tour 2

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Alderman	1331		12 a.m.-8 a.m.	Monday May 24, 1976

Description of Patrol or Observation Locale

Roanoke County. County with large urban center. Roanoke; 2 interstate highways (I-81 and I-581), 4 lane US highway (US 11). Traveling in marked car. (Only trooper on shift). 14-15 in the county.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
12:00	To Headquarters to get mobile radar. Verified accuracy.
12:30	On interstate 81. 2 hitchhikers. Looked at I.D. Sent them on to Hgy 11.
12:55	I-81. Radar clocked at 79 mph. Turned around and pursued up to 110 mph. Virginia car. 2 women. Issued summons ("They couldn't believe it").
1:10	Verified radar. Improper readings. (It fell off the dashboard during turn around). Returned Hdqrs to get 2nd radar, and couldn't find it. (Summons will be dismissed since court requires verification before and after). Checked and filled oil.
1:35	Left Hdqs.
2:45	Checked large shopping center.
3:00	Checked truck pulled off on Hgy 11. Driver ok and sleeping.
3:05	Checked truck (as above).
3:20	Dispatcher called. House had been broken into in Manassas County and child taken at 12:30 a.m. Given description of car and license number. Believed to be on the way to Alabama. (I-81 a route to Alabama). Told to be on lookout.
3:30-4	Lunch
4:20	Sleeping trucker on approach to Interstate (ok).
4:30	Sleeping trucker on I-81. Told to move on.
4:35	Sleeping trucker on I-81. Told to move on.
4:45	Hitchhiker on I-81. Checked I.D. with dispatcher (who in turn contacts "wanted list" in D.C.). Not wanted. Told to get back behind approach sign.
5:00	Checked Holiday Inn parking lot (many reports of citizen band radio thefts from this lot).
5:05	Met County Sheriff's deputy. Conversed briefly.
5:30	Sleeping trucker on I-81. Told to move on.
5:40	Hdqs. for gas.
6:35	Truck on I-81 emergency lane showed back-up lights. Backing up on one-way considered reckless. Warned.
6:40	Car with hood up and white flag on I-81 exit. Engine overheated. Called dispatcher to get a station that would accept Amoco Motor Club card. On receiving affirmative action left.
7:10-:30	Checked a back road on which a lady had complained that children rode mini-bikes before school. Did not observe any.
7:50	Returned observer to Holiday Inn.

APPENDIX A

Form ABC-27 (4-76)

Tour 3

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date Monday-Tuesday
Truworthy	820	1294	6 p.m.-2 a.m.	May 24-25

Description of Patrol or Observation Locale

Campbell County. Chief city Lynchburg (approx. 100,000). 11 men (14 spots). Some 4 lane, no interstate. Unmarked car.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
6:05	Dispatcher, accident report.
6:20-6:45	Arrived at scene--residential area. Rear-end collision between pick-up and Honda Civic, each driven by white females, rather little damage. Put out flares. Interviews and checks documents. Writes Reports. Driver of pick-up at fault. Charges her with "following too close" (the lesser of two possible charges, the other being "reckless driving"). Issues summons to appear in juvenile court. Advises both drivers of next steps: report to the state, insurance.
7:15	Cruising 4 lane. Stops car with two men, having sighted smooth tires. Examines. Issues Summons.
7:30	Cruising 4 lane. Sights two speeding autos. Turned, gave chase, getting between them and signaling both to stop. Troopers vehicle didn't get above 85. Charged them with going 64. Issued summons to both cars although one was out of state. (They were friends and the out-of-state driver stated he would be at friend's home for two weeks)
7:55	Dropped in at Hdqs. to pickup radar. None available.
8:00	Dispatcher. Reports drag racing on country road.
8:25	Nearing the scene of reported drag racing, sights car being driven off the road into a yard. It had no license plates. Driver, black male, charged with having no registration and no valid driver's license. Issued summons.
8:40	Nearing the scene of reported drag racing, inquired of farmer who said he said he had not heard or seen anything. Traveled the length of the road.
9-10	Dinner
10:20	Sighted motorcycle with improperly fixed headlight. Warned.
10:30	Sighted speeder. Driver slowed down as trooper neared.
10:40	Dispatcher reported disturbance at drug store. Drove by, saw nothing.
10:55	Sighted auto with hood raised at closed service station. Stopped. Apparently the engine was over-heated.
11:00	Sighted auto with defective tailight. Stopped. Warned.
11:25	Hdqs. for gas.
11:40	Sighted slow moving vehicle with headlights possibly aimed too high. Stopped outside home. Driver said tired (trooper later mentioned that vehicles are driven like this by the intoxicated).

APPENDIX A

Form ABC-27 (4-76)

CONTINUATION OF Tour 3

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
11:50	Sighted construction-type vehicle without 1 tailight. Stopped. License also hanging down. Remedied defects on spot. Warned.
12:00	Met fellow trooper via dispatcher and picked up radar.
12:20	Speeding auto. Chased at speeds up to 110 mph. Driver charged with 64 mph.
1:10	Speeding truck (61-65 mph.). Chased up to 80. Warned (an out of state driver, magistrate probably home).
1:40	Speeding auto (67 mph). Chased up to 80. Charged.

APPENDIX A

Form ABC-27 (4-76)

Tour 4

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Tuck	657		12-8 Actually 11:25-8:30	Tuesday May 25, 1976

Description of Patrol or Observation Locale

Greensville County. I-95, 301, 58. Emporia, 6000 pop. 5 men (1 on drugs). On North Carolina border.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
11:20	Picked up radar and verified.
11:40-12:35	Stopped Alabama truck. No SCC stamp. Led this and companion truck down to North Carolina for safe turn around and then to Emporia to see magistrate and pay bond. $40.
12:40-1:10	Dispatcher. Truck on fire. Arrived, fire department had already been on the scene. Cab etc. badly burned. Took down report.
1:30-2:10	Lunch
2:15	Caught Md car @65 mph. Wrote summons.
2:30	Met trooper on weight detail.
2:30-2:50	Stopped to help stranded trucker. Took him to truck stop.
2:50	Stopped to help car.
3:00	Called NYC owner in regard to confiscated stolen car and trial date for thief.
3:15	Circled motel where license plate changing goes on.
3:20-3:45	Caught Florida car @65 mph. Took to magistrate to pay bond of $35.
3:45	While enroute called dispatcher to have other trooper check on trucker mentioned at 2:30.
4:10	Caught North Carolina car @67 mph. Wrote summons.
4:25-5:00	Caught Pennsylvania car @70 mph. (A policeman who hoped brotherhood would win out and whose wife was furious). Took to magistrate for bond of $40.
5:10	Caught Virginia car @80mph. Driver claimed taking neighbor to hospital re dying husband. Let go.
5:50	Caught New Jersey car in excess of 70 by pacing. Wrote summons.
6:05-6:45	Caught Florida car @70 mph. Took to magistrate for bond of $40 (at first, the man insisted he only had $33).
6:45-7:25	On tip from city police informant traveled north @110 mph after Conn. car whose occupants had attempted to purchase drugs in Emporia. Via dispatcher called Sussex County Units and drug detail. Couple caught by Sussex--left scene when drug agents arrived.
8:00-8:25	Dinner.
8:25-8:35	To airport.

APPENDIX A

Form ABC-27 (4-76)

Tour 5

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Weil	668	1680	8-4 Actually 7:30-5:30	Wednesday May 26, 1976

Description of Patrol or Observation Locale

Henrico and Hanover Counties. I-64, I-95, 301, and 1 (38 Troopers, 4 working this shift). Richmond largest city. Marked car.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
7:40	Calibrated radar.
7:50	Caught Virginia car @65 mph (radar aimed behind). Driver indignant ("not passing anyone--just keeping up with traffic"). Wrote summons.
8:00	Stopped to help motorist parked on emergency lane. Driver decided it was minor electrical trouble and he would go on.
8:45	Caught Virginia car @66 mph. Driver turned onto 2 lane. Chased @90 or so. Wrote summons.
9:10	Stopped trucker who had gone off on the shoulder several times (wondered if he could be drunk). Man said he sneezed several times--obviously not drunk.
9:20	Caught Virginia car @71. Wrote summons.
9:25-10:00	Dispatcher. 2 men robbed toll booth (location given). Hurried to site (circa 110). Shortly, before arrival dispatcher said suspects had been arrested.
10:05	Dispatcher. Double B Wrecking Company has a suspicious car which they got for towing. Arrived at wrecking company. Ran serial number etc. on NCI. Wrecking man said after he received it (from a woman) a man came in and claimed it showing Florida papers. Virginia DWV shows title held by Richmond woman--Mary Smith.
10:30	Visited Schneider (woman who gave car to wrecker). Waited until her mother returned with receipt showing purchase of car (for $50) from Sydnor. Explained that man who visited wrecking company was Schneider's father-in-law.
10:55	Visited Sydnor at truck stop. Schneider Sr. was also there. Sydnor showed papers showing he bought it from Mary Smith, now Florida resident. Tried to call Tallahassee DMV (line busy).
11:30	Hdqs. Consulted with Sergeant. Called wrecking company telling them not to wreck it.
12:00-1:00	Lunch.
1:05	Caught Virginia car @66 mph. Wrote Summons.
1:30	Caught Virginia car @66 mph. Wrote Summons.
1:50	Stopped to help motorist parked on emergency lane with trailer. Driver had gone for help.
2:00	Florida car @70 mph. Took to magistrate at Henrico County. Bond of $51.

APPENDIX A

CONTINUATION OF

Tour 5

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
2:55	Caught Florida car @66 mph. Took to magistrate at Hanover County. Bond of $30.
3:50	Caught 2 Virginia, 1 N.C. @70 mph or more at the same time. Wrote Summons x3.
3:55	While writing summons, truck driver stopped to tell of a reckless harrassing car.
4:30	Returned radar to Hdqs.

APPENDIX A

Tour 6

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Sparks	712	1596	4-12	Friday June 18, 1976

Description of Patrol or Observation Locale

Buchanan County--rural county bordering on West Virginia and Kentucky, one 15 mile strip of 4 lane, many narrow mountainous roads. Trooper Sparks only man on duty.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
3:55	Picked up observer at motel.
4:12	Dispatcher called, gave trooper a phone number to call.
4:15	Stopped at gas station to use phone.
4:25	Finished phone call. From a woman who reported an incident of indecent exposure.
4:30	Arrived at woman's house. Interviewed. She was alone with small children, and could not leave to go to the locale of incident. Also said she would have to ask her husband about whether she should press charges.
4:40	Left woman's house.
4:50	Arrived at suspect's locale. Interviewed children (no adult at home).
6:15	Stopped at State Line Club. Made inquiry of tavern owner concerning a local car thief who had escaped two months ago and was rumored to be in vicinity after period of time back and forth across the state line. (A tip from boy's stepmother's boyfriend). Owner said he had seen him a few hours ago.
6:20	Dispatcher called, reported accident on the 4 lane.
6:45	Dispatcher called about same accident (The trooper was at opposite end of county and was driving straight to the location).
6:55	Arrived at scene. A one car accident with no passengers in the car. Husband of the driver had been called to the scene and reported facts, since his wife had been sent to the hospital. (Wrecker was also at the scene). Called dispatcher to check on registration. Dispatcher called back to confirm ownership.
7:10	Left scene of accident.
7:25	Arrived at hospital in adjacent county. Interviewed driver in the emergency room.
7:35	Left hospital.
7:45	Stopped for stranded motorist. A tire had blown on the van. Sheriff's deputies stopped. Talked to them re fugitive in notation 6:15.
7:50	Left scene with stranded motorist en route to garage (motorist had no spare).
7:53	Arrived at service station. Closed. Called dispatcher to call wrecking outfit, gave him detail of tire size.
7:57	Dispatcher called to say tire size unavailable. Agreed wrecker could change existing tires (presently double in back) to make van drivable.

