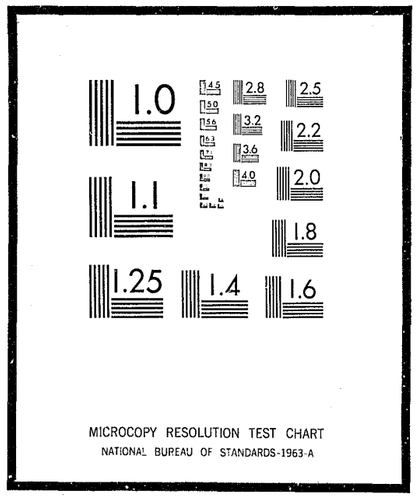

THE PSYCHOLOGICAL ASSESSMENT AND SELECTION OF POLICE OFFICERS FOR THE CITY AND COUNTY OF HONOLULU

PART II

OF

PHASE I

Report Submitted To
Police Department
City and County of Honolulu

Center for Psychological Services,
Training and Research

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December 1972

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Two major problems emerged in the course of data collection and analyses for Part II of Phase I of this research study. One relates to the criterion of supervisor ratings and use of alternative criteria. The other related to the difficulty of obtaining accurate, up-to-date information on men who do not continue with the Police Department for a variety of reasons. These problems will be discussed separately in Chapter V, Discussion of Results.

The researchers have attempted to make the study as extensive and complete as is possible at this point in time. A thorough analysis of all data was made, including the use of an additional criterion -- that of continued service with the Police Department, as well as use of Supervisor Ratings and Paired Comparisons of the men as originally specified in the Methods section. All of this constituted a serious research effort to obtain the maximum from the data. While certain trends are evident, no definitive selection criteria can be specified at this time which would in any major way minimize the amount of effort now expended in selecting Police Officers. However, a baseline has been established, a type of person identified. With continued effort in this area, selection criteria could emerge. A major problem in identifying such criteria at this time is that not enough time has elapsed to have a clear identification of the men who are "high risk," that is, those who leave the Department. In a year or two from now, a sufficient number of men may have terminated service to warrant looking again at defining selection criteria. By that time also, Supervisor Ratings may have identified more clearly those in the original sample who are especially "successful" in police work in the Honolulu Police Department. It may be

that in meeting with personnel officers and others in the Department, another means of looking at men's potential, other than through Supervisor Ratings could be identified.

More objective indices of performance, i.e., commendations, reprimands, number of times each officer was personally counseled, early or rapid promotion might prove to be more appropriate criteria for prediction. It may well be that a number of good predictors of performance have not yet surfaced.

It is also true that research in both industrial and military settings (Anastasi, 1968) has demonstrated the effectiveness of training supervisors regarding evaluation techniques in increasing the validity of supervisory evaluations.

CHAPTER II

THE PROBLEM

The problem for Part II, as originally stated in Part I of Phase I of The Psychological Assessment and Selection of Police Officers for the City and County of Honolulu, read as follows:

Part II. Follow-Up Study on Performance

The performance of the officers assessed in Part I of Phase I (the Honolulu Police Department) will be evaluated to identify:

A. Those officers who proved to be "high risk" and should preferably have been de-selected from the program.

B. Those officers whose superior performance indicates rapid advancement potential.

C. Those variables which proved to be valid predictors of successful/unsuccessful performance (these variables will be used to develop a test battery composed of the smallest possible number of variables that permit accurate assessment and prediction).

D. Those predictions made on the basis of individual and group interviews.

Evaluation of both testing and interviewing results will be utilized as a basis for a decision as to whether either or both should be continued in the assessment process.

CHAPTER III

METHODS

Chapter II introduced the problem of validation of instruments and procedures utilized in this study for purposes of refining the scientific methodology of selection and placement. This chapter will describe the population and include a brief description of the instruments and procedures used. (For a more complete description readers are referred to Phase I, Part I of The Psychological Assessment and Selection of Police Officers for the City and County of Honolulu, December, 1971.)

The Population

Subjects for this portion of the study were the 249 Recruits who had entered or were ready to enter training in the Police Academy from the period January, 1970 through June, 1971. This sample included all those who had reported for testing (approximately 70 per cent of all applicants) and who had been selected at the level of Police Service Officer I or II.

Predictor Variables

A. Biographical Data Forms

B. Structured Interviews (Individual Depth and Group Stress)

C. Psychological Tests

1. The Strong Vocational Interest Blank for Men, 1966 Revision (SVIB)
2. The Minnesota Multiphasic Personality Inventory (MMPI)
3. Test of Social Insight (TSI)
4. Structured-Objective Rorschach Test (SORT)
5. Intellectual Skills Tests (IST)
   a. Closure Speed
   b. Closure Flexibility
   c. Perceptual Speed

Hypotheses

Hypotheses related to data concerned with the prediction of successful performance and/or "high risk" potential were formulated and described in Phase I, Part I of this study. These are Hypotheses 33 through 122 (see pages 43-50 of the December, 1971 Research Report).

Validation of Predictive Indices

A. Criterion Variables

The predictor variables will be compared with at least one of the three identified criterion variables. Because the criterion variable is the basis for determining the validity of the predictor variables, its place in this study cannot be over-emphasized. The variable proposed as criterion for this research is the Supervisor Rating form (Performance Evaluation Report) currently used in the Police Department. This supervisor rating scale will be maintained as the primary criterion variable because it is the actual scale which will be used in consideration for future promotions and within grade rankings. As such, it will still be the best overall criterion available until such time as another rating scale could be adopted by the entire Police Department.

A second criterion will be the rating obtained from the paired comparison form of evaluation adopted from the Chicago Police Department study (Baehr, Furcon, and Froemel, 1968). This method requires supervisors to compare each Police Officer with every other officer in his unit, and results in a "batting average" for every individual in the survey.

A third criterion will be continued service with the Police Department three months after completion of testing.

B. Statistical Procedures

Pearson Product Moment correlations for the predictor variables with the three identified criterion variables will be performed. These correlations will then be utilized in the analyses of multiple linear regressions. Multiple linear regression analysis allows the researcher an excellent statistic with which to evaluate the usefulness of a large number of predictor variables in relation to the criterion variable and also in relation to the predictive ability of other variables. This is accomplished by removing from the first analysis the predictor variable which has demonstrated the highest correlation with the criterion variable. Next, all remaining variables are tested to select the one which now contributes most to predicting the criterion variable. This process is continued until all variables have been tested, or no more variables are found that aid in predicting the criterion variable. Multiple linear regression analysis, then, rank orders the predictor variables from highest to lowest predictive ability. Those variables determined to be of significance in their predictive ability will be weighted (through multiple regression) and their importance in terms of their total predictive ability will be shown. It will be these variables (along with their weighted predictive ability) which will be recommended for use in the selection of Police Officers.

CHAPTER IV

RESULTS

The issue addressed by the following analyses is the extent to which the test (predictor) variables account for differences in each of the performance (criterion) variables. The analyses, a series of multiple step-wise regressions, selects those test variables -- together with the proper weights which should be applied to them (beta weights) -- which will best predict the criteria. The regression analysis functions in the following way: First, the predictor correlating highest with the criterion is selected out; next, partial correlation coefficients are generated from the remaining predictors and the highest of these is selected out; finally, this process continues in a step-wise fashion until there is no further utility in selecting out additional predictors. In this study only the first 10 are reported along with their respective weights (B). The final statistic is the multiple correlation coefficient (R) which indicates how well these 10 variables combine to account for differences in the criterion. This coefficient when squared and multipled by 100 ($R^2 \times 100$) represents the percentage of the variance in the criterion accounted for by the combination of the 10 predictors. Ultimately, prediction for any individual is achieved by summing his properly weighted scores for each of the 10 variables selected out by the regression analysis.

A. Analysis of Data for "High Risk" Personnel

From the original sample of 246 Police Officers who participated in the study, sixteen individuals were identified who were no longer with the Department three months after completion of testing. These individuals were designated as "high risk." Table I presents correlations of each of the 55 predictor variables with continued presence in the Department. Of these, one correlation

TABLE I. CORRELATION OF PREDICTOR VARIABLES WITH CONTINUED PRESENCE IN THE POLICE DEPARTMENT THREE MONTHS AFTER COMPLETION OF TESTING

Predictor Variable	Pearson Product Moment Coefficient (r)
Biographical Data	
1. Age	-.09
2. Veteran Status	.05
3. Number of Years of Schooling	-.03
4. Single	.06
5. Married	.07
6. Divorced	-.05
7 Number of Jobs Previously Held	-.01
8. Previous Criminal Record	-.08
9. Civil Service Score	-.03
Strong Vocational Interest Blank	
10. Military Activity	-.02
11. Technical Supervision	.07
12. Adventure	.01
13. Religious Activities	.05
14. Army Officer	.01
15. Air Force Officer	.01
16. Forest Serviceman	.14
17. Policeman	.08
18. Rehabilitation Counselor	-.04
19. Social Worker	-.01

(Continued)

TABLE I. (Continued) CORRELATION OF PREDICTOR VARIABLES WITH CONTINUED PRESENCE IN THE POLICE DEPARTMENT THREE MONTHS AFTER COMPLETION OF TESTING

