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STRACT

This is an illustration of the use of various asures in particular elements, including self-descriptive devices, l of which are designed to emphasize most precise measurement of tential, rather than already developed abilities and skills. See so TM 001 163-165 for further information on the job element thod, and use of the J-Scale. (Author/DLG)

Enc. #4

Use of Measures of Potential and Motivation in a Promotion Examination From Laborer-Type Positions to Gardener-Trainee Park Service

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Use of Measures of Potential and Motivation in a Promotion Examination From Laborer-Type Positions to Gardener-Trainee Park Service

PART ONE - INTRODUCTION

I. PURPOSE

We are making use of new measures of potential and motivation to evaluate applicants in the elements of positions to which they seek advancement. The purpose of this report is to analyze results of the second of our cooperative studies with agencies in the use of these measures. (The first study is reported in Report on New Tests of Reading, Mathematical Abilities, and Mechanical Information for Apprentice and Trainee Positions, September 1968.)

In this examination, applicants were evaluated on each element by using combinations of programmed instruction, aptitude tests, interest and motivation checklists, special supervisory ratings and information in personnel folders.

The following summary of the promotion examination, prepared by Roy S. Ference, Bureau of Training, U. S. Civil Service Commission, appeared in the Federal Trainer, Vol. 1, No. 1, August 1969:

> Interior's National Capitol Region, National Park Service, the second pioneer in this new approach, designed a program to train gardeners and tree workers. Using the new selection techniques stressing potential and motivation, 23 former laborers are now learning a trade that will pay them $900 to $1500 more per year. All had been laborers all their lives; 5 were 40 or older; 4 had no high school; and 19 are minorities. In the classroom they are learning the theory and principles of plant growth and on the job they are following the seasons in applying that knowledge while beautifying our capitol. The greatest feedback from Parks' program is that the technique of measuring a man's potential and interests in a trade, rather than his previous experience and achievement, is a good, if not better, predictor of how well he will do. Of great interest is that the few men who have left the gardener program were indeed at the lower scale in terms of total interests and motivation for the trade.

The promotion examination was conducted in the agency by Mr. Edward Jylka, who developed the crediting plan and supervisory rating forms, instructed the rating panel in job element procedures and furnished the data for the

present analysis. The training program itself was conducted by Mr. James Lindsay of the agency.

II. CREDITING PLAN

The crediting plan was based on the following elements, as given in Handbook X-118C for jobs like Gardener-Trainee, where ability to learn and advance is necessary: Reliability and Dependability, Job Aptitude and Interest (so worded, instead of Shop Aptitude and Interest in the standard since it is not in a shop), Following Directions, Ability to Work as Members of a team and Dexterity and Safety.

As an example of the way in which various kinds of evidence were used in the crediting plan, following is the crediting plan for the screen-out element, Reliability and Dependability. Note that in the job element system, the screen-out element is a summary of all the elements in the standard. In the present instance, Reliability and Dependability means the extent to which the employee can be depended upon to do the job. The standard provides that potential ability is required in particular in the element--Job Aptitude and Interest:

Element 87 (Reliability and Dependability)

Evidence of Ability	Point Values
Superior Ability	
Able to render continuous and dependable service in situations relevant to the kind of position applied for (for example, a person with 2 years or more in his most recent and related positions with no evidence of poor attendance or other signs of unreliability).	4
Satisfactory ability	
Demonstrated dependability in situations pertinent to the job applied for, with no negative evidence (or, otherwise intermediate between 2 and 4 points).	3
Acceptable ability	
No seriously derogatory information.	2

This is the screen-out element. Note that meeting this element requires showing sufficient Job Aptitude and Interest. Point values below 2 disqualify the applicant.

Reliability and Dependability (Continued)

Suggested sources for evaluative purposes can be:

1. Reading test
2. Ability and Interest Questionnaire Scores, and answer to the questionnaire
3. Supervisor's appraisal
4. Employee's Official Personnel Folder
5. Demonstrated performance by the Tree Worker Helper-Trainee applicant
6. Any other factors that the Evaluation Committee feels appropriate

Important Note:

Written tests may not be used:

- as sole indicator of ability in more than two elements

- as a sole indicator of ability in the screen-out element.

III. SUPERVISORY APPRAISAL OF EMPLOYEE FOR PROMOTION

An appraisal form was developed to secure information from supervisors. Each employee was rated by his own supervisor and could, if he wished, ask to have a second supervisor rate him. The supervisory appraisal included the following categories: Reliability and Dependability, Following Directions, Ability to Work as a Member of a Crew, Safety and Dexterity, and Capabilities or Potential.

a. Reliability and Dependability

For the purpose of the supervisory evaluation, reliability and dependability in the appraisal applied only to past employment. This would, therefore, be only one part of the appraisal that would affect rating of the screen-out element even though it had the same title. Other categories, particularly capabilities or potential, were also considered in rating the screen-out element.