APPENDIX A
CONTINUATION OF

Form ABC-27 (4-76)

Tour 6

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
8:00	Returned driver to his van to await for wrecker.
8:05	Dispatcher called to tell Trooper to go to Sheriff's office to administer Breathalyzer. Deputy was bringing DWI in but not yet there.
8:06	Arrived at restaurant for dinner
8:55	Left restaurant.
9:05	Arrived at Sheriff's office (jail) to administer Breathalyzer. Subject accused deputy of giving him beer, and refused to take test.
9:25	Magistrate arrived. Subject still refused to take test.
9:37	Left jail.
9:55	Arrived at Headquarters for gasoline.
10:03	Left Headquarters.
10:05	At locale of exposure. (mentioned at 4:50). Interviewed adult male. It appears the suspect is the man's son-in-law (with wife in hospital). Interviewee denied the possibility that it could be his son-in-law.
10:10	Left locale.
10:11	Pursued car with defective headlight. Car eluded us, although probably not intentionally--simply turned up side road or driveway.
10:20	Dispatcher called to tell Trooper to go to Sheriff's to administer Breathalyzer.
10:30	Arrived at jail. Obtained consent. Set up machine.
10:45	While waiting, called the woman who made complaint about indecent exposure. Her husband agreed that she could make complaint. Trooper told her he would make arrangements for her to view the suspect.
11:02	Finished Breathalyzer. (23%)
11:03	Called DWI's sister for him (no answer).
11:10	Left jail.
11:50	Stopped three boys walking along lonely road with a case of beer. Though one looked to be a minor, and although he could produce no identification, Trooper accepted their word that they were all over 18.
12:30	Returned observer to motel.

APPENDIX A

Form ABC-27 (4-76)

Tour 7

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
McMahon	1398		12-8	Saturday June 19, 1976

Description of Patrol or Observation Locale

Henry County. Martinvsille, chief city. Some 4 lanes.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
12:30	Trooper met observer at airport. (Plane was late).
12:45	Checked into motel. Ate lunch.
1:45	Left motel.
1:46	Dispatcher called re abandoned vehicle, and also a car driving North which if seen should be stopped and told to call home.
2:00	Speeding violation by moving radar 64/55. Wrote summons.
2:11	Left scene.
2:16	Speeding violation. 67/55 (moving radar). Checked license with DMV. Wrote summons.
2:28	Left scene.
2:35	Dispatcher called--accident.
2:44	Dispatched called--asked location of Trooper.
2:50	At scene. Apparently collision between motorcycle and DWI in auto. Sheriff's deputy and another state police car already at the scene.
2:56	Ambulance (unrelated to above accident) went by with sirens on. Sirens not allowed except for true emergency. Trooper called in to dispatcher.
3:00	On way to hospital. (Other Trooper had asked that DWI not have anything injected or to drink). While on the way to hospital, dispatcher called and said to hurry--the DWI was creating a disturbance.
3:04	Arrived at hospital emergency room. City police already there, and left upon Trooper's arrival. The DWI denies being the driver. Admitted drinking, claimed to be in pain.
3:25	M.D. came to see DWI.
3:30	Telephone call for Trooper, telling him to check on abandoned auto.
3:45	Other Trooper served warrants on DWI.
3:50	Blood Alcohol Test done on DWI. DWI asked Trooper to find out bond. Trooper called magistrate.
4:30	Left hospital
5:10	At scene of abandoned auto (see 3:00)
5:24	At owner's home. Brother said auto broke down, and intended to have it picked up.
5:25	Left.

APPENDIX A

Form ABC-27 (4-76)

CONTINUATION OF
Tour 7

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
5:30	Served warrant on driver in case where people were severely injured including driver's wife who was still in hospital paralyzed.
5:39	Left.
5:51	Stopped by service station to see if they'd been notified to pick up abandoned auto (as in 3:30 and 5:10).
5:55	Notified dispatcher of heavy storm.
6:30	Speeding violation 63/45 on radar. Lost.
7:09	Stalled automobile. Looked at car. Called dispatcher to call wrecker. Put out flares. Directed traffic (car was blocking 1 lane).
7:50	Wrecker arrived. Left.
8:30	Returned observer to motel.

APPENDIX A

Form ABC-27 (4-76)

Tour 8

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Woodard	859		12-8	Sunday June 20, 1976

Description of Patrol or Observation Locale

Chesterfield County, Suburban Richmond area. Several 4 lanes.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
11:45	Met observer at airport. (Actually because of weather conditions, observer came by car, but Trooper Woodard had not been informed, and was at the airport).
12:00	Checked in at motel and had lunch there.
12:45	Left restaurant.
1:00	Arrived at headquarters. Picked up a warrant from another county. Looked for radar (which wasn't there).
1:15	Left headquarters. Looked for house to serve warrant.
1:33	Found house, served warrant (reckless driving in another county).
1:45	Left house.
1:46	Pursued motorcyclist without protective glasses. Lost him--must have turned off while Trooper was turning around on 4 lane.
2:20	Set up stationary check of automobiles on 2 lane. Checked approximately 20-25 autos. Issued insurance form and summons for bald tire to one vehicle. Also called in re operator's license and car registration.
2:50	Left scene.
2:51	Called dispatcher to ask for a rendezvous to pick up radar.
2:58	Dispatcher called, gave license number of vehicle from which a beer bottle had been thrown.
3:03	Arrived at radar rendezvous and obtained it from the other Trooper.
3:15	Saw car with bike trailer in parking lot. Trailer appeared not have sticker. Checked. It had one.
3:33	Speeding violation 69/55 by radar. Out of state--Non-Reciprocal-State driver. Trooper smelled "drinking" on driver's breath. Asked him to walk straight line and also to stand with one leg (which driver did well). Asked him also to take alcoholyzer (or alcolyser) test. Driver positive. Driver pleaded he was unemployed, said he drank last night and into the early a.m. but nothing today except a beer. Arrested. Searched and placed in Trooper's vehicle with driver's wife following in the other car.
4:05	Arrived at Headquarters for Breathalyzer which the sergeant administered. Breathalyzer at .10.

APPENDIX A

CONTINUATION OF
Tour 8

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
4:30	Trooper took fingerprints.
4:45	Left headquarters.
4:57	Arrived at Magistrates'. Magistrate said bond would be $300 for drunk driving and $48 for speeding. Suspect did not have that much money. Suspect's wife called relatives in Richomnd to see if they could raise the money.
5:25	Entered jail with suspect.
6:00	Restaurant for dinner.
7:00	Left restaurant.
7:10	Rendezvoused with another Trooper. Observer went with second Trooper and radar.

APPENDIX A
Tour 9

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Moore	1245	1537	9-6	Monday June 21, 1976

Description of Patrol or Observation Locale

Accomack County. Northhampton County. One major N-S 4 lane US 13.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
8:30	Met observer at airport. Took to motel to check in.
9:00	At headquarters where observer talked to Sergeant.
9:50	Left headquarters with radar.
10:03	Dispatcher called, "car in ditch."
10:07	Dispatcher called, disregard the above.
10:17	Speeding violation 66/55. Driver said he had set the cruise speed for 60 mph. Out of country (Quebec), so asked to follow to magistrates'.
10:32	Arrived at magistrate's house. Driver's wife very suspicious. Child needed to go to restroom, magistrate wouldn't allow. Driver paid bond.
10:50	Left magistrate's house.
10:57	Dispatcher called. First, gave phone number and name to call. Second, said to go back to magistrate's house.
11:05	Arrived at magistrate's house. She had overheard first dispatcher call and thought she should warn Trooper of the peculiarities of the woman. Turned out to be identical names. Trooper returned call to a woman who merely inquired after her husband's blood alcohol level.
11:20	Left magistrate's house.
11:23	Dispatcher called to inform Trooper of accident.
11:35	Arrived at scene of two car collision. The driver and passenger in one car had already been taken to the hospital. Measured. At 11:55 a tow truck came to take one vehicle. At 12:00 another tow truck came to take the other one. Trooper interviewed the driver who had remained at the scene. It was slightly difficult to get the location of her residence, age, etc. This not due to uncooperativeness, but shock or perhaps general intellectual-education level. Helped her with the DMV form, told her to call her insurance company. Then charged her with failure to Yield the Right of Way and Operating Without a License.
12:20	Left scene of accident.
12:30	Arrived hospital emergency room. Interviewed passenger. Driver still in X-Ray.
12:35	Interviewed husband of driver (who had not been in vehicle), gave him various forms.
1:00	Interviewed driver. (Measurements, other driver, this driver etc. all essentially agree). Told her of court date. She and her husband were to be out of state. on that date. Passenger, a local resident, agreed to go to court. He was given a subpoena.

Form ABC-27 (4-76)

CONTINUATION OF
Tour 9

APPENDIX A

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
1:10	Leaving hospital. Person in lobby stopped to ask Trooper about progress, if any, on a burglury which had taken place on his premises.
1:15	Left hospital.
1:27	Arrived at garage, where one of the cars in the above accident had been towed, to find registration.
1:35	Left garage.
1:45	Arrived at restaurant for lunch
2:45	Left restaurant.
2:46	Speeding violation 66/55. Wrote summons.
2:52	Left scene.
3:00	Speeding violation 70/55. Out of state, took to magistrates.
3:12	Arrived at magistrate's.
3:24	Left magistrate's.
3:34	Speeding violation 72/55. Apprehended 3:40. Out of state, took to magistrate's.
3:45	Arrived Magistrate's.
4:00	Left Magistrate's.
4:15	Speeding violation 64/55. Out of state.
4:20	Left scene.
4:39	Arrived Magistrate's.
4:47	Left Magistrate's.
5:15	Saw accident. Rear-end collision, no personal injury. Called tow truck. Other Trooper arrived.
5:20	Left scene.
5:24	Speeding violation 65/55. Out of state.
5:27	Left scene.
5:35	Arrived Magistrate's. Bond was $35. Young couple with baby only had $32.
5:43	Left Magistrate's with driver to see if he could raise money on his Master Charge card at gas station. First station refused, second station gave him money on personal check.
5:52	Back at Magistrate's.
5:54	Left Magistrate's. Met off-duty Trooper. Talked to him about recent criminal court case in which he had testified.

Form ABC-27 (4-76)

CONTINUATION OF
Tour 9

APPENDIX A

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
6:20	Left off-duty Trooper.
6:30	Sighted stalled truck. Trucker said he thought he could fix. Trooper said he'd ask Trooper on duty at weighing station to check later on.
6:31	Arrived at truck weighing station, where he gave other Trooper message re trucker and explained the weighing station to the observer.
7:00	Left weighing station.
7:20	Stopped by parked truck to see if help was needed.
7:35	Speeding violation. 70/55. Out of state.
7:40	Left scene.
7:50	Arrived Magistrate's.
8:15	Left Magistrate's, led driver back to highway.
8:30	Left observer at motel.