Predictor Variable	Pearson Product Moment Coefficient (r)
20. Minister	.01
21. Artist	-.03
22. Musician Performer	.06
23. Office Worker	.02
24. Real Estate Sales	-.05
25. Life Insurance Sales	-.04
26. Academic Achievement	-.06
27. Age Related Interests	.00
28. Diversity of Interests	.11
29. Masculinity-Femininity II	-.03
30. Managerial Orientation	-.12
31. Occupational Introversion-Extroversion	-.02
32. Occupational Level	-.16
33. Specialization Level	-.02
34. Like Percent	.04
35. Indifferent Percent	.05
36. Dislike Percent	-.11
Minnesota Multiphasic Personality Inventory	
37. L - Self-Aggrandizement	-.03
38. F - Conventionality	-.09
39. K - Defensiveness	.06
40. Scale 1 - Concern with Bodily Functions	-.06

(Continued)

TABLE I. (Continued) CORRELATION OF PREDICTOR VARIABLES WITH CONTINUED PRESENCE IN THE POLICE DEPARTMENT THREE MONTHS AFTER COMPLETION OF TESTING

Predictor Variable	Pearson Product Moment Coefficient (r)
41. Scale 2 - Discouragement, Apprehension	-.13
42. Scale 3 - Emphasis on Denial	-.09
43. Scale 4 - Dependency-Independency Conflict	-.24*
44. Scale 5 - Masculinity or Femininity of Interests	-.12
45. Scale 6 - Personal Sensitivity	-.01
46. Scale 7 - Compulsivity	-.05
47. Scale 8 - Contact With Real World	-.09
48. Scale 9 - Drive Level	.11
49. Scale 0 - Social Introversion	-.07
Test of Social Insight	
50. Withdrawal	.03
51. Passivity	-.04
52. Cooperativeness	-.02
53. Competitiveness	.04
54. Aggression	.01
55. Total Score	.03

* .05 Level of Confidence

Total N = 246. This includes an N of 230 officers who have continued in the Department and an N of 16 who are no longer with the Police Department.

reached the r = .19 value necessary for the .05 level of significance in this analysis: the Minnesota Multiphasic Personality Inventory Scale 4 (character scale related to dependency-independency conflict).

A multiple correlation coefficient of .40 resulted from the regression analysis of this data. The relative contribution of each of the first 10 variables to R is presented in Table II.

None of these individuals participated in the individual or group stress interviews. In addition, neither the Structured-Objective Rorschach Test nor Intellectual Skills Test data were available for any of the 16 officers identified as "high risk."

B. Supervisor Ratings

Supervisor Ratings are depicted in Figure I. A standard Civil Service Performance Evaluation Report Form was used in this study (see Appendix IV). Ratings from this form were translated into numerical equivalencies with a range from a possible low of 4 to a high of 16. As can be seen from Figure I, the ratings did not approximate a normal distribution. Actually, 80 per cent of the ratings fell within 3 points of the 16 point scale.

C. Supervisor Ratings Criterion Analysis

Correlations of the criterion with each predictor variable are presented in Tables III through VI. The correlation required for significance at the .05 level of significance is r = .17; only one of the correlations reached this level, i.e., Managerial Orientation, a scale from the Strong Vocational Interest Blank. The second regression analysis in this study was performed using Supervisor Ratings as the criterion. In this analysis, R for the first 10 variables selected out was .38 and the percentage of variance accounted for by these variables was 14.2 per cent. The individual contributions to R are summarized in Table VII.

TABLE II. MULTIPLE REGRESSION ANALYSIS OF PREDICTOR VARIABLES RELATED TO CONTINUANCE IN THE POLICE DEPARTMENT

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	Dependency-Independency Conflict (MMPI)	.2441	-.02
2	Drive Level (MMPI)	.2902	.01
3	Occupational Level (SVIB)	.3168	-.01
4	Diversity of Interests (SVIB)	.3463	.00
5	Conventionality (MMPI)	.3554	-.01
6	Personal Sensitivity (MMPI)	.3688	.01
7	Previous Criminal Record (Biographical Data)	.3794	-.04
8	Real Estate Sales (SVIB)	.3875	.00
9	Concern With Bodily Functions (MMPI)	.3946	.01
10	Office Worker (SVIB)	.4006	.00

N = 246. This includes an N of 230 officers who have continued in the Department and an N of 16 who are no longer with the Police Department.

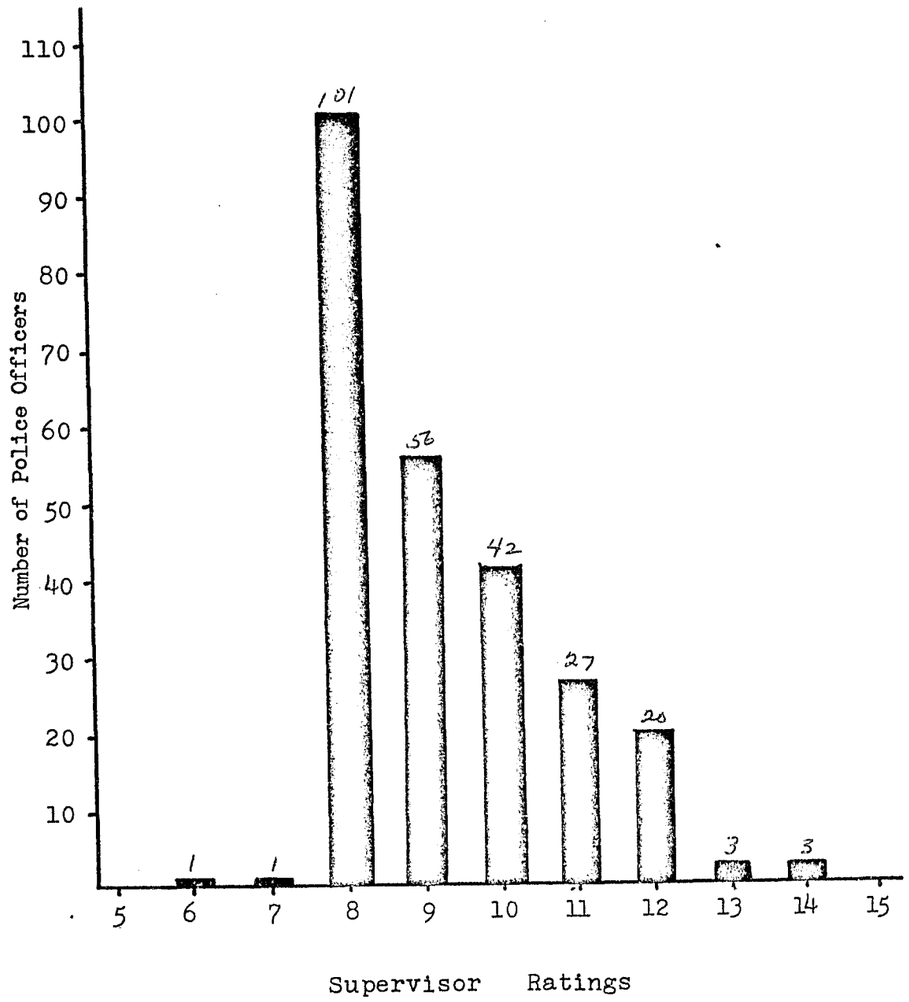


Figure 1. Summary of Supervisor Ratings of 230 Police Officers on Civil Service Performance Evaluation Report Forms.

TABLE III. BIOGRAPHICAL DATA PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Biographical Data	Pearson Product Moment Coefficient (r)
1. Age	.05
2. Veteran Status	.04
3. Number of Years of Schooling	-.15
4. Single	-.04
5. Married	.08
6. Divorced	-.05
7. Number of Jobs Previously Held	.00
8. Previous Criminal Record	.01
9. Civil Service Score	-.01

N = 230

TABLE IV. STRONG VOCATIONAL INTEREST BLANK (SVIB) PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Strong Vocational Interest Blank Scales	Pearson Product Moment Coefficient (r)
1. Military Activity	-.08
2. Technical Supervision	.01
3. Adventure	-.06
4. Religious Activities	-.03
5. Army Officer	-.09
6. Air Force Officer	-.06
7. Forest Serviceman	.00
8. Policeman	.05
9. Rehabilitation Counselor	.00
10. Social Worker	.02
11. Minister	-.03
12. Artist	.02
13. Musician Performer	.10
14. Office Worker	.03
15. Real Estate Sales	.04
16. Life Insurance Sales	.02
17. Academic Achievement	-.06
18. Age Related Interests	.03
19. Diversity of Interests	-.04
20. Masculinity-Femininity II	-.01

(Continued)

TABLE IV. (Continued) STRONG VOCATIONAL INTEREST BLANK (SVIB) PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Strong Vocational Interest Blank Scales	Pearson Product Moment Coefficient (r)
21. Managerial Orientation	-.18*
22. Occupational Introversion-Extroversion	.03
23. Occupational Level	-.02
24. Specialization Level	.03
25. Like Percent	.03
26. Indifferent Percent	-.03
27. Dislike Percent	.01