APPENDIX A

Tour 10

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date Tuesday
Forrest	655		9-6	June 22, 1976

Description of Patrol or Observation Locale

James City County and York County. Principal city--Williamsburg. Several 4 lanes.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
9:00	Met observer at airport.
9:15	Arrived at car wash.
9:29	Left car wash.
9:45	Arrived headquarters to see if radar was available (it wasn't). Observer talked to Sergeant.
10:04	Left headquarters.
10:10	Arrived at Juvenile Court.
10:30	Judge began hearing traffic cases. Defendant in Trooper's first case did not appear. A warrant was issued. Trooper's second case involved reckless driving, leaving the scene of the accident, and failing to report. The accident took place April 2nd. Trooper described scene and weather, investigation, showed photographs and diagrams, quoted the defendent. The defendant said, "He is telling the truth": Judge asks Trooper whether reckless driving is included in hit and run (Trooper apparently knows traffic regs. better than judge).
11:06	Leave court.
11:15	Arrived Hdqs. to check for radar. It was not there.
11:17	Called dispatcher to arrange rendezvous for radar.
11:23	Rendezvoused and picked up radar.
11:25	Dispatcher called to arrange a relay for a prisoner being transferred from one facility to another.
11:35	Picked up prisoner at county-line. Changed handcuffs, picked up belongings.
11:55	At the other county line waiting for state police in Chesterfield County.
12:03	Police car arrived. Changed handcuffs, etc.
12:15	Stopped for stranded motorist. Out of gas. Driver had already gone and was expected back soon.
12:16	Spotted truck across the 4 lane with an out of date inspection sticker (5 instead of 6). Turned and stopped truck, wrote summons. Driver needed explanation (was not the owner of the truck).
12:28	Left scene.
12:30	Saw State Police car in front of Wayside Grocery. Stopped to see if help was needed (it wasn't).
12:45	At restaurant for lunch.
1:35	Left restaurant.
2:00	Speeding violation checked at 65/55. Virginia. Also had smooth tires. Wrote summons for both.
2:13	Left scene.

CONTINUATION OF
Tour 10

APPENDIX A

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
2:20	Speeding violation 66/55, Virginia. Wrote summons.
2:30	Left scene.
2:31	Dispatcher called asking Trooper to call phone number.
2:36	Dispatcher called. Gave address and sketchy details of someone trying to run someone else over. Hurried to scene.
2:45	Arrived at scene. Interviewed two sets of people. Apparently a domestic relations problem--quarreling spouses drove off in separate cars with husband possibly in pursuit of wife. Another police car arrived.
2:55	Left scene.
2:57	Saw 2 car accident. City police were at the scene. Stopped to ask if help was needed. It wasn't.
3:00	At Headquarters to get gas and to make phone call as in dispatcher's message of 2:31. Phone call was from insurance representative concerning a school bus which presumably forced two cars off the road. Wanted to know if there were witnesses. There were none.
3:30	Left headquarters.
3:34	Speeding violation 60/45. While stopped waved over a car with a bad muffler, and warned that driver who said it had just fallen off. Wrote summons on the speeder.
3:50	Left scene.
3:57	Speeding violation 66/55. Wrote summons.
4:02	Left scene.
4:09	Speeding violation 64/55. Wrote summons.
4:20	Left scene.
4:21	Speeding violation 68/55. Wrote summons.
4:35	Left scene.
5:20	Sleeping driver on Interstate. Woke up, told to move on.
5:50	Truck driver pulled off waiting for his companion truck on the Interstate. Told to move on or off.
6:00	Delivered observer to relay vehicle at county line.

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Tour 11

APPENDIX A

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date
Stout	1204		8-4	Wednesday June 23, 1976

Description of Patrol or Observation Locale

Prince William County--Suburban Washington D.C. Heavily traveled I-95.

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
7:45	Picked up observer at motel.
8:01	Stopped to look at parked auto on side of I-95. No one in it.
8:05	Stopped to look at parked truck on side of I-95. Driver sleeping. Told him to move on.
8:10	Stopped to look at parked auto on I-95. No one in it.
8:25	Followed and stopped truck with long iron "thing" sticking out behind. Driver had the proper permit.
8:45	Stopped truck. No license plate on front, tied on with string in the back. Registration in order. The truck was leased. Trooper speculated that leasor was using the plates on two trucks.
8:55	Stopped to look at parked auto on I-95 with year old inspection sticker.
9:00	Checked rest areas (to see if anyone needs help).
9:01	Checked parked truck. Sleeping driver who is barred from driving at by his special permit. Told to move on.
9:11	Dispatcher called, gave Trooper a phone number to call.
9:20	Saw wrecker. Went to talk to driver.
9:23	Parked car sitting in middle of secondary road at intersection with US 1. No driver, blinkers on. Wrecker driver had said the driver just got out and walked over the bank.
9:25	Garageman came. Driver had walked over the bank as shortcut to garage, car had stalled. Garageman started the car and drove off.
9:27	Dispatcher called and asked Trooper to call Hdqs.
9:30	Stopped at weigh station to return the two phone calls. The first was from a wrecker who wanted permission to tow a vehicle the wrong way on the Interstate. The Trooper told him to call the Sergeant. The second, from Hdqs., asked him to stop by a home without a phone and tell [illegible] to call relatives in West Virginia because there was a sickness in the family. Also asked the Trooper to patrol Stafford County because the Troopers there were in Court.
9:45	Left weighing station.
9:45	Stopped by parked truck. Driver claimed to be checking equipment.
9:53	Speeding violation verified by pacing. Wrote summons for lowest speed 66/55.
10:03	Left scene.
10:09	Dispatcher called, "call Sergeant".

Form ABC-27 (4-76)

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
10:10	Driving on back roads and into a large subdivision in order to find home for telephone message as in 9:30. Checked with mailman, called dispatcher to verify address.
10:30	Stalled auto. Stopped to see if he could aid motorist. Driver said she had called her husband who was on his way.
10:35	Dispatcher called, "call office".
11:10	Found the house, delivered message.
11:15	Left the house.
11:25	Dispatcher called. "Traffic control needed for wrecker" (as in phone call of 9:30 am).
11:30	Headquarters for gasoline and to talk to Sergeant. Told to meet wrecker (who did not get permission to drive the wrong way on the Interstate) and to stop traffic so that wrecker could turn vehicle around.
11:40	Left headquarters.
12:00	Met wrecker.
12:03	Stopped traffic on three lanes of Interstate by standing in the middle of the road, thus enabling the wrecker to turn around with a Winnebago.
12:10	Left scene.
12:15	Checked rest area.
12:16	Smelled something like locked brakes. Trucker managed to release same sufficiently to get to next truckstop.
12:45	Stopped at restaurant for lunch.
1:10	Left restaurant.
1:30	Speeding violation by pacing. 70/55. Massachusetts driver, taken to Magistrate's.
1:45	Arrived at Magistrate's.
2:10	Left Magistrate's.
2:15	Trucker stopped Trooper to inform him of accident in Stafford County. Asked him to call it in. Trooper did so.
2:23	Crossed into Stafford County.
2:27	At scene of accident. A two car collision. Directed traffic. Wrecker took one car.
2:35	Left scene when Stafford police arrived.
2:45	Returned to the scene of one of the early a.m. parked vehicles. Called in to have car towed away for storage. Called in tag numbers.

Form ABC-27 (4-76)

CONTINUATION OF
Tour 11

APPENDIX A

VIRGINIA STATE TROOPERS

Observational Job Analysis Report

Trooper	Badge No.	ID No.	Shift	Date

Description of Patrol or Observation Locale

Record observations at 15-minute intervals and for all non-routine events: WHAT HAPPENED, WHERE, WHEN, WHAT TROOPER DID

TIME	
2:50	Tow truck arrived. Filled out report. Another Trooper stopped and talked.
3:06	Left scene.
3:06	Driving to National Airport with observer.

APPENDIX B

CRITICAL INCIDENTS ANALYSIS

Investigation (319 Incidents)

All the incidents appear to call for observational and cognitive skills, and in the case of covert investigation also the ability to assume a role foreign to one's own character in dangerous or hostile surroundings. In the course of the patrol tours, "investigation of auto accidents" and "investigation of other" were witnessed. Even the simple automobile accident involves scrupulous attention to physical signs and subjects who may be difficult to interview because they are emotionally shocked, uneducated, drunken or culpable. In two of the other investigations that were witnessed, interrogation was complicated by the family relations between the various parties. (Tours 5 and 6).

Investigating Auto Accidents (25 Incidents)

00739---I investigated a vehicle over the bank with a rock on the gas pedal and key in switch. Owner claimed it was stolen, but it had all the marks of being done for insurance.

00096---Worked double fatality in which two men were inside a vehicle which burned. There were numerous rumors of a third party who left the scene. Thorough investigation was required to discount this.

00473---I investigated a hit and run accident involving seven injuries. In order to apprehend a suspect, extensive investigation was required.

Investigating Applicants and Evaluating Conditional Appointees (12 Incidents)

00331---Travel from Virginia to Bronx, N.Y. to conduct applicant investigation in Bronx, N.Y. on TROOPER applicant.

00776---Applicant investigation. Training I received at the Training School in report writing and interrogating people and the experience with court records systems and our reporting procedures helped me to conduct a better investigation than I would have been able to otherwise.

00844---Responsible for the training of a conditional appointed TROOPER and submitted an evaluation report.

Working in the Vehicle Inspection Program (10 Incidents)

00817---Inspection Station Complaint Investigation: put into effect a procedure to verify that the station was improperly inspecting vehicles. The procedure not only verified the improper inspections but established that an unauthorized person was inspecting vehicles.

00816--Inspection Station Applicant Investigation. Investigated the Firm, Plant, Owner and Employees to determine their mechanical ability, character and reputation. Made decision as to recommendation into the state inspection program.

00809---Two employees (one an officer in the firm) conducted official inspections without authority, compounding it through forgery. Ensuing investigations involved refusal to cooperate, handwriting expert, question of jurisdiction, several prosecutors and prosecution.

Conducting Covert Investigations (39 Incidents)

01057---While working undercover I talked to a drug dealer who stated that the next person who put him behind bars would be killed. In my mind knowing this person was going to be me.

00085---Displaying the ability to preserve my identify as a police officer while associating with and trying to convince the criminal element that I am the complete opposite of what I actually believe.

01064---While working undercover in a large drug deal the dealer who was aware that I had a large quantity of money attempted to get me into a remote section of woods on a mountain top to murder me.

Investigation of Other Incidents (233 Incidents)

00477---While off duty and hunting I observed two subjects drive into unattended farm house which was the scene of a breaking and entering and safe larceny in September. Upon seeing me, they left and I was able to record their tag number. A week later I heard one's name on the police radio as a larceny suspect in another county. I gave my information to the proper authorities and the subjects were later arrested and convicted of the breaking and entering and safe larceny.

00587---Subject reported armed robbery of his person. Detailed investigation revealed subject was embezzling his company.

00262---Subject picked up female hitch hiker then assaulted her and threatened to rape her and exposed himself to her. Very difficult to question woman about the minute details of the case as she was very upset and embarrassed. Also very hard not to become involved emotionally and to get precise facts for reports and court.

Physical Strength (386 Incidents)

During the observational tours, no incident requiring unusual strength occurred. It seemed entirely possible, however, that on Tour 1 (11:50 p.m.) the ingredients of an incidentrequiring the exercise of strength to subdue resisting subjects were present.

Exercise of Strength to Subdue a Resisting Subject (190 Incidents)

00644---Attempting to issue a traffic summons to a violator, when violator attacked me and attempted to strangle me. During the ensuing struggle the violator attempted to gain possession and control of my service revolver to use against me.

00020---Trooper _____ and I roped and tied up a 450 lb. angry Black Angus steer in the middle of Rt.___ after it had been chased by at least five other people for several hours off Rt.

00057---I went with the county deputy to a private home where subject was beating wife, destroying household property, and threatening to burn the home. Subject had to be over-powered physically. Subject had been in court 48 times previously. Subject attempted to get officers pistol while being transported to jail.

Exercise of Strength With Passive Object (101 Incidents)

00802---During an accident investigation I was the only person on the scene able to assist the injured. One vehicle was up a steep bank and was turned on the right side so the only way to get the injured 200 pound man out was out the left door. I had to lift him up and out.

00621---Full size auto stalled in heavy traffic had to be pushed to shoulder.

00730---I observed a vehicle jump the guard rail and go into the median. Placed both occupants under arrest for DWI and DIP. The DIP was unconscious, had to carry him 75 feet and place in my vehicle.

Pursuit of Fleeing Subject on Foot (43 Incidents)

00896---Jumped off 12 foot terrace, chased and tackled fleeing suspect over a 50 yard distance.

00294---Ran one mile into the woods chasing an escapee.

00120---Subject ran from car through broomsage, bramble, thorns and then into the woods. Had to run subject approximately 1 mile.

Tracking (32 Incidents)

00504---Involved in search for two escapees from convict camp, one apprehended, other shot two fishermen and searched for him all night, tour of duty lasting 17 hours.

00235---Tracked felony suspect through mountainous terrain for 15 miles in cold weather for over six hours.

00768---Subject shot and killed another man over a woman. He then fled into the woods and I had to be on my feet all night in searching the woods for the subject.

Working With Canines (10 Incidents)

00582---As a member of the State Police Canine I assisted the U.S. Marines in searching for a 2 year old boy who was lost for 30 hours in the rain soaked woods of _____ County. We found the boy some 2 miles from his home in a brush pile wet, scratched and hungry, but not badly hurt.

P262----Tracked 2 suspects for several miles using canine before apprehending them. Suspects charged with Spot Lighting, Felonious Assault, and Reckless Driving.

P205----Follow a K-9 dog for 3 or 4 miles at a half trot through woods, fields, creeks, swamps.

Diving (10 Incidents)

00410---Search in extremely cold water (35-40°) and swift current for a murder weapon. Scuba Diving--two days of diving in difficult water and weather.

00359---Recovered the bodies of two juveniles from approximately 6-10 feet of water with one inch of ice on top. In water for one hour.

00532---Was lowered into well to search for evidence in felonious shooting.

Driving and Traffic Incidents (320 Incidents)

During the observational tours high speed pursuits (in excess of 100 mph) were common. While it is safe to assume that many drivers exceed the 55 mph limit by a significant margin, it should not be assumed that many drivers exceed 100 mph. The high speed chase results in part from the fact that the TROOPERS most often use their moving radar on the oncoming traffic lanes. In the case of divided highways with limited access, the TROOPER must find a place to cross the median and therefore in order to apprehend a driver going 65 mph may themselves exceed 100 mph. There were no incidents in the observation tours of violators attempting to evade or outrun the TROOPERS, although several were lost.

The apprehension of wrong-way drivers is treated separately from pursuit of high speed drivers on the basis of conversation with one TROOPER, who mentioned that these chases were best carried out in the interests of innocent drivers, by heading the driver off at the next access road rather than by hot pursuit. The apprehension of wrong-way drivers was not seen during the observational tours. The only "vehicular and other" incident occurred during tour 2 in which the radar fell from its perch during a rapid turn around and became inoperable after that. Traffic control occurs frequently with both accidents and with stranded vehicles.

Pursuit of Speeders (277 Incidents)

00217---I was involved in a high speed chase for approximately 6 miles in excess of 100 mph on a curvey 4 lane. The subject then turned off onto a narrow secondary road. He stopped once and then pulled out again. As he pulled out, he went sideways. When he went sideways, I struck him in the rear. He continued for approximately 1 mile, turned onto a dirt road. Being very dry, the dust was so thick I couldn't see well. The driver of the other vehicle, knowing this, kept spinning, causing more dust. After approximately ½ mile, I went over an embankment. Driver was later apprehended.

00086---Met and turned on a vehicle traveling at a high rate of speed in heavy traffic. Pursued the vehicle for approximately eight miles at speeds of 120-130 miles per hour in heavy traffic before overtaking the vehicle and checking it in excess of 85 mph.

00401---Subject passed me at 100 mph and I chased him for 7 miles before he would stop. He did not have control of his vehicle and almost hit several cars.

Apprehending Wrong-Way Drivers (12 Incidents)

00562---While on routine patrol, I observed a vehicle travelling in the wrong lane. I was able to stop the vehicle by flashing my lights and by use of red light. The operator was under the influence of alcohol and had traveled 2 miles in this direction.

00366---Apprehending intoxicated driver on Interstate traveling in wrong direction, involving pursuing violator the wrong way.

01076---Vehicle driving slowly, southbound in northbound lane. Driver refused to stop, made U turn, started North. Driver apprehended, no defects found, also refused to discuss incident.

Vehicular and Other Problems (21 Incidents)

00694---Making my first traffic stop in a new vehicle in heavy traffic on Rt___ I tried to stop a drunk driver. The siren on my vehicle was frozen and the red light was on but failed to rotate. Since traffic was heavy in both directions it was very difficult to stop the vehicle.

00386---Front brakes of police car failed while coming down steep, crooked mountain road.

00674---I was traveling southbound on _____ and was called to an accident approximately 10 miles down ____ . This accident was to have four vehicles involved and many injuries. I turned on my red light and siren and started southbound. I had a real problem getting vehicles out of my path and most of them could not hear my siren at all. I feel that with better equipment I could have made better time enroute to the accident scene.

Traffic Control (10 Incidents)

00393---During the _____ festival, I stood more than three hours and directed 5,000 vehicles at an intersection and answered most of their questions at the same time.

00643---Was called to a major traffic crash on ____ during rush hour on Friday before a long weekend. Traffic was extremely heavy and was backed up several miles. There was total chaos with people injured and upset, running around giving orders and fighting among themselves, was necessary to remain calm, settle disputes and maintain order and secure the incident from further disruption.

00203---Investigated crash where a semi loaded with dye caught fire and a series of explosions followed. North and southbound lanes were blocked for approximately 5 hours.

Interpersonal Situations (241 Incidents)

During observational tour 10, the TROOPER appeared briefly in court as the witness in a case involving a juvenile driver who had left the scene of an accident. The defendant did not refute the charges; even so, it was evident that careful preparation and presentation of the facts was necessary. It was also evident that the TROOPER was more familiar with the laws than the judge.

No incidents occurred regarding the security of dignitaries, although in one county the various police were coordinating their efforts regarding a visiting dignitary who would appear the next week. Also, no incidents occurred in the crowd control aspect, although crowds did gather very quickly after auto accidents. The TROOPERS probably averted some critical situations by their courtesy. They were uniformly courteous toward all violators, including belligerant and uncooperative drunks from the lower strata of society. In one instance (tour 6, 9:05 p.m.) the TROOPER was able to calm down a DWI in the Sheriff's office at a time when the deputies were nearing exasperation. In another incident, a DWI in an emergency room caused a disturbance, the personnel were unable to quiet him, but he became much more tractable after the appearance of the (tour 7) TROOPER. In discussion with the TROOPERS they cited two subcategories which were stressful for them: these categories were: appearing in court, and informing families of fatalities.

Guarding Dignitaries (53 Incidents)

00529---On this date I was assigned as security for Governor Godwin during an appearance in South Hill. I was in civilian clothes and was assigned the responsibility for the Governor's safety. I was to watch the crowd for suspicious people and stay close to the Governor as he moved about.

01032---Crowd control and security for the Premier of Japan during his visit. We were assigned to keep a lookout for dangerous persons and secure certain areas against unauthorized entry.

00858---Providing security for U.S. Senator Goldwater after group sponsoring appearance received threats against the Senator's life.

Appearing as a Witness in Court (49 Incidents)

00428---Court House. Had to present exact measurements, Road and weather conditions. This was an auto crash case. Road angle-visibility-grade-and estimated speed had to be presented.

00238---Being the defendant in a civil case where allegations are made against you that you had made an illegal arrest and used excessive force in making the arrest. Testifying in Federal Court and trying to convince a jury that the arrest was legal and no excessive force was used.

00838---I was testifying on two drug charges I had made against a defendant from undercover work when over and over his attorney tried to turn both situations around and make it appear that I was the one on trial. Many times he tried to unnerve me and try to make me lose my temper on the witness stand. My experience in testifying in court and my understanding of what he was trying to do was a great help to me in remaining calm and not getting upset no matter what question was asked of me.

Crowd Control (43 Incidents)

00091---Crowd control at a beer party, disorderly, parking on the road, some under the influence of drugs. 6 officers contained 150 people and prevented any outburst while clearing the area. Size and physical-professional demeanor was the calming factor.

00826---I was notified that 2 _____ Policemen were in a fight and needed assistance. Being a short distance away, I called for back-up but arrived at the scene before any other Police Officers. There was a mob of approximately 100 people, some of whom had the 2 _____ Policemen on the ground beating them. Seeing the situation, I approached with my riot shotgun and told the crowd to backoff which they did after seeing I was armed. I ordered 6 people who were involved in the fight to come with me which they did and the crowd dispersed.

00113---Called to church because of disturbance, found approximately 200 members of congregation in yard of church having disagreement over minister. Was able to disband crowd.

Exercise of Tact and Persuasion (37 Incidents)

00310---Attempting to talk a mentally ill person who has been committed to a hospital by the court, into going to the hospital willingly and without becoming violent. Subject had a previous mental record and was known to be very violent.

00616---I observed a family domestic disturbance which resulted in my having to separate a man and his wife to prevent him from assaulting her. After this I was able to talk to both of them and calm them down and restore peace and tranquility.

00341---Arrested subject from Africa who spoke almost no English. Subject spoke some French. He was unable to post bond and after some time I was able to explain situation to subject by using English and a limited knowledge of the French language. At first, subject was very confused and somewhat hostile, but after explanation was cooperative.

Public Speaking/and/or Training Programs (30 Incidents)

00707---Giving a safety talk to a group of high school students who do not wish to be there and answering their sometimes foolish questions as they endeavor to make it seem like you don't know what you are doing.

00923---Instructed in Constitutional Law class which took 112 hours of preparation. Without the training I have received through the Department, I would have been at a loss as to where to even begin my research.

00327---Gave a presentation on the operation and usefulness of the breath-alyzer to a group of doctors, attorneys and businessmen. I also give talks to other varied groups and touch on many subjects needed by the community.

Experiencing the Emotional Stress of Fatalities (23 Incidents)

00938---Above date I advised an hysterical woman that her husband was dead.

01028---Investigated a suicide committed by a male subject. A 12 gauge shotgun was used and he had plac the barrel against the side of his head and pulled the trigger. Parts of the body and body tissue were scattered about the vehicle.

00369---While on patrol, stopped to check an unattend d vehicle and found a dead body in the vehicle. The victim had been dead for approximately two days.

Liaison ré Uniform Crime Reports (6 Incidents)

00035--- _____ County Sheriff's Office had not been filing the Uniform Crime Reports as required by law. Tact and diplomacy were needed to persuade them to file the reports. Assistance was given in the proper preparation of the forms.

01075---As UCR Field Representative for the past six months, I have been involved in public relations work in selling the UCR program and assisting other police agencies in training personnel in UCR reporting and record keeping.

00476---Trying to motivate interest in the UCR program with Sheriff of _____ County.

Other (56 Incidents)

These are incidents which do not readily fall into larger categories. However, they are common, the only one not observed was "Administering First Aid". On an ordinary patrol, "Aiding Motorists and Others" appears frequently. The TROOPERS place a high priority on this form of service, and therefore seldom use their radar in a stationary mode. By cruising, they are more likely to be on hand if someone needs help.