* .05 Level of Confidence

N = 230

TABLE V. MINNESOTA MULTIPHASIC PERSONALITY INVENTORY PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Minnesota Multiphasic Personality Inventory Scales	Pearson Product Moment Coefficient (r)
1. L - Self-Aggrandizement	-.12
2. F - Conventionality	.08
3. K - Defensiveness	-.16
4. Scale 1 - Concern With Bodily Functions	-.05
5. Scale 2 - Discouragement, Apprehension	-.02
6. Scale 3 - Emphasis on Denial	-.13
7. Scale 4 - Dependency-Independency Conflict	-.12
8. Scale 5 - Masculinity or Femininity of Interests	.06
9. Scale 6 - Personal Sensitivity	.08
10. Scale 7 - Compulsivity	.01
11. Scale 8 - Contact With Real World	.01
12. Scale 9 - Drive Level	-.02
13. Scale 0 - Social Introversion	.11

N = 230

TABLE VI. TEST OF SOCIAL INSIGHT (TSI) PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Test of Social Insight Scales	Pearson Product Moment Coefficient (r)
1. Withdrawal	.07
2. Passivity	-.03
3. Cooperativeness	.03
4. Competitiveness	-.10
5. Aggression	-.05
6. Total Score	-.13

N = 230

TABLE VII. MULTIPLE REGRESSION ANALYSIS UTILIZING PREDICTOR VARIABLES FROM BIOGRAPHICAL DATA, SVIB, MMPI, AND TSI FOR PREDICTION OF SUPERVISOR RATINGS

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	Managerial Orientation (SVIB)	.1757	-.04
2	Total Score (TSI)	.2194	-.04
3	K - Defensiveness (MMPI)	.2673	-.06
4	Occupational Level (SVIB)	.2989	.03
5	Number of Years of Schooling (Biographical Data)	.3243	-.20
6	Number of Jobs Previously Held (Biographical Data)	.3432	-.16
7	Social Worker Interests (SVIB)	.3413	.03
8	Age (Biographical Data)	.3583	.04
9	Minister (SVIB)	.3680	-.02
10	Passivity (TSI)	.3768	-.04

N = 230

In addition, a series of analyses were performed on smaller samples taken from the population of 230 Police Officers. In the first analysis of this series of sub-samples, Psychologist Ratings obtained through Individual and Group Interviews were used.

Figure 2 shows the distribution of Psychologist Ratings for 73 Police Officers interviewed in this study. Figure 3 depicts the distribution of Psychologist Ratings of 72 Police Officers who participated in group stress interviews. Correlations with the criterion appear in Table VIII. None of these correlations reached the critical r = .39 required for significance.

Additional predictors from this analysis were added to those already reported in Table VII. The objective was to determine if the inclusion of additional variables would increase the multiple correlation coefficient. The comparisons between R values in these analyses must be considered tentative, however, because of the varying sample sizes. The multiple correlation coefficient (R) for the 10 variables selected out was .80. However, it must be noted that 71 predictors were included and the number of individuals in this sample was 72. (See Table IX)

In the second analysis of this series using sub-populations, three predictors (Intellectual Skills Test scores) were added. The correlation of these three variables with Supervisor Ratings are presented in Table X. A coefficient of r = .28 was required to reach significance at the .05 level. None of the correlations attained significance. These variables did not contribute to the Multiple Regression.

In the third analysis of this series, 30 Rorschach variables were added. The variable "Structuring" (exactness in perception of reality) correlated .26 with the criterion, and the variable "Persistence" correlated .24 with the criterion. Though it may be noted that these two variables had the highest

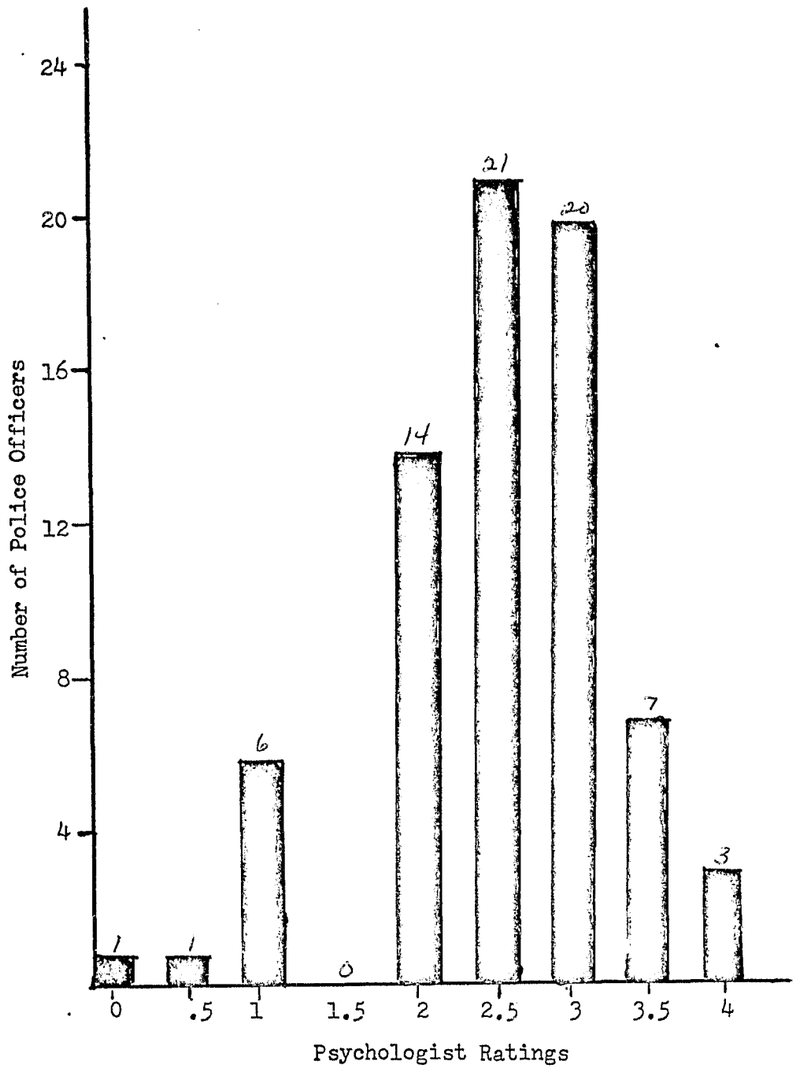
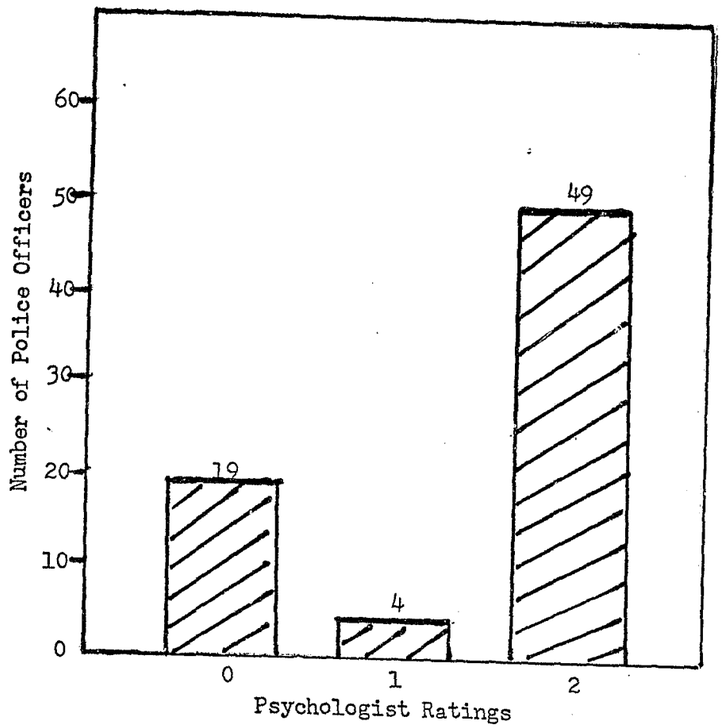


Figure 2. Distribution of Psychologist Ratings for 73 Police Officers interviewed individually.



0 = Possible "high risk" performance
1 = Satisfactory performance
2 = Successful performance

Figure 3. Distribution of Psychologist Ratings of 72 Police Officers on group performance.

TABLE VIII. PSYCHOLOGIST RATINGS (INDIVIDUAL AND GROUP INTERVIEWS) CORRELATED WITH SUPERVISOR RATINGS

Interview Questions	Pearson Product Moment Coefficient (r)
1. Reason for choosing police work	-.10
2. Highest rank desired and expected	.05
3. Alternatives if not hired	.08
4. Family life and discipline	.15
5. Wife and/or family reaction to police work	.12
6. Reaction to school - grades - friends	-.01
7. Reaction to military	.04
8. Prejudice to races or social groups	.29
9. Anger-resolution	-.13
10. Incident: Rough neighborhood	.05
11. Incident: Wife ill - need money	.20
12. Individual interview composite rating	.09
**********	
13. Structured group stress interview composite rating	-.13

N = 73 Individual Interview
N = 72 Group Interview

TABLE IX. MULTIPLE REGRESSION ANALYSIS UTILIZING PREDICTOR VARIABLES FROM BIOGRAPHICAL DATA, SVIB, MMPI, TSI, AND PSYCHOLOGIST RATINGS FOR PREDICTION OF SUPERVISOR RATINGS

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	K - Defensiveness (MMPI)	.34	-.19
2	Air Force Officer Interests (SVIB)	.48	.10
3	Age Related Interests (SVIB)	.57	-.03
4	Prejudice Towards Others (Individual Interview)	.61	.29
5	Reason for Joining the Department (Individual Interview)	.64	-.56
6	F - Conventionality (MMPI)	.68	-.14
7	Scale 1 - Concern With Bodily Functions (MMPI)	.72	.16
8	Specialization Level (SVIB)	.75	-.02
9	Total Composite Score (Individual Interview)	.78	.44
10	Passivity (TSI)	.80	-.06

N = 72

TABLE X. INTELLECTUAL SKILLS TESTS PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variables Intellectual Skills Tests Scales	Pearson Product Moment Coefficient (r)
1. Closure Flexibility	-.20
2. Closure Speed	-.04
3. Perceptual Speed	-.08

N = 112

correlations in the analyses, neither reached an r = .27 required for the .05 level of significance. Correlations are presented in Table XI.

Tables XIIa and XIIb report the Multiple Correlation Coefficients obtained when SORT I (the first 13 scales of the test) and SORT II (the last 17 scales of the test) were added to the analysis.

D. Paired Comparison Criterion Analysis

Pearson Product Moment correlations were computed for each of the predictor variables for the 239 Police Officers tested and compared in this study. Results are presented in Tables XIII through XVI. For these tables an r = .17 was required for the .05 level of significance. As can be seen, none of the correlations reached that level.

In the regression analysis performed using the Paired Comparison Ratings, the multiple correlation coefficient (R) for the first 9 variables selected out was .351 and the percentage of variance accounted for by these variables was 12.3 per cent. The individual contribution of each variable to R is summarized in Table XVII.

Only a limited number of predictor variables entered into the regression analyses for both criteria of Supervisor Ratings and Paired Comparison Ratings.

TABLE XI. STRUCTURED-OBJECTIVE RORSCHACH TEST (SORT) PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

Predictor Variable Structured-Objective Rorschach Test Scales	Pearson Product Moment Coefficient (r)
1. Theoretical	.03
2. Practical	.02
3. Induction	-.03
4. Deduction	-.01
5. Rigidity	-.06
6. Structuring	-.26
7. Concentration	-.11
8. Reductive Factors	-.17
9. Range	-.09
10. Human Relationships	-.04
11. Popular	-.06
12. Original	-.08
13. Persistence	-.24
14. Aggressiveness	-.17
15. Social Responsibility	-.03
16. Cooperation	.03
17. Tact	.11
18. Confidence	.07
19. Consistency of Behavior	-.10
20. Anxiety	.09
21. Moodiness	.02
22. Activity Potential	.02

(Continued)

TABLE XI. (Continued) STRUCTURED-OBJECTIVE RORSCHACH TEST (SORT) PREDICTOR VARIABLES CORRELATED WITH SUPERVISOR RATINGS

	Predictor Variable Structured-Objective Rorschach Test Scales	Pearson Product Moment Coefficient (r)
23.	Impulsiveness	.10
24.	Flexibility	-.16
25.	Conformity	.10

N = 118

TABLE XIIa. MULTIPLE REGRESSION ANALYSIS UTILIZING PREDICTOR VARIABLES FROM BIOGRAPHICAL DATA, SVIB, AND SORT FOR PREDICTION OF SUPERVISOR RATINGS

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	Persistence (SORT)	.23	-.49
2	Years of Education (Biographical Data)	.32	-.40
3	Flexibility (SORT)	.36	-.45
4	Military Activities (SVIB)	.41	-.03
5	Social Worker (SVIB)	.45	.04
6	Managerial Orientation (SVIB)	.47	-.03
7	Civil Service Score (Biographical Data)	.49	-.06
8	Age (Biographical Data)	.51	.06

N = 118

TABLE XIIb. MULTIPLE REGRESSION ANALYSIS UTILIZING PREDICTOR VARIABLES FROM BIOGRAPHICAL DATA, SVIB, AND SORT FOR PREDICTION OF SUPERVISOR RATINGS

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	Structuring (SORT)	.27	-.47
2	Years of Education (Biographical Data)	.33	-.32
3	Social Worker (SVIB)	.36	-.03
4	Managerial Orientation (SVIB)	.43	-.04

N = 118

TABLE XIII. BIOGRAPHICAL DATA PREDICTOR VARIABLES CORRELATED WITH PAIRED COMPARISON RATINGS

Predictor Variable Biographical Data	Pearson Product Moment Coefficient (r)
1. Age	.00
2. Veteran Status	.00
3. Number of Years of Schooling	-.01
4. Single	.04
5. Married	.00
6. Divorced	-.11
7. Number of Jobs Previously Held	-.15
8. Previous Criminal Record	-.08
9. Civil Service Score	.04

N = 239

TABLE XIV. STRONG VOCATIONAL INTEREST BLANK (SVIB) PREDICTOR VARIABLES CORRELATED WITH PAIRED COMPARISON RATINGS

Predictor Variable Strong Vocational Interest Blank Scales	Pearson Product Moment Coefficient (r)
1. Military Activity	-.15
2. Technical Supervision	-.08
3. Adventure	.04
4. Religious Activities	-.10
5. Army Officer	.03
6. Air Force Officer	-.06
7. Forest Serviceman	-.01
8. Policeman	-.07
9. Rehabilitation Counselor	-.10
10. Social Worker	-.02
11. Minister	-.10
12. Artist	-.09
13. Musician Performer	-.08
14. Office Worker	-.12
15. Real Estate Sales	.08
16. Life Insurance Sales	.04
17. Academic Achievement	.05
18. Age Related Insterests	.07
19. Diversity of Interests	.08
20. Masculinity-Femininity II	-.10

(Continued)

TABLE XIV. (Continued) STRONG VOCATIONAL INTEREST BLANK (SVIB) PREDICTOR VARIABLES CORRELATED WITH PAIRED COMPARISON RATINGS

Predictor Variable Strong Vocational Interest Blank Scales	Pearson Product Moment Coefficient (r)
21. Managerial Orientation	-.05
22. Occupational Introversion-Extroversion	-.05
23. Occupational Level	.05
24. Specialization Level	-.01
25. Like Percent	.10
26. Indifferent Percent	-.05
27. Dislike Percent	-.09

N = 239

TABLE XV. MINNESOTA MULTIPHASIC PERSONALITY INVENTORY PREDICTOR VARIABLES CORRELATED WITH PAIRED COMPARISON RATINGS

Predictor Variable Minnesota Multiphasic Personality Inventory Scales	Pearson Product Moment Coefficient (r)
1. L - Self-Aggrandizement	-.02
2. F - Conventionality	.03
3. K - Defensiveness	-.05
4. Scale 1 - Concern With Bodily Functions	.08
5. Scale 2 - Discouragement, Apprehension	.13
6. Scale 3 - Emphasis on Denial	.02
7. Scale 4 - Dependency-Independency Conflict	-.03
8. Scale 5 - Masculinity or Femininity of Interests	-.01
9. Scale 6 - Personal Sensitivity	-.03
10. Scale 7 - Compulsivity	.04
11. Scale 8 - Contact With Real World	.01
12. Scale 9 - Drive Level	-.08
13. Scale 0 - Social Introversion	.08

N = 239

TABLE XVI. TEST OF SOCIAL INSIGHT (TSI) PREDICTOR VARIABLES CORRELATED WITH PAIRED COMPARISON RATINGS

Predictor Variable Test of Social Insight Scales	Pearson Product Moment Coefficient (r)
1. Withdrawal	.04
2. Passivity	.02
3. Cooperativeness	.00
4. Competitiveness	-.14
5. Aggression	.07
6. Total Score	-.07

N = 239

TABLE XVII. MULTIPLE REGRESSION ANALYSIS UTILIZING PREDICTOR VARIABLES FROM BIOGRAPHICAL DATA, SVIB, MMPI, AND TSI FOR PREDICTION OF PAIRED COMPARISON RATINGS

Order Selected	Predictor Variable	Multiple Correlation Coefficient (R)	Beta Weight (B)
1	Number of Jobs Previously Held (Biographical Data)	.1479	-.03
2	Competitiveness (TSI)	.2014	-.01
3	Army Officer Interests (SVIB)	.2346	-.01
4	Social Worker Interests (SVIB)	.2767	-.01
5	Diversity of Interests (SVIB)	.2990	.01
6	Forest Serviceman Interests (SVIB)	.3205	.00
7	Drive Level (MMPI)	.3320	.01
8	Aggression (TSI)	.3433	.01
9	Military Activity (SVIB)	.3509	.00

N = 239

CHAPTER V

DISCUSSION OF RESULTS

Continued Service Criterion

One simple method of assessing successful performance in police work is the officer's continuance as a Police Officer for the City and County of Honolulu. Those who are terminated for any of a variety of reasons (such as to seek other employment, for inappropriate behavior, for incompetency, etc.) may be said to be "high risk." Two hundred forty-six Police Officers participated in the original portion of this study. Several months later 16 of these individuals had left the Department. Of the 55 predictor variables correlated with this criterion (i.e., continued service), only one variable from the Minnesota Multiphasic Personality Inventory (MMPI) reached a significant level (.05). This was the fourth scale from the MMPI which related to character values and strength. Successful performance in the Honolulu Police Department can therefore be said to be significantly related to such dimensions as emotional maturity, a tendency toward consistent behavior, and a desire for people contact.