Administering First Aid (25 Incidents)

00805---I was called to a 10-50F. Four people were injured. When the rescue squad arrived, only one member was experienced. I had to administer first aid to two small children and clear the spectators away from the scene. I had to carry one of the injured to the hospital because the ambulance left without him.

00196---Diner choked on piece of steak. CPR used to restore breathing.

01054---I ran up on an accident involving a pedestrian that was struck by a pickup truck. The pedestrian was a male and was bleeding badly. I had to stop the bleeding and treat for shock and summon rescue squad.

Piloting (12 Incidents)

01029---I had a flight assignment in the Aztec airplane to proceed to to pickup _____ who had to be in_____ for a special meeting. While approaching _____ under instrument conditions the flight went through two thunder cells and moderate turbulence.

01030---The helicopter was called to conduct a search for a lost child in the woods in an area of _____ County. The aircraft was flown at slow speeds and at treetop level during darkness until approximately 3 a.m. There was no moon and it was slightly windy at the time.

00415---Search flight for escapee who had shot two men. Flight was in adverse wind conditions. First observer became ill after about three hours. Picked up second observer who also became ill (motion sickness) after about two hours. After completion of flights, although fatigued was contacted to investigate two accidents in _____ County.

Aiding Motorists and Others (11 Incidents)

00801---Assisting an elderly mental patient in returning safely to her home.

00698---I was flagged over to the side of the road by a motorist. Subject's wife was about to have a baby. I put the woman in the back seat of my car and took her and her husband to the hospital 25 miles away, driving through congested traffic. The baby was born 10 minutes after arriving at the hospital.

00624---Assisted female motorist in unlocking the gears in the vehicle and moved it from a hazardous position.

Administering Breathalyzer (4 Incidents)

1598---The Breathalyzer Program requires an officer to be skilled in the use of the instrument and also be flexible due to the fact that he never knows when he will be called, whether on duty or off.

00699---Was giving Breathalyzer test to DWI and found out he was armed with a knife. Officer had not search the subject.

00859---At Sheriff's Office. Operated Breathalyzer for 10-55 case.

Weighing Trucks (4 Incidents)

01043---Arresting an arrogant truck driver who refused to pull his truck on the scales, parked his truck in the middle of the road, and proceeded to leave the scene.

00850---On this date I assisted Trooper _____ in weighing a truck by using the loadometers at the Area _____ Office.

00960---Determining the correct weight of a truck when 3 different scales gave 3 different readings.

Not Elsewhere Classified (109 Incidents)

In some cases, these are incidents in which there is insufficient information given; in others there are elements of many of the preceding categories with no indication of the most stressful or problematic element.

Commonwealth of Virginia

CRITICAL INCIDENTS IN STATE TROOPER PATROL

For a study of the requirements for the position of Trooper we want to collect concrete incidents of critical job demands. Please describe any incidents, up to a maximum of three (3) that occurred in the last six months in which you were involved in a situation calling for somewhat more skill and ability than the average experience during a patrol. Be specific in your description. Incidents could involve a high-speed chase in traffic, controlling a crowd or mob, escorting a visiting dignitary, arresting a resisting offender, testifying in a difficult case.

Trooper Name _____ Badge No. _____

Incident 1

Date _____ Time of Day _____ Weather (if relevant) _____

Road Surface (if relevant) _____ Location of Incident _____

Incident 2

Date _____ Time of Day _____ Weather (if relevant) _____

Road Surface (if relevant) _____ Location of Incident _____

Incident 3

Date _____ Time of Day _____ Weather (if relevant) _____

Road Surface (if relevant) _____ Location of Incident _____

APPENDIX C

JOB ANALYSIS QUESTIONNAIRE FOR STATE TROOPERS

The information you provide on this questionnaire will be used to determine testing and selection requirements for STATE TROOPERS. Therefore, it is very important that the information you give is complete and accurate. You are to analyze and rate the position, not any particular person occupying the position.

RATING INSTRUCTIONS

For each of the tasks, attributes, and aptitudes listed as job elements, you should indicate the extent to which it is important to or present on the job of STATE TROOPER. On the top of each page is a rating guide as follows:

IN THE COLUMN HEADED "RATING" USE THE FOLLOWING CODE:

Not Important or Present = 0		Slightly Important = 1
Important = 2	Very Important = 3	Extremely Important = 4

EXAMPLE: A set of ratings could be as follows (in each definition the phrase "The job of STATE TROOPER requires the ability to..." is to be understood):

	RATING
Simple arithmetic: Add, subtract, multiply and divide whole numbers	3
Arithmetic calculations: Use fractions, decimals, and percentages in addition, subtractions, multiplication, and division	2
Technical arithmetic: Perform ordinary arithmetic, algebraic, and geometric procedures in standard practical applications	0

In this case, the rater has judged that the job requires to a VERY IMPORTANT EXTENT facility with basic arithmetic with whole numbers, that facility with fractions, decimals, and percentages is IMPORTANT but somewhat less so, and that facility with more complex arithmetical procedures is NOT IMPORTANT.

Name of Rater _____ Title _____

Location _____ Date of Job Rating _____

Commonwealth of Virginia

IN THE COLUMN HEADED "RATING" USE THE FOLLOWING CODE:

Not Important or Present = 0		Slightly Important = 1
Important = 2	Very Important = 3	Extremely Important = 4

I. SENSORY CAPACITIES — Rating

SOUND DISCRIMINATION Identify or discriminate sounds in terms of their intensity, frequency, and/or other characteristics or changes therein _____ (1)

ODOR DISCRIMINATION Identify a wide variety of substances by their odor _____ (2)

TACTUAL DISCRIMINATION Identify objects or judge the surface characteristics of objects with the sense of touch _____ (3)

SEEING DISTANT OBJECTS See the details of distant objects clearly _____ (4)

SEEING NEARBY OBJECTS See the details of nearby objects clearly _____ (5)

COLOR VISION Make discriminations on the basis of color _____ (6)

II. MOTOR SKILL AND STRENGTH

DEXTERITY OF HANDS AND ARMS Make large movements with the hands and arms such as that required in using wrenches and large tools _____ (7)

WORK RAPIDLY FOR SUSTAINED PERIODS Maintain a high pace of activity, as on a moving belt assembly line _____ (8)

EYE-HAND OR EYE-FOOT COORDINATION Move hand or foot at the same time that the eye sees something. Coordinating foot control of brake, clutch and gas with steering and reacting to stimulibinvolves eye-hand-foot coordination _____ (9)

SPEED OF REACTION React quickly to signals, unexpected situations, or emergencies _____ (10)

HAND SKILL Handle small objects neatly and without fumbling or dropping them _____ (11)

DRIVING-CONTROLLING Start, stop or control the actions of a machine in order to produce, process, or move things or people _____ (12)

DEXTERITY OF FINGERS Make fine finger movements where the hand and arm are not involved to any extent _____ (13)

STAMINA Keep working at very heavy tasks without showing signs of tiring _____ (14)

AGILITY Move about with heavy loads, as in carrying heavy furniture down stairs without tripping, balancing and coordinating with large or awkward loads _____ (15)

STAYING IN THE SAME BODY POSITION Stay in about the same position, as in standing, sitting or balancing, for long periods of time _____ (16)

DEXTERITY OF FEET AND LEGS Move feet and legs with dexterity as in climbing poles and trees or walking on plankings or narrow footpaths _____ (17)

STRENGTH Lift, push, or pull heavy objects or pieces of equipment (Maximum weight lifted is _____ lbs) _____ (18)

UNCOMFORTABLE BODY POSITION Work in a kneeling or awkward position, in cramped spaces, etc. _____ (19)

III. PERCEPTUAL SKILLS

VIGILANCE Give continual attention to some aspect of the job situation, as radar watching, driving in traffic, watching instruments continuously _____ (20)

PERCEIVE FORM OF OBJECTS Perceive differences and details in shapes of things--how parts are related to each other, where they are attached, which part is shaped wrong _____ (21)

ATTENTION TO DETAILS Pay attention to small variations and differences, or to specific detailed procedures _____ (22)

SPACE Relate objects in three dimensions by visualizing length, width and thickness, as in interpreting a blueprint _____ (23)

PERCEPTUAL SPEED Grasp quickly the actual shape of objects, and see quickly small differences between objects _____ (24)

MEASURING Line things up with precision and dexterity, using measuring instruments such as rulers, scales, or micrometers _____ (25)

COMPARING NAMES OR NUMBERS Notice likenesses and differences rapidly and accurately when comparing lists of names or numbers _____ (26)

UNDERSTANDING ILLUSTRATED MATERIAL Understand and use illustrated material, such as maps, blueprints, or graphs _____ (27)

COMPARING PATTERNS OR OBJECTS Notice likenesses and differences rapidly and accurately when comparing patterns or objects _____ (28)

ESTIMATION OF MOTION Estimate the speed and direction of moving objects _____ (29)

ESTIMATION OF QUANTITY OF OBJECTS Estimate quantity by means of looking but not counting, as in estimating about how many objects or people there are in a certain space _____ (30)

ESTIMATION OF SIZE OF OBJECTS Estimate how large an object is by seeing it but not actually measuring it, or estimate whether an object will fit into a space of a certain size _____ (31)

IV. MEMORY

REMEMBERING INSTRUCTIONS Remember spoken or written instructions well enough to carry them out when working alone _____ (32)

REMEMBERING DETAILS Remember and use small details as given in lists of items or in minor points of instructions _____ (33)

MEMORY FOR IDEAS (ABSTRACT) Remember plans and overall policy; recall all pertinent information relating to a particular problem, including previous rulings, precedents, and regulations _____ (34)

V. MATHEMATICAL FACILITY

COUNTING Use simple addition or subtraction, or read and record figures _____ (35)

SIMPLE ARITHMETIC Add, subtract, multiply and divide whole numbers _____ (36)

ARITHMETIC CALCULATIONS Perform the four basic functions on fractions, decimals and percentages _____ (37)

TECHNICAL ARITHMETIC Perform ordinary arithmetic, algebraic, and geometric procedures in standard practical applications _____ (38)

VI. LANGUAGE FACILITY

SPELLING Spell correctly _____ (39)

WORD Make rapid association of similar things, as in associating a large number of words that all begin with the same letter of the alphabet _____ (40)

WRITING UNDERSTANDABLY Write clear and effective reports, descriptions, letters, or instructions _____ (41)

USING WORDS IN SPEAKING Use spoken words effectively in making reports, describing problems, asking questions, or giving instructions _____ (42)

HEARING COMPREHENSION Understand what people say; grasp quickly what people mean when they give spoken instructions, ask or answer questions, discuss problems _____ (43)

VERBAL COMPREHENSION Understand written materials such as instructions, descriptions, or other written communications _____ (44)

REFERENCE BOOKS Frequently use and refer to technical manuals, written instructions, and directions _____ (45)

ALPHABETIZING Order a list of names or words in alphabetical order quickly and accurately _____ (46)

VII. COMPLEX INTELLIGENCE

COMPILING-COMPUTING Gather or classify data, people or things, together with the arithmetic operations necessary to furnish reports _____ (47)

REASONING Think clearly and logically in solving problems or making decisions _____ (48)

SOLVING PROBLEMS Find practical ways of dealing with unusual problems and situations _____ (49)

SORTING OUT FACTS Listen to different stories or reports from a person or a number of people and sort out the facts which seem to fit together _____ (50)

MAKING DECISIONS Decide what needs to be done on the job and go ahead and do it _____ (51)