Two variables came quite close to the level of .17 needed for statistical significance: "Forest Serviceman" and "Occupational Level," scales on the SVIB. These results indicate men who continue to choose police work are not as concerned with prestige and status as they are with working outdoors, at least part of the time, and in a variety of settings. Another correlation close to the statistically significant level was Scale 2 on the MMPI. This scale is related to feelings of discouragement or apprehension. The men who continue in police work appear less prone to this particular kind of emotional response.

The multiple correlation coefficient (R) of .40 which resulted from

the analysis of selected variables in relation to continued service in the Police Department must be viewed with caution since only 16 of the 246 Police Officers included in the analysis were in the "absent" category (i.e., no longer with the Department).

Supervisor Rating Criterion

Another criterion of successful performance entails analysis of the officer's rating by his superior. For the Honolulu Police Department these ratings are reported on a form provided by the ~~State~~ County Civil Service Department. A space for comments is provided as well as a series of categories for checking the officer's performance on "Quantity of Work," "Quality of Work," "Attitude Toward Work" and "Relationship With People" (See Appendix IV). A fifth category, "Supervision of Employees," is also provided, but this did not apply to the newer Police Officers in the sample. The officer may be rated "Excellent," "Exceeds Requirements," "Meets Requirements" and "Below Requirements." The tendency to rate most officers in the "Meets Requirements" category is evident in Figure 1. Also evident, though less notable, is a tendency to rate the officer higher rather than lower than "Meets Requirements."

Only one of the correlations of this criterion (Supervisor Rating) with the 55 predictor variables reached a significant level (Tables III-VI). This was "Managerial Orientation" on the SVIB. Supervisors apparently do not appreciate or reward (by higher rating) younger officers who demonstrate supervisory proclivities, the assumption perhaps being that more "Indians" and fewer "Chiefs" are needed.

Several other variables came within close approximation of statistically significant levels. These were years of schooling from the Biographical Data Form, Scale K (Defensiveness) and Scale 3 (Denial) of the MMPI, and the Total Score from the TSI.

The correlation of Supervisor Rating with years of schooling was negative, indicating that supervisors do not necessarily value the kind of man who is likely to continue his education. When this is considered in relation to the lack of reward for leadership potential, it seems possible to speculate that at least some supervisors prefer men who are more likely to follow orders without question and less likely to take strong stands on theoretical issues.

That supervisors tend to rate men higher who respond more honestly and openly to them is indicated by the negative correlations of Scale K (Defensiveness) and Scale 3 (Denial) with the Supervisor Rating. A preference for men who do not distort or deny reality is demonstrated.

A combination of scores from the TSI which is based on a facility for dealing with social situations is likewise not rewarded by supervisors. This may imply that men who are more straightforward, and less socially adept, are reinforced for their behavior.

The multiple regression analysis with selected variables did not yield Beta weights sufficiently high to be of practicial application when Supervisor Rating was the criterion (Table VII). Discussion of the difficulties of using the Supervisor Rating as the criterion is presented at the end of this chapter.

Several other data analyses were made, using smaller samples of Police Officers. One of these was for the group of 73 men who had Psychologist Interview Ratings. These ratings of 73 new officers presented a somewhat more balanced distribution (Figure 2) than the Supervisor Rating distribution (Figure I). The central tendency is still evident, but there is a wider range of scores. Psychologist Group Ratings (Figure 3) also indicate more willingness on the part of the psychologists to rate officers lower as well

as higher than average. Correlations of Psychologist Ratings with Supervisor Ratings failed to reach significant levels (Table VIII). However, a positive correlation between the Psychologist Ratings on Question 8, dealing with prejudice toward social groups or races, and Supervisor Ratings, demonstrates that both groups of raters tend to value similar attitudes toward prejudice. That is, in general, if a Police Officer's verbalization of some prejudice was not deemed inappropriate, if he was aware of it, felt no need to deny it, and made allowance for it in his response to others.

Including an item from the Psychologist Ratings (No. 5, Table IX) in a multiple regression analysis yielded an R of .80. These results must be considered tentative, however, because of the small sample size and the large number of variables.

Separate data analyses were made correlating results from the Intellectual Skills Tests with Supervisor Ratings. As Table X indicates, these analyses failed to show statistically significant results.

Two variables from the Structured-Objective Rorschach Test (SORT), an instrument which unfortunately had to be dropped from the study (see Appendix I for profiles and discussion of results) because test materials could no longer be obtained, presented the highest correlations with the criterion of Supervisor Ratings. These were "Structuring" and "Persistence." The importance of "Structuring" and "Persistence" in police work seems evident. While creative, original work may demand a flow which "Structuring" might impede, dealing with the real world of people and their responses often demands some structure be given to the situation. "Persistence" in the face of difficult or adverse situations also is desirable; that is, a man is more valuable who does not give up when the "going gets tough." At r = 126 and 124 respectively, however, these variables did not reach the r = .27 required for significance.

The results of the multiple correlation using SORT variables are shown in Tables XII, a and b.

Paired Comparison Technique

A third means of assessing successful performance was to ask each supervisor to rate every man in comparison with every other man under his supervision. This method is designated Paired Comparison. While this produced very definitive choice within group, the lack of comparability between groups made for difficulties. Although a correlation of .17 was required for statistical significance and none of the correlations with this criterion reached that level, there are three predictor variables which approximated this level. These are "Number of Jobs Previously Held" (Biographical Data), Military Activities (SVIB), and "Competitiveness" (TSI). The negative correlation with "Number of Jobs Previously Held" seems to imply that the raters (supervisors) prefer men just out of school or who have held only one job to those who have had more work experience.

The negative correlation between Military Activities (SVIB) and the ratings given in the Paired Comparison is a somewhat unexpected result and perhaps needs further study in order to understand in depth the ramification of this relationship.

There was a negative correlation between "Competitiveness" on the TSI and the rating given by supervisors in the Paired Comparison technique. This seems to support a general conclusion that supervisors, when using the Civil Service Performance Evaluation Report Form or Paired Comparison technique, tend to prefer men who are non-competitive, unlikely to move rapidly into managerial levels, and whose educational attainments are not beyond a certain level.. Table XVII shows the multiple regression results using the Paired

Comparison method of assessment.

Hypotheses

No discussion of hypotheses is provided. Although several were postulated for Part II of Phase I (pp. 43-50 of Part I), an in-depth enumeration and discussion of each hypothesis does not appear of value at this time because of the scarcity of statistically significant correlations.

Difficulties Encountered With Criteria Employed In Study

The difficulty of finding a method for assessing successful performance cannot be over-emphasized. Supervisor Ratings are subject to a number of criticisms, among them that (1) there is little spread among the ratings (Mean = 9.2, S.D. = 1.4), (2) they are highly subject to social desirability, and (3) they may also be contaminated by subjective "halo" effects, such as an attractive appearance or a pleasing personality rather than competence or quality of work. Moreover, qualities evaluated on the rating form may not be those which relate most highly to successful performance in the Police Department. The Paired Comparison method produced very definitive results, but only within each group assessed. Comparisons between groups set up for the Paired Comparison technique may not be meaningful. For example, a rater who rated the men as a result of knowing them during their training period might have very different criteria in mind than someone who is supervising the men on patrol work. This problem might possibly be alleviated to some extent by specifying traits desirable for Police Officers to possess, but even then it is clear that being fifth in a group of 10 men is not the same as being fifth in a group of 50 men. There is, in addition, the possibility that ten men in one group were all superior and the performance of the officer rated at the bottom of that particular group might actually surpass that of

the officer at the top of another group of 50. These are problems inherent in any rating system where human fallibility may be involved. Using a criterion of having been hired and staying in the Department was tried as an alternative method of assessment, in addition to the Paired Comparison technique and Supervisor Ratings. None of these produced the results anticipated.

Information Accuracy and Timeliness

More definitive information is needed about the people who left the Department and the actual reason for leaving, regardless of what notation is made on a man's separation report. Here again, the human factor enters in, and there is clearly a desire to protect the man's image and give him another chance whether it be within the Department or outside. On human grounds, this is undoubtedly extremely worthwhile, but for researchers attempting to work with hard data, it poses many problems. In addition to more definitive information, a longer period of time needs to elapse between the end of testing (late 1971) and the attempt to come up with definitive results. Up to the cut-off point for analysis of data, only 16 men of the total 246 hired had left the Department. An even fewer number had left for reasons which could be construed as damaging to the man's career in police work or other kinds of employment. Some had sought other employment, some had returned to school, two had died -- one in the line of duty and one of natural causes. A recommendation is made that consideration be given to making an assessment about two years hence of those in the original sample who have left the Department in relation to all predictors considered in this study.

CHAPTER VI

CONCLUSIONS

The conclusions may be divided into two categories: those relating to the selection process and those related to training.

Selection

As a preface to this section, it must be strongly emphasized that the low 5 per cent annual turnover of personnel in the Police Department of the City and County of Honolulu is clearly indicative of the fact that the established selection procedures are performing adequately. However, it may be worth speculating whether the kind of Police Officer who is rewarded with a high rating by his supervisor is in fact the most appropriate type of Police Officer for the Department. However, if Supervisor Ratings are a valid index of the most appropriate Police Officer, the data suggests that serious consideration be given during the selection process to men:

1. who are less competitive.
2. who have an adequate, but not an advanced level of education.
3. who have little work experience.
4. who are less likely to prefer leadership roles and more likely to take orders without questioning them.
5. who are relatively unprejudiced or who are aware of their prejudices and able to handle them so they do not interfere with the performance of duty.
6. who tend not to be defensive or deny reality, but to be open and straightforward.
7. who have some liking for outdoor work and variety in experiences.
8. who are not especially concerned with prestige and status.
9. who tend not to become easily discouraged or depressed.
10. who are capable of persevering in the face of adversity.
11. who are not especially adroit socially, but more straightforward in their responses to social situations.
12. who are comfortable with structure and may even seek it.