VIII. WORK AUTONOMY

STAYING ALERT Stay watchful and ready for sudden action even during long periods when there is little to do _____ (52)

CONCENTRATING Do a good job in spite of distractions, such as sudden noises, movements, or temperature changes _____ (53)

SHOWING INITIATIVE Think up new and better ways of doing a job and put them into action _____ (54)

PLANNING Plan work ahead for a day or a week, deciding on the most efficient or convenient order in which to do assigned tasks _____ (55)

ENFORCING RULES AND PROCEDURES See that set rules, procedures, and regulations are followed _____ (56)

BEING RELIABLE Meet tight time schedules and deadlines all through the day every day _____ (57)

WORKING ALONE Do the job without having much contact with other persons or groups _____ (58)

IX. INTERPERSONAL RELATIONS

UNDERSTANDING See how a situation looks to another person and how he may feel about it _____ (59)

PERFORMANCE EVALUATION OF OTHERS Evaluate the performance of other members of the State Police Force _____ (60)

SAFETY AND WELL-BEING OF OTHERS Assume responsibility for the safety and well-being of others _____ (61)

SCHEDULING Schedule the work of other persons or employees, or plan for the operation of machines or equipment _____ (62)

CHEERFULNESS Stay pleasant and good-tempered in dealing with people all day long _____ (63)

WINNING RESPECT Win the immediate respect and confidence of others _____ (64)

TACT Deal with trouble-makers firmly but without causing more trouble _____ (65)

PUTTING UP WITH ABUSE Put up with and handle insults and other verbal abuse from a person or a group _____ (66)

BEING PART OF A TEAM Work well with others in a group to get a job done _____ (67)

PERSUADING PEOPLE Persuade or influence others to think or act in some particular way _____ (68)

KEEPING POSITIVE FEELINGS TOWARD PEOPLE Maintain faith in human nature in spite of experiences with the worst side of it _____ (69)

BEING A LEADER Take the lead or take charge when working or dealing with others _____ (70)

APPEARANCE Present a neat, clean, well-dressed, appearance _____ (71)

RESTORING ORDER Restore order when people are having disputes or fights _____ (72)

DEALING WITH HOSTILE PEOPLE Readiness to use physical force if needed in handling people who are being hostile or violent _____ (73)

BEING A SUPERVISOR Direct the work of others so that the job gets done the way the force wants it done _____ (74)

X. JOB CONTEXT FACTORS

OUTSIDE-EXPOSURE TO WEATHER Adapt to and work in changing weather conditions _____ (75)

TEMPERATURE AND HUMIDITY Work in the presence of extremes of temperature or humidity _____ (76)

ENVIRONMENTAL POLLUTANTS Work in the presence of environmental pollutants _____ (77)

WORK IRREGULAR HOURS Adapt to changes in hours of work, shift worked on, at least occasional long overtime _____ (78)

BEING AWAY FROM HOME Live away from home or family if necessary for several days or weeks at a time _____ (79)

FACING RISKS Accept the possibility of personal injury on the job _____ (80)

APPENDIX D

Training Course Analysis, 62nd Session
161 Subjects* 1065.5 hours*

For more detailed descriptions of the courses, reference should be made to: Commonwealth of Virginia Department of State Police, Basic Course, 62nd Session, November 1, 1976 through April 15, 1977, Resume of Subjects, pages 9-31.

Employee Orientation Courses		Hours
A1	Blue Cross-Blue Shield Coverage	1
A2	Credit Union, Inc. for State Employees	½
A3	Death Benefit Fund	½
A4	Expense Accounts	2
A5	Insurance and Bond Coverage	1
A6	Intradepartmental Safety Program	1
A7	Note Taking and How to Study	2
A8	Orientation: Rules and Regulations of the School	8
A9	Personnel Evaluation	2
A10	Reports, Weekly: Required Weekly Activity Report	3
A11	Reports, Weekly: Review of Student-Prepared Sample	1
A12	Retirement Act	1
A13	Supply Procedure	1
A14	Training Manuals: Item by item verification of material	2
A15	Welcome Address by Superintendent	½
	Total Hours	26½
	Percent of Total	2.48%

Background Courses		
B1	Alcohol Beverage Control Board Provisions	2
B2	Atomic Radiation and Nuclear Materials	2
B3	Central Criminal Records Exchange	1
B4	Community Relations: Police Community Relations Program	1
B5	Constitutional Law and the Bill of Rights	8
B6	Contemporary Social Unrest	4
B7	Counterfeiting--U.S. Secret Service Relations	1
B8	Division of Investigation: Its Organization	1
B9	Enforcement Policies (Of Department)	1
B10	Game Laws of Virginia: Game Law Violations	1

*One 15.5-hour unit was the administration to this class of the experimental battery being developed for Trooper selection. It is omitted from this analysis

		Hours
B11	Geography of Six Field Divisions	6
B12	Gun Control Act, Federal	1
B13	Hauling Permits: State Highway Department Regulations	1
B14	Highway Safety, Origin and Development Of	2
B15	Highways and Transportation Department Policies	2
B16	History and Origin of Policing	2
B17	Human Behavior	20
B18	Juvenile Statutes	4
B19	Legal Research	3
B20	License Plates and Their Use	1
B21	Machine Gun Statutes, Virginia	1
B22	Medical Examiners System	1
B23	Motor Carriers Act	6
B24	Motorcycle Gangs	1
B25	National Automobile Theft Bureau, Cooperative Functions Of	1
B26	Organized Crime	2
B27	Panel on Inter-Police Cooperation	2
B28	Panel on the Judicial System	2
B29	Parole Policies	1
B30	Police Professionalism	2
B31	Press Relations	1
B32	Propane Gas	1
B33	Public Relations	2
B34	Records and Statistics Division: Purpose and Functions	2
B35	School Bus Rules and Regulations	1
B36	State Government Organization and the Virginia Judicial System	3
B37	State Police Manual	24
B38	Supreme Court Ratings	2
B39	Tour of Division of Motor Vehicles	4
B40	Tour of State Penitentiary	4
B41	Traffic Accident Picture--National and State	1
B42	Uniform Crime Report	1
B43	Virginia Highway Safety Division, Functions Of	1
B44	Virginia History	12
	Total Hours	142
	Percent of Total	13.23%

Basic General Skills Training Courses

C1	Audio Visual Aids: Operation and Use	2
C2	Automotive Equipment, Case and Maintenance Lecture	1
C3	Automotive Equipment, Maintenance, Demonstration	1
C4	Communications: State Police Radio and Teletype, and Use of Radar	16
C5	Emergency Obstetrics	2
C6	English, Remedial	16
C7	First Aid	40
C8	Instruction: Instructional Techniques	1
C9	Lesson Plans: Preparation Of	1
C10	Manuscripts, Fundamentals of Research	2

CONTINUED

3 OF 4

		Hours
C11	Observation and Flash Recognition	2
C12	Patrol Techniques	5
C13	Photography: Theory and Practice in use of Cameras in the Department	10
C14	Physical Training: Planned Exercises and Physical Testing	133
C15	Plaster Casting: Practice in Making Plaster Casts	4
C16	Printing: Instruction in Hand Printing to Improve Forms Legibility	2
C17	Public Speaking: Introduction	1
C18	: Pretest Practice	3
C19	: Demonstrating Students	7
C20	Swimming, Basic	15
C21	Training Aids: Use in making Presentations	1
C22	Typing: To criterion of 20 wpm	30
C23	Water Safety: Swimming techniques, lifesaving skills, use of flotation devices, boat operation	22
	Total Hours	317
	Percent of Total	29.75%

Specific Police Procedures, Regulations and Laws Courses

		Hours
D1	Accident Investigation, Motor Vehicle lecture and class work in responding to the scene, on-scene, and post-scene activities, including evidence collection, interviewing drivers and witnesses, preparation of court cases, techniques to make Hit and Run Investigations	42
	Practical exercises in investigating two simulated accidents	16
D2	Aircraft Crash Investigation	3
D3	Aircraft Use and Capabilities	2
D4	Ambush Attacks on Officers	2
D5	Applicant Investigation	2
D6	Armored Vehicle Operation	2
D7	Arrest, Laws	12
D8	Arrest, Techniques and Mechanics Of	5
D9	Arson	3
D10	Autopsy-Observation, for Homicide Investigation	4
D11	Auto Larceny	2
D12	Barricaded Criminals, Apprenhension Of	2
D13	Bomb Threats Investigation	2
D14	Canine Program	2
D15	Court-Testimony Before Court and Jury	2
D16	Criminal Investigation-Including Actual Investigations of Simulated Crimes	32
D17	Criminal Law of Virginia	20
D18	Defensive Tactics-Demonstrations and Practical Exercises in Disarming Methods and Self-Defense (Additional Practice--13 hours)	20
D19	Differential Diagnosis of Accident, Suicide, Homicide	2
D20	Disaster Plan Coordination	2
D21	Driving Under the Influence Statutes Drugs	6
D22	Coordinating and Reporting (Role of Coordinators)	1
D23	Coordinating With Drug Laboratory	1
D24	Drug Users Vernacular	2
D25	Effects of Drugs and Narcotics	2
D26	Identification of Cannabis and Related Laws	3
D27	Identification of Opium and Related Laws	3
D28	Investigation of Doctors, Drug Stores, Hospitals	1
D29	LSD and Other Hallucinogenics	1
D30	Purchasing for Evidence	4
D31	Role Playing Skits	4
D32	Stimulus, Depressants and Tranquilizers	4
D33	Virginia Drug Problem	1
D34	Who and What of Drug Investigation	1
D35	Entrapment	1
D36	Evidence--Collection, Preserving and Forwarding	2
D37	Evidence--Rules Of	6
D38	Explosive Ordinance Disposal	2
D39	Extortion	1
D40	Fingerprint Classification, Including Fingerprinting Practice	20
D41	Fingerprints (Latent)--Locating and Lifting Fingerprints	5
	Firearms	
D42	Introduction (Bullseye Course)	4
D43	Revolver Course (Practice)	16
D44	Riot Gun (Demonstration and Practice)	4
D45	Safety and Demonstration in Marksmanship (With 24 hours on various ranges)	7
D46	Fireworks Law Enforcement	1
D47	Flim-Flam Methods	1
D48	Habeas Corpus Investigation	1
D49	Highway Safety, Component Parts	2
D50	Identi-kit	2
D51	Inmate Confrontation	1
D52	Interrogation of Suspects and Witnesses	3
D53	Legal Documents, Execution Of (Documents Members are Required to Execute)	3
	Medico-Legal Investigation Of	
D54	Deaths Subject to Public Inquiry	1
D55	Gunshot Wounds	1
D56	Motor Vehicle/Pedestrian Fatalities	1
D57	Military Drill, Riot Control Formations and Tactics	57
D58	Moot Court--Practice in Testifying in Accident, Driver Contact, and Criminal Investigation Cases	16
D59	Motor Vehicle Code	55
D60	Motor Vehicle Inspection	38
D61	Operator's Licensing	1
D62	Police Science Evidence, Demonstration	2
D63	Polygraph (Lie Detection)	1
D64	Pursuit Driving (4 hours lecture, 36 hours instruction including 20 hours on the skid pan)	40
D65	Raids	6
D66	Report Writing--Investigative Report	10

		Hours
D67	Reports, Miscellaneous--Completion of Department Forms	3
D68	Riot Control Tactics	4
D69	Roadblocks	2
D70	Scuba Program	10
D71	Search and Seizure, Laws Of	10
D72	Summons Traffic	2
D73	Surveillance	3
D74	Tear Gas and Other Chemical Agents	4
D75	Terrorist Activities	2
D76	Traffic Direction and Control	10
D77	Traffic Safety Promotion	1
D78	Vice Investigation	4
	Total Hours	580
	Percent of Total	54.43%

APPENDIX E

Training Courses Related to Critical Incident Categories

Critical Incidents categories are taken from Appendix I, "Critical Incidents and On-The-Job Observations of State Trooper Job", of Affidavit of Philip Ash, January 18, 1977. Training course identifications are tkaen from Appendix D, preceding, of this report. The listing for each Critical Incidents category is meant to be illustrative and not exhaustive. Particular incidents may call on learnings from more units than are listed for the overall category.