Training

It is possible to look at the data with a view toward selecting Police Officers with most of the desired qualities listed above, and additional training experiences may be utilized to prepare the officer to function more appropriately in a wider range of situations. For example, it is unlikely that Police Officers who prefer structured situations will be as comfortable or as able to handle relatively unstructured situations, where it is not clear what is expected of them. Training might take cognizance of this and directly teach a variety of possible responses to unstructured situations, with the aim in view of teaching the officer to think rapidly "on his feet" and choose the best possible solution to the problem. In addition to teaching unstructured or ambiguous situations, training might encompass such aspects of functioning as:

1. Knowing when to "let go" as well as to persevere.
2. Being able to generalize quickly and accurately from one situation to another.
3. Understanding personality dynamics in greater depth as a way of handling people more effectively.
4. As stated in the Introduction to Part II of Phase I, more definitive standards and procedures for training, as well as selection, will be possible in about a year when a larger group of both "high risk"

and clearly "successful" officers can be identified from the original sample. This research may come to full fruition at that time.

APPENDIX I

APPENDIX I

RESULTS OF THE STRUCTURED-OBJECTIVE RORSCHACH TEST

At the inception of the study the investigators' intention was to use the Structured-Objective Rorschach Test (SORT) throughout the study. However, after the initial testing of 118 Police Officers, it became impossible to obtain supplies and test materials. The sole source of these test materials was unable to be contacted further and assumed to be temporarily, if not permanently, out of business. The findings from those 118 men tested are presented here in Appendix I. Figure A shows the mean scores for the group of Police Officers hired in 1970. As the graph indicates a score of 2 is a low score for the particular dimension tested and a score of 6, a high score, with 3 being below average, 4 average, and 5 above average. In this test, which encompasses such items as "Moodiness," a high score is clearly not necessarily a desirable outcome. On many of the items it is undoubtedly preferable to be average, or possibly below average, depending upon the interpretation. In this case, the demands of police work should be the important factor to keep in mind.

As the table indicates no mean scores fell in the low, nor in the high category. Thus, the men, as a group, ranged from below average to above average on the various dimensions of the test. One section of the test related to possible reduction in efficiency due to "Low Generalization," "Perfectionism," "Poor Control," and "High Anxiety;" these results are presented in a separate figure. While most scores fall around the average range, a tendency to approach an above average score of 5 can be noted for "Structuring" (4.68), "Aggressiveness" (4.69), and "Consistency of Behavior" (4.67). A below average tendency (below 4) is especially evident in

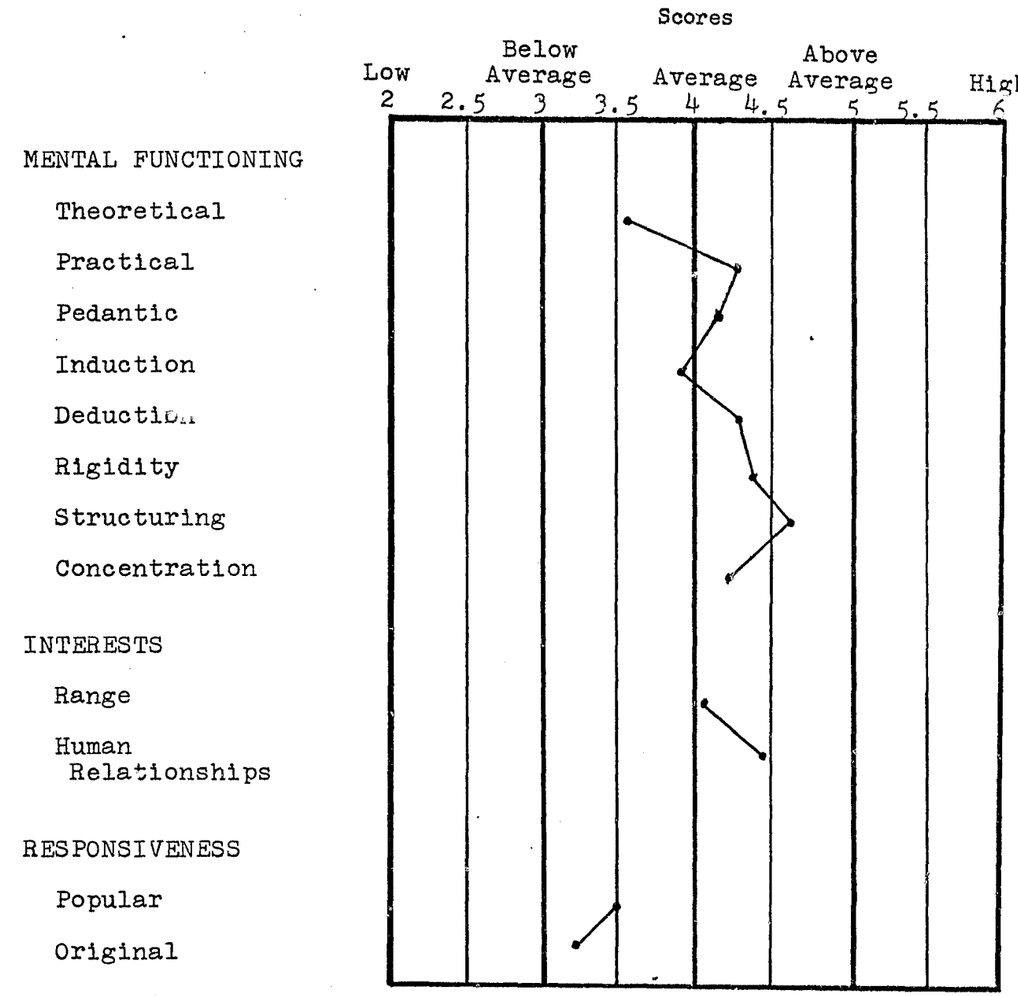


Figure A. Composite profiles of mean scores on the Structured-objective Rorschach Test, (N=118).

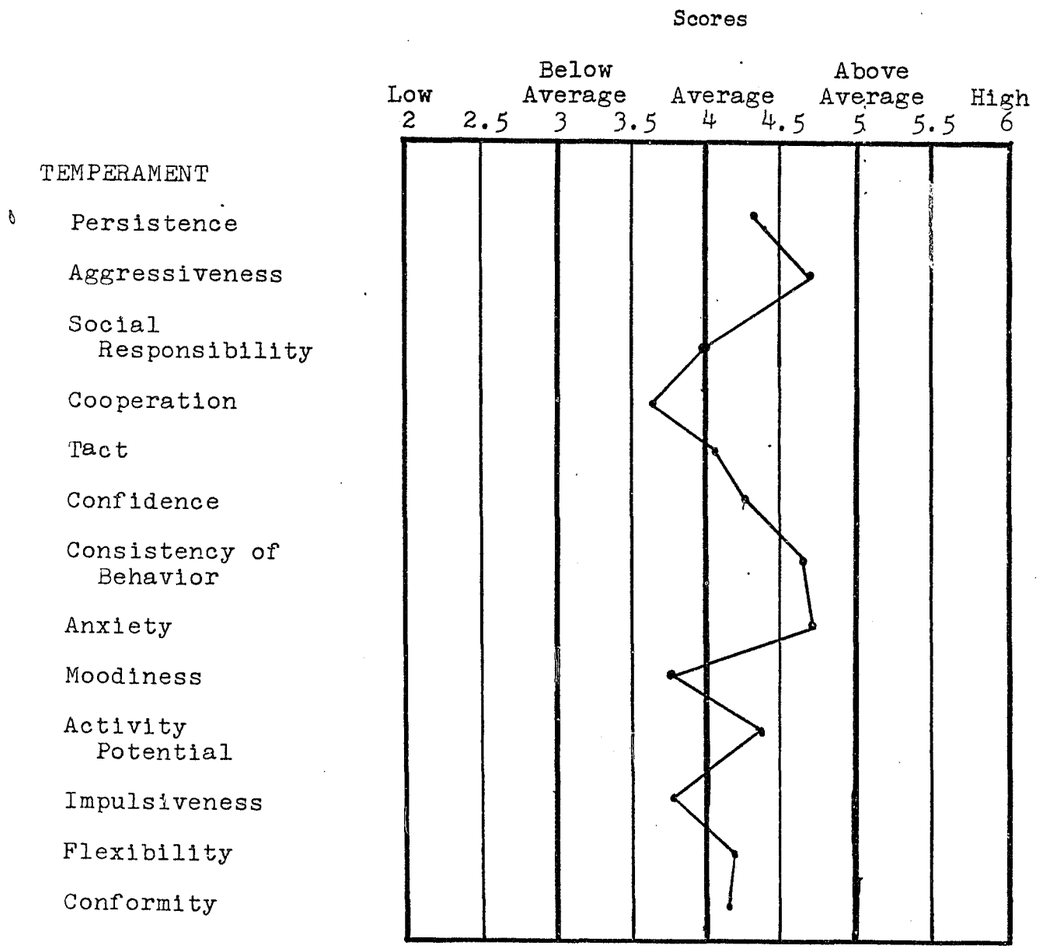


Figure A (continued). Composite profile of mean scores of the Structured-objective Rorschach Test, (N=118).

"Popular" and "Original" (3.24 and 3.50) and "Theoretical" (3.53). "Cooperation" is slightly below the average score of 4 at 3.64.

Figure B, Appendix I, shows the results from the SORT on the possible reduction in efficiency due to "Low Generalization," "Perfectionism," "Poor Control," and "High Anxiety." A combination of these factors can result in "Compulsivity." Almost one-third of the men tested had some possible reduction in efficiency due to "Low Generalization." Only 3 per cent of the 118 men had scores which indicated "High Anxiety." Fourteen per cent fell into the "Perfectionism" category and 19 per cent evinced some area of "Poor Control." Overall, somewhat over one-third (.36) of the men displayed some tendency toward "Compulsivity" which could result in reduction of efficiency.

The results of the SORT present some interesting areas for consideration. It may well be that "Structuring," which is defined as a facility for mental alertness and exactness in perception of reality (see p. 35 of Part I), is an asset in police work. It may be more desirable for Police Officers to be aware of conformity to the environment and its demands than those in differing occupations. Some "Aggressiveness" and "Consistency of Behavior" may likewise be interpreted as beneficial to efficient performance on the job, whereas high "Aggressiveness" would be a hindrance. "Popular" and "Original" responses are probably often inappropriate for many areas of police work. For example, an officer who stops a man for speeding might be very conscious of the "popular" response, and in identifying with the man, respond, "Of course, I understand. I'm sometimes in a hurry myself." An "original" response might entail some distinctive or unexpected behavior such as refusing to give tickets to someone who is driving his favorite make of car.

Structured-objective Rorschach Test

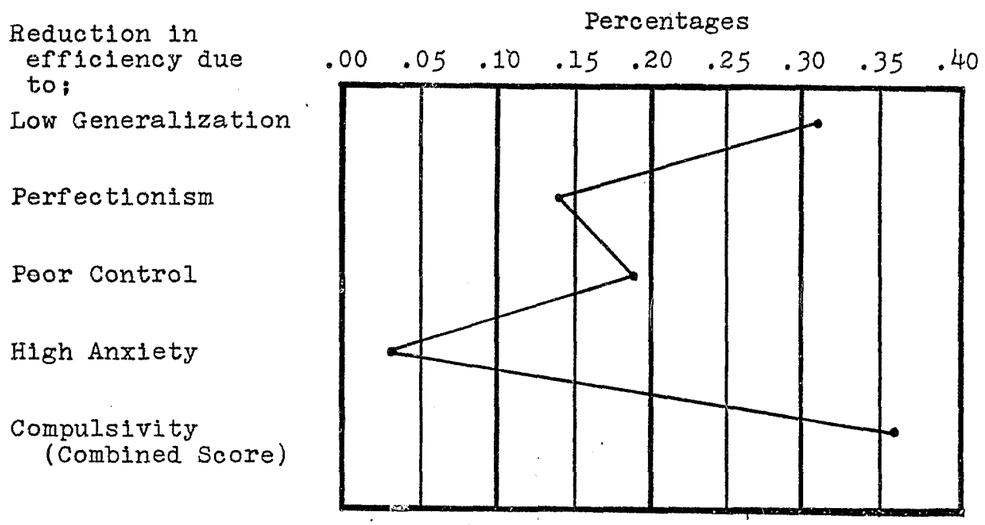


Figure B. The results for Police Officers who took the Structured-objective Rorschach Test (Spring 1970). Performance efficiency of these officers may be reduced by the factors indicated, (N=118).

Implications for training may arise in the tendency of those tested to display some possible reduction in efficiency due to "Low Generalization" and "Compulsivity." It appears that the men could be taught to generalize from experiences and use similarities between situations as a way of increasing successful performance. Some degree of "Compulsivity" may be important for certain kinds of police work, although generally not necessarily considered desirable. Training in this area might help differentiate an appropriate range of responses to specific situations, including the ability to "let go" as well as to persevere.

APPENDIX II

APPENDIX II

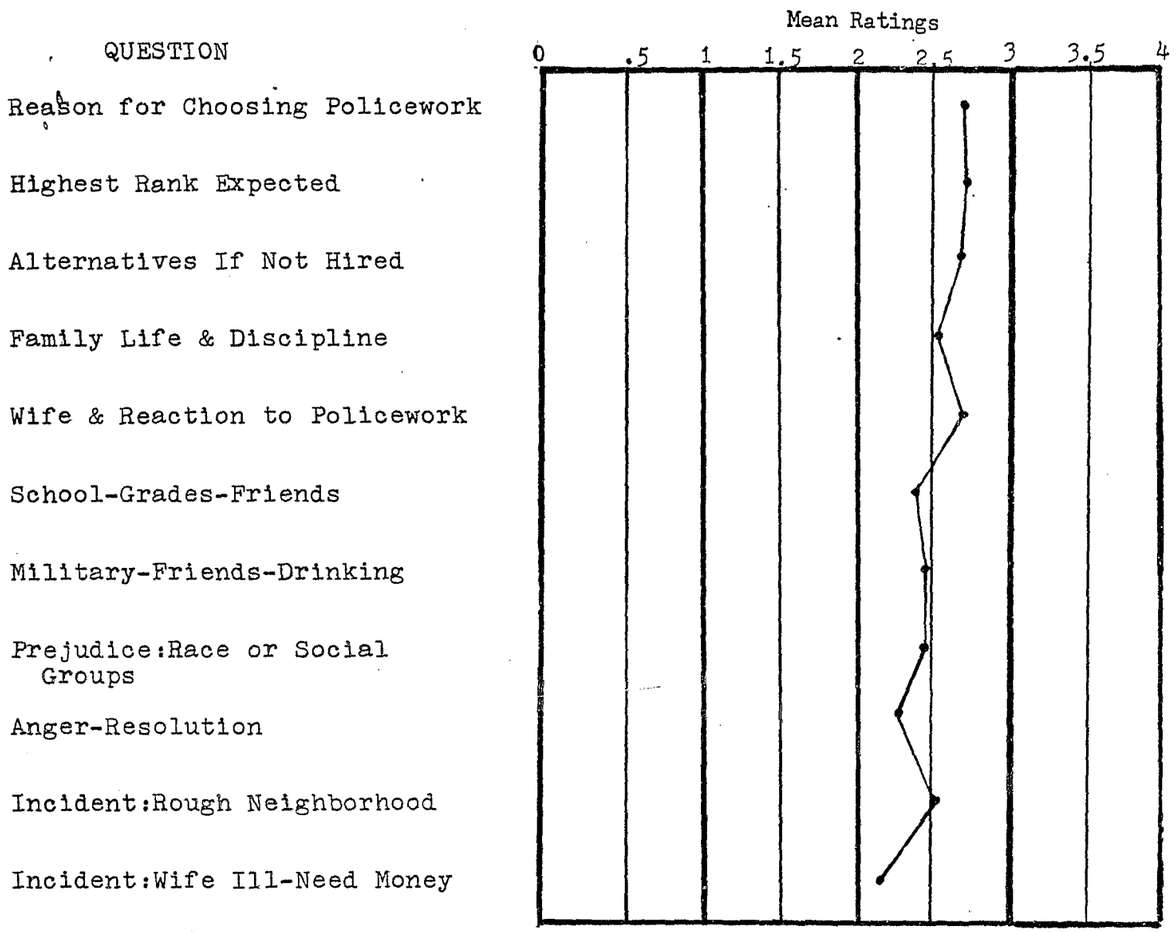


Figure C. Mean Ratings assigned by Psychologists to responses of 73 Police Officers who participated in Individual Structured Depth Interviews.

APPENDIX III

APPENDIX III

EXPLANATION OF MULTIPLE REGRESSION ANALYSIS

Correlation of one variable with another indicates how closely they covary. That is, are they positively related (as one increases so does the other) or are they negatively related (as one increases the other decreases). When one says related, however, this means statistically and not necessarily substantively. The increase of teachers' salaries may be highly correlated with the increase in liquor consumption, but this does not imply causality. Probably a third variable, a prosperous economy, accounts for the relationship.

The Pearson Product Moment correlation coefficient is the one most commonly used in statistical work. This study is based upon it. The coefficient varies from positive one (a perfect positive relationship) to negative one (a perfect negative relationship).

The correlation coefficient is often difficult to interpret in social science research. This is because, unlike the physical and life sciences, this data is elusive. Our measurement problems are legion. Correlations are seldom obtained which are near positive or negative one. Then, how does one interpret a correlation of say .50?

What one really wants to know is if he can assume that the sample correlation of .50 is representative of the true correlation in the population with a given probability that he might be wrong. Fortunately, there is what is called an F test which provides this information.