Investigating Auto Accidents (25 incidents)
Courses: A10, B17, B37, C4, C7, C12, C22, D1, D15, D21, D36, D37, D49, D52, D56, D58, D76

Investigating Applicants and Evaluating Conditional Appointees (12 incidents)
Courses: A4, A10, C11, C22, B3, B17, B19, B37, D5, D52, D66

Working in Vehicle Inspection Program (10 incidents)
Courses: A10, B20, C22, D5, D59, D60, D66, D67

Conducting Covert Investigations (39 incidents)
Courses: A4, A10-11, B17, B26, C11, C14, D7, D8, D16, D17, D18, D22-34, D35, D37, D52, D58, D65, D66, D71, D73, D78

Investigation of Other Incidents (233 incidents)
Courses: A4, A10-11, a large variety of background training courses depending upon the nature of each "other" or miscellaneous incident, C11, other basic general skills courses depending upon the incident, D1-2, as required, D16, D36, D37, possibly D39 and/or D47, D52, D62, D66-67, D78

Exercise of Strength to Subdue a Resisting Subject (190 incidents)
Courses: A10-11, B5, B17, B20, C14, D7-8, D15, D17, D18, possibly D40-41, possibly D42-45, D52-53, possibly D57, D66-67, possibly D68, D71

Exercise of Strength with Passive Object (101 incidents)
Courses: A10-11, B17, C14, possibly C7, probably D1, D7, D15, D36-37, D49, D52, possibly D56, D58, D66-67, possibly D69, possibly D76

Pursuit of fleeing subject on foot (43 incidents)
Courses: A10-11, B17, C11, C14, C22, B5, D4, D7, D8, D15, D18, possibly D42-45, possibly D64, D66-67, D69

Tracking (32 incidents)
Courses: A10-11, B5, B11, B17, C11, C14, C22, possibly C20, possibly C23, possibly D4, D7, D8, D18, possibly D42-45, possibly D69

Working with Canines (10 incidents)
Courses: A10-11, B5, B11, B17, C11, C14, C22, possibly C20, possibly C23, possibly D4, D7, D8, D14, D18, possibly D42-45, possibly D69

Diving (10 incidents)
Courses: A10-11, possibly C7, C14, C20, C23, D70, other courses depending on the circumstances (e.g., recovering evidence, pulling drowning victims out of the water, operation of boats)

Pursuit of Speeders (227 incidents)
Courses: A10-11, B5, B9, B17, possibly B24, B37, C4, C11, C12, C14, C22, D7-8, D15, possibly D18, probably D21, possibly D42-45, D52, D61, D64, possibly D69, D72, D77

Apprenhending Wrong-Way Drivers (12 incidents)
Courses: A10-11, B5, B9, B17, possibly B24, B37, C4, C11, C12, C14, C22, D7-8, D15, possibly D18, probably D21, possibly D42-45, D52, D61, D64, possibly D69, D72, D77

Vehicular and Other Problems (21 incidents)
Courses: C2-3, D64, and combinations of courses involved in Pursuit of Speeders, Apprehending Wrong-Way Drivers, and similar incident types, depending upon the circumstances.

Traffic Control (10 incidents)
Courses: A10-11, C12, C14, possibly D69, D76, and other courses depending upon the occasion--e.g., traffic control around an accident, for a crowd such as at a festival or state fair, or other heavily-travelled section of highway.

Guarding Dignitaries (53 incidents)
Courses: B4, B17, B31, B33, C14, possibly D4, D18, D42-45, D57, D68, D73

Appearing as a Witness in Court (49 incidents)
Courses: A10-11, B5, B17, B19, B28, B30, B33, B36, C17-19, D15, D37, D58, and courses dealing with the substantive issues before the court--e.g., a traffic violation, an accident, a drug case, an allegation of the use of excessive force and/or illegal arrest, etc.

Crowd Control (43 incidents)
Courses: A10-11, B4, B9, B17, B33, C17-19, possibly D7-8, D18, possibly D42-45, D57, D68

Exercise of Tact and Persuasion (37 incidents)
Courses: A10-11, B4, B17, possibly B18, B30, B33, possibly C17-19, possibly D12, possibly D52, other courses depending upon situation (e.g., arrest, stop of speeder, assault in a domestic fight, etc).

Public Speaking and/or Training Programs (30 incidents)
Courses: Courses in relevant subject matter and other background courses, depending upon topic, and B4, B30, B33, C1, C8, C9, C10, C17-19, C21

Experiencing the Emotional Distress of Fatalities (23 incidents)
Courses: A10-11, B17, B30, B33

Liaison re Uniform Crime Reports (6 incidents)
Courses: B30, B33, B42, C17-19, D17

Administering First Aid (25 incidents)
Courses: A10-11, C7. The situation from which the injuries stemmed usually also involved other police action (e.g., an accident, a rescue of a drowning person, an assault, etc.) which calls for skills and knowledges appropriate to the core situation. Minimally, use of communications facilities (C4) is almost always present, to call for an ambulance or other aid.

Piloting (12 incidents)
Courses: Piloting is not taught in the Basic Course, but the Basic Course includes two related courses, D2-3

Aiding Motorists and Others (11 incidents)
Courses: A10-11, B17, B30, B33, occasionally C5, C2-3, occasionally C23

Administering Breathalyzer (4 incidents)
Courses: Usually, but not always, part of a speeder pursuit case, where the relevant courses apply. In addition, D21.

Weighing Trucks (4 incidents)
Courses: B13, B23, D60

Commonwealth of Virginia

STATE TROOPER SELECTION PROCEDURES

APPENDIX F

PAIRED COMPARISON RATINGS

On the pages following are pairs of names of Troopers and/or Investigators who are in your division and area. Some, but not necessarily all, of these people recently participated in an Experimental Test Selection Study.

For each pair of names, choose the one who you think is best, and encircle his or her name.

For example, given the pair "H. W. Jones-T. C. Williams," if you think that Williams is, overall, the better Trooper of the two, encircle his name. "H. W. Jones - (T. C. Williams)

If you cannot choose between the two members of the pair for any reason check the box "( ) Cannot Choose". This means that you do not know at least one member of the pair .

Division 6 Area 43 Rater _____

Developed by
Ash, Blackstone and Cates
Chicago, Illinois
1976

D6,A43,R191,359

PAIRED COMPARISON LIST

DO NOT MARK DIMENSION

			CANNOT CHOOSE			
1A.	673	Jones, E.L.	( )	1B.	946	Clark, C.W.
2A.	615	Knick, F.R., Jr.	( )	2B.	673	Jones, E.L.
3A.	840	Plaster, G.H.	( )	3B.	519	Hurd, S.T.
4A.	1156	Rowland, W.W.	( )	4B.	895	Teaford, G.M.
5A.	1144	Fowle, W.H., Jr.	( )	5B.	946	Clark, C.W.
6A.	946	Clark, C.W.	( )	6B.	615	Knick, F.R., Jr.
7A.	519	Hurd, S.T.	( )	7B.	1156	Rowland, W.W.
8A.	519	Hurd, S.T.	( )	8B.	615	Knick, F.R., Jr.
9A.	895	Teaford, G.M.	( )	9B.	673	Jones, E.L.
10A.	895	Teaford, G.W.	( )	10B.	615	Knick, F.R., Jr.
11A.	840	Plaster, G.H.	( )	11B.	1144	Fowle, W.H., Jr.
12A.	673	Jones, E.L.	( )	12B.	1144	Fowle, W.H., Jr.
13A.	840	Plaster, G.H.	( )	13B.	615	Knick, F.R., Jr.
14A.	673	Jones, E.L.	( )	14B.	519	Hurd, S.T.
15A.	1144	Fowle, W.H., Jr.	( )	15B.	1156	Rowland, W.W.
16A.	946	Clark, C.W.	( )	16B.	519	Hurd, S.T.
17A.	673	Jones, E.L.	( )	17B.	1378	Bryant, L.P.
18A.	1378	Bryant, L.P.	( )	18B.	946	Clark, C.W.
19A.	1144	Fowle, W.H., Jr.	( )	19B.	519	Hurd, S.T.
20A.	895	Teaford, G.M.	( )	20B.	519	Hurd, S.T.
21A.	895	Teaford, G.M.	( )	21B.	1144	Fowle, W.H., Jr.
22A.	840	Plaster, G.H.	( )	22B.	946	Clark, C.W.
23A.	1144	Fowle, W.H., Jr.	( )	23B.	1378	Bryant, L.P.
24A.	840	Plaster, G.H.	( )	24B.	673	Jones, E.L.
25A.	946	Clark, C.W.	( )	25B.	1156	Rowland, W.W.
26A.	673	Jones, E.L.	( )	26B.	1156	Rowland, W.W.
27A.	1156	Rowland, W.W.	( )	27B.	1378	Bryant, L.P.
28A.	895	Teaford, G.M.	( )	28B.	840	Plaster, G.H.
29A.	1378	Bryant, L.P.	( )	29B.	895	Teaford, G.M.
30A.	1378	Bryant, L.P.	( )	30B.	840	Plaster, G.H.
31A.	1144	Fowle, W.H., Jr.	( )	31B.	615	Knick, F.R., Jr.
32A.	615	Knick, F.R., Jr.	( )	32B.	1156	Rowland, W.W.
33A.	615	Knick, F.R., Jr.	( )	33B.	1378	Bryant, L.P.
34A.	840	Plaster, G.H.	( )	34B.	1156	Rowland, W.W.
35A.	895	Teaford, G.M.	( )	35B.	946	Clark, C.W.
36A.	1378	Bryant, L.P.	( )	36B.	519	Hurd, S.T.

Commonwealth of Virginia

STATE TROOPER SELECTION PROCEDURES

APPENDIX G

TROOPER ASSESSMENT RATING

To assist in evaluating the usefulness of an Experimental Test Selection Procedure for Troopers, you are asked to rate, as objectively as you can, each of the Troopers under your supervision who participated in the study. While these ratings are confidential and will in no way affect the Trooper's career, they are critical to the study. For the Trooper or Investigator who is identified on this page, please read each statement on the following pages and check (√) THOSE STATEMENTS THAT DESCRIBE THIS TROOPER. If a statement does not describe this Trooper, make no mark next to it. On the average, you should end up with ten to thirty checks, but you may check more or fewer statements than that.

If you feel that you do not know this Trooper well enough to rate, check here, and return the questionnaire blank.

I DO NOT KNOW THIS TROOPER WELL ENOUGH TO RATE ( ).

Please sign your name here as rater, whether you have rated the Trooper or have not rated him or her.

Rater Signature _____

TROOPER NAME _____ CODE NUMBER _____

TEST NUMBER _____ DIVISION _____ AREA _____

RATER NAME _____

Developed by
Ash, Blackstone and Cates
Chicago, Illinois
1976

TROOPER ASSESSMENT RATING STATEMENTS

Check ONLY those statements that, in your opinion, describe the Trooper identified on the previous page.