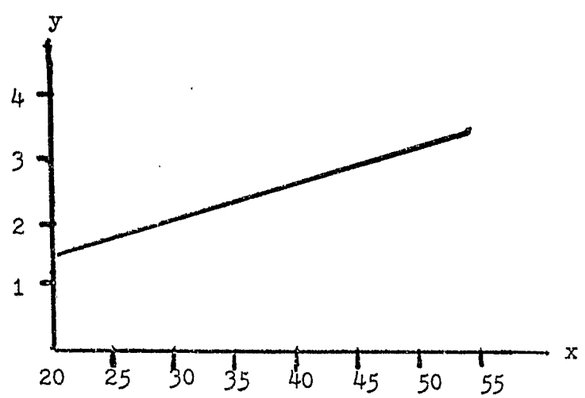
An F value for a correlation can be computed based upon the parameters in the problem. The null hypothesis one puts forth is that the correlation in the population is zero. A significant F value is the basis for rejecting this hypothesis. One can then say with a certain degree of confidence that

the true correlation in the population is equal to the correlation found in the sample.

The choice of a significance level is arbitrary. Usually the .05 or .01 level is used. When an F value is significant at the .05 level it means that this F value could be expected to appear by chance from similar samples of uncorrelated populations 1 out of 20 times. At the .01 level this F could be expected to appear by chance in 1 out of 100 sample correlations. This assumes two variables at a time are being correlated. If one variable is correlated with 99 others one would expect to get 5 significant sample correlations by chance even if the true relationship in the population were zero. Such relationships are impossible to interpret.

Regression

Least squares linear regression is a method for fitting a straight line to a set of data points. In the figure below it may be seen how the variable y (i.e., supervisors rating) is related to x (age). For each subject those two variables provide the coordinates for the point in space representing the subject. The straight line through the points is the best linear least square estimate of the points. Therefore, if one knows x but does not know y in another sample, the best guess of y based upon the first regression would be that point on the least squares line which corresponds with the age of the subject whose supervisor rating one wants to predict. The equation for this



is:

$$y = \alpha + bx$$

where y = the dependent variable, supervisor rating

α = the point at which the least squares line intercepts the y axis

x = the independent variable, age

When more than one independent variable is used, as in the regressions performed in this study, the equation becomes:

$$y = \alpha + b_1x_1 + b_2x_2 + b_3x_3 \ldots\ldots = b_nx_n$$

What is the usefulness of establishing this kind of relationship? This depends on what the researcher desires to know. The most important statistics which result from a regression are the multiple correlation coefficient (R), the b coefficients and the standard error of the estimate. Which one or ones are emphasized varies with the study.

The multiple R indicates the degree of association between the dependent variable and the independent variables. When squared (R^2) shows the proportion of the variance in the values of the dependent variable which can be explained (statistically) by concomitant variation in the independent variables. One must use discretion when running numerous independent variables against a dependent variable. The more variables w h ich are run, the greater the probability of finding the increase of liquor consumption and increase in teachers' salaries kind of relationship. The R^2 can always be increased. The important thing is to have solid substantive reasons for using the variables which increase it. There is no substitute for strong theoretical justification of independent variables.

The b coefficients indicate the average number of units increase or decrease in the dependent variable which occur for each unit increase in the independent variable. For instance, in $y = \alpha + .5x_1 - .3x_2$ for each unit

increase in x_1, while x_2 is held constant, there will be a .5 unit increase in y. For each unit increase in x_2 while x_1 is held constant there will be a .3 unit decrease in y.

In a multiple step wise regression in which the variables are not comparable the coefficients are standardized. This means that a unit increase in x_1 is equivalent to the standard deviation of x_1. Using the above equation

$$y = a + .5x_1 - .3x_2$$

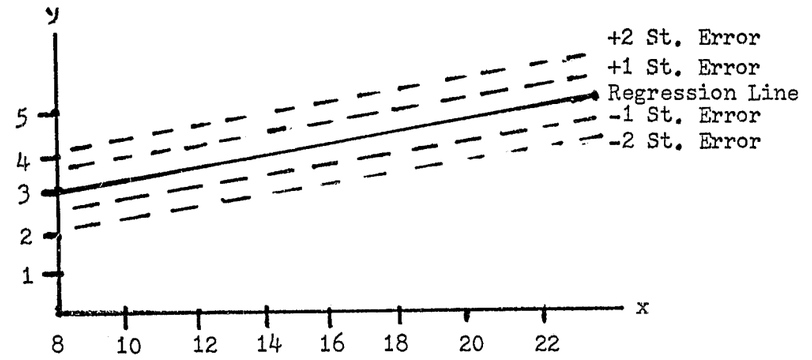
the appropriate interpretation is that for one standard deviation increase in x_1 holding x_2 constant, there will be a .5 standard deviation increase in y. For a standard deviation increase in x_2, holding x_1 constant, there will be a .3 standard deviation decrease in y. The standardization process permits the researcher to ascertain the relative importance of each independent variable for producing change in the dependent variable without concern for the various units of analysis of the independent variables. Standardization enables the discussion to take place in terms of standard deviation units. Of course, is is a simple operation to translate back to the original units of analysis.

What use are the coefficients? If a satisfactory relationship is found the coefficients can be of aid in reproducing that relationship in the future. If one determines what constitutes the ideal psychological-socioeconomic mix for a police recruit by regression then recruitment policy can be designed to obtain this type of individual. Alternatively, if a change in a variable (x_1) such as marriage increases a policeman's performance (y) the department can phase out single men. If the coefficients indicate that a manipulable variable is important to recruit success (years of schooling) this could be encouraged or provided.

The standard error of the estimate is also an important regression

statistic. It shows how nearly the estimated values of y, which fall on the regression line, agree with the actual observed values. It consists of the standard deviation of the differences between the observed and the estimated y values. It provides, then, a feeling for the dispersion of the points about the regression line.

The standard error is given in the units of the dependent variable. For large samples, greater than or equal to 30 cases, the following probability statements can be made. We can expect 2 out of 3 of the actual y values to fall within a confidence interval of the estimated y value ($\hat{y}$) $\pm$ one standard error with a probability of .67 and 19 out of 20 of the values to fall within a confidence interval of ($\hat{y}$) $\pm$ two standard errors with a probability of .95. (See figure)



Therefore, in the above figure if the standard error were .5, one could say that for an x value of 8 a .95 per cent confidence interval for y would be 3 ± 1, where 3 is the y estimate on the line and 1 is equal to two standard errors above and below the estimate. In one hundred samples one would expect the value of y to fall within the interval 95 times.

A similar interpretation is given the standard error of the regression coefficient. Above it was indicated that the regression coefficient b (in this case standardized) shows the amount of increase or decrease (depending

on its sign) which will result in the dependent variable for every unit change in one independent variable, holding the other independent variables constant. If the sample coefficient is .73 and its standard error is .07, certain probability statements can be made with respect to the true b coefficient in the population. It lies within the range $.73 \pm .07$ with a probability of .67. It lies within a range of $.73 \pm .14$ with a probability of .95.

Discussion of Output

To some degree the above discussion should be an aid to understanding why the regression output is not helpful in predicting to either good supervisor ratings or presence on the Police Department.

Each regression is displayed in a similar manner to that found on page 114 of Psychological Assessment of Patrolman Qualifications in Relation To Field Performance: LEAA Project #046. All the variables listed are significant with respect to the regression equations.

One may wonder how the input variables to the regression could be significant, while the end product is insignificant? The answer lies in the stepwise procedure. The program inserts that variable at each stage in the regression which has the highest partial correlation with the dependent variable and the highest F ratio. However, in calculating the F ratio the program does not account for the fact that the variable being entered may be chosen from a group of 60 or 70. Chance correlation may then play a role. Many of the variables are only slightly significant and contribute very little to the R^2. As a result the predictive capacity of the equations is negligible.

APPENDIX IV

Form No. 44, Rev. 2/62

APPENDIX IV

Department HONOLULU POLICE

Division

Evaluation Period: From To

Employee's Name Pos. No. Class Title

Performance Factors	Excellent	Exceeds Requirements	Meets Requirements	Below Requirements
1. Quantity of Work				
2. Quality of Work				
3. Attitude toward Work				
4. Relationship with People				
5. Supervision of Employees				

(To be used only in evaluating supervisory and administrative personnel)

COMMENTS

Recognition for superior work; suggestions for improving performance.

Certificate of Evaluator

I hereby certify that this performance evaluation constitutes my best appraisal of the service of the employee based on personal observation and knowledge of his work for the evaluation period indicated.

Signature Class Title Date

Certificate of Employee

I hereby certify that this performance evaluation has been discussed with me.

Signature Date

Certificate of Reviewer

I hereby certify that I have reviewed the performance evaluation of this employee.

Signature Class Title Date

(See reverse side for instructions)

APPENDIX V

APPENDIX V

INSTRUCTIONS TO SUPERVISORS FOR PAIRED COMPARISON METHOD

1. This deck of IBM cards is based on the roster obtained from Captain Naylon. Each card contains the names of two men, and the rating deck consists of all possible pairs of names on your list.
2. Try not to consider what you may have heard others say about these men. Rather, base your judgments upon your own experience with them.
3. Consider the two men on each card, and ask yourself the following question: "Which of these two men is the better police officer in terms of performance on the job?"
4. When you have made your choice, draw a circle around the number in front of the name of the man that you feel is doing the better job. Make a choice for <u>each</u> card and circle only <u>one</u> number on each card.

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BIBLIOGRAPHY

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