1. ( ) Seeks information about recent court rulings so that "good" arrests won't be lost by his actions.
2. ( ) Ignores recent court rulings because he feels they tie his hands too much.
3. ( ) Enters building with broken door window instead of guarding exits and calling for assistance.
4. ( ) Continues to write a traffic violation when he hears a report of a nearby robbery in progress.
5. ( ) Checks car lots and parking lots when not busy.
6. ( ) Cracks up in tense situations.
7. ( ) Works to keep himself in top shape even though he's 45 years old.
8. ( ) Complains about a particular problem but offers no solution.
9. ( ) Considers law enforcement a career, not just a job.
10. ( ) Has a good reputation in the minority community.
11. ( ) Is considered one of the boys on his watch or shift.
12. ( ) Has to be asked to repeat himself over the radio.
13. ( ) Clears blocked air passage and restores victim's breathing by applying resuscitation.
14. ( ) Does not protect crime scene for evidence preservation.
15. ( ) Underestimates a drunk suspect, resulting in injury to himself.
16. ( ) Takes short-cuts on traffic violations, approaching the car without thinking about whether any occupant is armed.
17. ( ) Withholds fire in a situation calling for the use of weapons where gunfire would endanger innocent bystanders.
18. ( ) Checks his patrol car for damage and general condition every day.
19. ( ) Shoots self in leg while trying to quickdraw and fire.
20. ( ) Harasses members of ethnic groups other than his own.
21. ( ) Insults and bullies a father in front of his family.
22. ( ) Quiets a highly volatile situation by remembering a citizen's name and addressing him as "sir" despite insults and threats.
23. ( ) Assists his partner physically with a fighting suspect.
24. ( ) Stands outside a bar while another officer is in trouble inside.
25. ( ) Says he checked the back doors of a group of businesses when he didn't because it was a cold, rainy night.
26. ( ) Is mouthy and loud in a restaurant while in uniform.
27. ( ) Personally cleans his patrol vehicle on his own time.
28. ( ) Volunteers to assist fellow officer who has a heavy workload.
29. ( ) Takes college courses in law enforcement and police science.
30. ( ) Goes only through the motions of the job.
31. ( ) Speaks slowly and clearly when testifying in court.
32. ( ) Believes that "a ticket a day keeps the sergeant away."
33. ( ) Works willingly with an officer who is having trouble adjusting to various duties.
34. ( ) Is exhausted after a short run.
35. ( ) Drops empty food containers on the floor of the patrol car and does not pick them up when going off duty.
36. ( ) Makes a thorough investigation of a misdemeanor.
37. ( ) Stretches the truth sometimes in reporting what occurred but never really falsifies a report.
38. ( ) Smiles, waves back and continues driving when a citizen waves at him for assistance.
39. ( ) Neglects cleaning his gun unless he has fired it at the pistol range.
40. ( ) Is always playing with the radio.
41. ( ) Waits to complete a physical arrest until securing assistance.
42. ( ) Applies precise penal code section to a case, avoiding ambiguous or wrong charges.
43. ( ) Issues appropriate summons in routine traffic code violations.
44. ( ) Has to be asked to repeat himself over the radio.
45. ( ) Confuses opinion with fact in his written and oral reports.
46. ( ) Is a loner.
47. ( ) Refuses training because he thinks he is already an expert.
48. ( ) Has highly shined shoes.
49. ( ) Wears a dirty, unpressed uniform.
50. ( ) Stays calm during rock and bottle throwing.
51. ( ) Uses up his total number of sick days each year.
52. ( ) Rarely checks files for friends or favorite spots of suspects.
53. ( ) Waits for his supervisor to arrive at scene rather than make a decision on his own.
54. ( ) Stops searching after one bomb is found, resulting in a delay in the location of second bomb.
55. ( ) Makes statements that cannot be carried out because of insufficient manpower or legal constraints.
56. ( ) Knows he could break down a locked door while in hot pursuit and thus arrest a fleeing suspect.

57. ( ) Misinforms public on legal matters through lack of knowledge.
58. ( ) Notices potentially dangerous situations before anything actually occurs.
59. ( ) Keeps an up-to-date written account of all crime in his patrol area.
60. ( ) Comes to work 1/2 hour early to check on previous day activity.
61. ( ) Follows form instructions.
62. ( ) Gripes about the way things are handled just once in a while.
63. ( ) Talks with people with less education at their level but does not talk down to them.
64. ( ) Collects evidence in a drug case so that it will be admissable in court.
65. ( ) Does not recognize narcotics overdose immediately.
66. ( ) Does not drive in a hot pursuit on a foggy night.
67. ( ) Touches and fools around with a bomb while waiting for the bomb squad to arrive.
68. ( ) Uses first aid equipment if it is necessary for the injured person.
69. ( ) Aggravates citizens by insulting them when talking to them.
70. ( ) Uses a ruler to measure distances for accident reports, rather than estimating distances.
71. ( ) Confuses citizens by using technical jargon when talking to them.
72. ( ) Works on his own time gathering information on a case.
73. ( ) Makes minor repairs to equipment when necessary.
74. ( ) Allows a fleeing suspect to escape in a crowd rather than endanger bystanders.
75. ( ) Talks so fast over radio that he is unintelligible.
76. ( ) Remains cool under verbal abuse.
77. ( ) Believes that all violations of the law cannot be satisfied by arrest at that time.
78. ( ) Shoots out tire of car of fleeing felon suspect who ignored sirens and commands to halt.
79. ( ) Preserves evidence at the scene of a burglary.
80. ( ) Is asked about points of law by less experienced officers.

APPENDIX H

Commonwealth of Virginia

STATE TROOPER SELECTION PROCEDURES

OBJECTIVE

JOB PERFORMANCE

DATA

THIS BOOKLET INCLUDES A RECORD OF THE SCHOOL PERFORMANCE AND ON-THE-JOB PERFORMANCE FOR THE PERIOD MAY 1, 1977 THROUGH OCTOBER 31, 1977 OF TROOPER:

_____ Name

_____ Code Number (1 - 4)

_____ Division (5)

_____ Area (6 - 7)

_____ Duty Post (8)

_____ Test Number (9 - 11)

Developed by
Ash, Blackstone and Cates
Chicago, Illinois
1976

DESCRIPTIVE DATA

1. Date of Birth ____/____/____ (12-17) 2. Age at Last Birthday _____ (18-19)

3. Sex: 1. ( ) Male 2. ( ) Female (20) 4. Ethnic Group: 1. ( ) White 2. ( ) Black 3. ( ) Latino 4. ( ) Other

5. Highest Educational Level Reached: (22)
   1. ( ) Grade School Graduation
   2. ( ) Some High School
   3. ( ) High School Graduation
   4. ( ) Some College
   5. ( ) College Graduation
   6. ( ) Beyond College Graduation

6. Total Number of Years of Education: _____ (23-24)

7. Status: 1. ( ) Trainee in 62nd Session (Go On To Item 8) (25)
   2. ( ) Employed Trooper Before 62nd Session (Skip To Item 14)

SCHOOL HISTORY

8. Did he complete Training Program? 1. ( ) Yes 2. ( ) No (26)

9. If NO, left or was dropped after _____ (27-28) weeks of the Training Program.

10. Did he or she graduate? 1. ( ) Yes 2. ( ) No (29)

11. If he or she did not graduate, or quit, or was dropped from the School, what was the reason?
    1. ( ) Voluntary Quit (30) 2. ( ) Involuntary Termination (30)

    Reason(s) For Involuntary Quit
    ( ) Inadequate Driving Skill (31) ( ) Violated Rules In School (32)
    ( ) Inadequate Ability To Handle Job (33) ( ) Unsatisfactory Physical Condition (34)
    1. ( ) Dropped Or Not Graduated For Other Reasons (35)

12. IF GRADUATED, was he given an assignment? 2. ( ) Yes 3. ( ) No (35)

12A. IF PLACED, where was he originally assigned?
    Division _____ (36) Area _____ (37-38) Duty Post _____ (39)

13. IF NOT assigned, why not? _____

14. Date of Current Assignment ____/____/____ (40-45)

15. CURRENT STATUS: 1. ( ) On Active Duty 2. ( ) On Layoff 3. ( ) Terminated
    IF TERMINATED, date of termination ____/____/____ (48-53)

16. TERMINATION REASONS IF TERMINATED (54)
    1. ( ) Voluntary, Personal Reasons
    2. ( ) Retirement
    3. ( ) Voluntary, Job Related Reasons
    4. ( ) Death
    5. ( ) Poor Driving Or Accident Record
    6. ( ) Rules Infractions
    7. ( ) Poor Citizen Relations
    8. ( ) Other

ON THE JOB PERFORMANCE

The following items are to be completed ONLY for Troopers who successfully completed the Training Program and went on to an assignment in the field. For these Troopers, the data should show the SUMMARY of the Weekly Reports from the week SUNDAY, MAY 1, 1977-SATURDAY, MAY 7, 1977 (Week 1) through the week SUNDAY, OCT. 23, 1977 through SATURDAY, OCT. 29, 1977, a period of 26 weeks. For each Trooper, the sum of the data over these weeks is to be reported--although lists by weeks will also be acceptable. If the Trooper rated did not serve for the entire period of 26 weeks, indicate the number of weeks of service since May 1, 1977._____ (55-56)

17. Days Worked_____ (57-59) 18. Miles Driven_____ (60-65)

19. Hours On Patrol_____ (66-71) 20. Hours Traffic Control_____ (72-77)

21. Hours Accident Investigation_____ (78-83) 22. Hours Criminal Investigation_____ (84-89)

23. Hours Other Investigation_____ (90-95) 24. Hours Civil Disturbance_____ (96-101)

25. Hours Size And Weight_____ (102-107) 26. Hours Radar Enforcement_____ (108-113)

27. Hours Inspection Supervision_____ (114-117) 28. Hours Other Duty_____ (118-123)

29. Hours Breathalyzer Test_____ (124-129) 30. Hours Preparing For Instruction_____ (130-135)

31. Hours Instructing_____ (136-141) 32. Hours Safety Education_____ (142-147)

33. Unsafe Vehicles Removed_____ (148-152) 34. Vehicles Seized_____ (153-156)

35. Stolen Vehicles Recovered_____ (157-159) 36. Total Accidents Investigated_____ (160-162)

37. Total Arrests, Accidents_____ (163-165) 38. Speeding Arrests, Trucks & Buses_____ (166-168)

39. Total A & S Checking Detail_____ (169-171)

40. Assists To Motorists_____ (172-174)

41. Total Warnings_____ (175-177)

42. Convictions Not Appealed_____ (178-180)

43. Dismissals_____ (181-183)

44. Nolle Prossed_____ (184-186)

45. Complied With Law_____ (187-189)

46. Total Court Cases_____ (190-192)

47. Speeding Radar_____ (193-195)

48. Speeding Pace_____ (196-198)

49. Reckless Driving_____ (199-201)

50. Driving Under Influence_____ (202-204)

51. Pedestrian Violations_____ (205-207)

52. Other Haz. Moving Violations_____ (208-210)

53. Other Haz. Trucks & Buses_____ (211-213)

54. Driving While Suspended_____ (214-216)

55. No O.L. Or C.L._____ (217-219)

56. Improper Equipment_____ (220-222)

57. Size and Weight_____ (223-225)

58. All Other Traffic_____ (226-228)

59. Total Traffic_____ (229-231)

60. Total Criminal_____ (232-234)

61. Total A & S Legal Doc._____ (235-237)

62. Total Arrest & Summons_____ (238-240)

END