The category, Reliability and Dependability, was rated in three phases. The first phase was failing to report for work without first obtaining official leave, with categories of - -

Never
No more than once in 6 months
No more than once a month
No more than once a week
More often than once a week

The second phase was frequency of leaving job before quitting time without prior approval, with the same categories as above.

The third phase was a judgment, "In your opinion, the applicant is - -

Dependable and reliable; or
Not dependable and reliable"

b. Following Directions

This was rated in the following categories: Often gets directions which change what he is doing, and he does not have trouble following them; sometimes gets new directions and no trouble; simple directions and no trouble; has to have simple directions repeated.

c. Ability to Work as a Member of a Crew

This was rated in terms of the following categories: Experience in cooperating where dangers are constant; experience in work needing close cooperation; experience in cooperating in the regular run of work; no experience where he had to cooperate.

d. Safety and Dexterity

This was rated in terms of the following categories, not necessarily a continuous scale: Has observed and reported dangerous conditions; never had an accident, where he was at fault, with equipment on job; no such accident in last 2 years; more than one such accident in last 2 years.

e. Capabilities or Potential

This was rated in two phases. First, the supervisor checked whether the applicant had or did not have "the potential and capabilities to learn the knowledges and develop the skills required for target position." Then, the supervisor made a summary rating:

Outstanding
Excellent
Satisfactory
Unsatisfactory

IV. APTITUDE AND INTEREST BLANK AND TESTS

A. Aptitude and Interest Blank

Use was made of a new kind of aptitude and interest blank that had been developed through the cooperative efforts of:

Dr. Kenneth R. Brown - PMRDC, Standards Division
Sally Ann Jones - PMRDC, Standards Division
Ernest S. Primoff - PMRDC, Standards Division
Jack McCourt - BRE
Thomas J. Portelance - BRE

Behavioral evidences in past experience, training, or hobbies which would demonstrate aptitude and interest for Gardener-Trainee were collected. Most of the items were selected from "Questions on Your Trades Interest" (CSC Form 668). Additional items were added which had special relevance to gardening.

For ease of competitors, items were grouped under the following categories: Use of Tools; Use Strength; Work Outdoors; Teamwork, in a Crew; Work With Plants or Trees; Mechanical Work; Careful and Reliable Work; Numbers and Arithmetic; and Worked Under Special Conditions. For example, items under Use of Tools included:

Cut wood with a saw
File a piece of metal
Use a screw driver

Items under Work With Plants or Trees included:

Rake leaves
Pull weeds
Water grass
Prepare earth for planting

Items for Worked Under Special Conditions included:

Work where it's damp
Work in a narrow space, in a cramped body position

Before the applicant filled out the blank, he listed his jobs on a numbered sheet and his past training in mechanical, outdoors, gardening or arithmetic, on a lettered page. Then, as he began to fill in the first category on the page, "Use of Tools," he was told to write the Job Number for each job and the Course Letter for each training where he used or learned about tools. He was also to list any hobbies where he used tools. Then, for each evidence of use of tools, such as "Cut wood with a saw," he was to mark one or more

of the letters--A, B, C, D--to show his degree of ability - -

A. I have little or no training or experience in this
B. I have had study or training in this
C. I have done this in work or hobbies
D. I feel I can do this well enough to make a living, without more training

Then, he was to show his interest and willingness by circling L or D to show that he would - -

L - Like doing it, or
D - Dislike doing it

and he was to circle W or U to show that he would be - -

W - Willing to do it, or
U - Unwilling to do it

The competitor followed the same procedure with the items in each of the categories. After the applicant completed all the items through the last category, "Worked Under Special Conditions," he answered eight multiple choice questions to show his safety and attendance record.

B. Written Tests

1. Test of potential for trades reading

A reading test was prepared in accordance with the principles described in Report on New Tests of Reading, Mathematical Abilities, and Mechanical Information for Apprentice and Trainee Positions, September 1968. The paragraphs concerned gardening. As indicated in the Crediting Plan for the element Reliability and Dependability, the reading test was considered as one evidence in the rating of this element. It was also used as one evidence in evaluating Job Aptitude and Interest, and a minimum score was considered as one evidence that the applicant should receive at least one credit in Following Directions.

2. Test of potential for trades arithmetic

A test of potential for using arithmetic in gardening was developed, based on the principles discussed in the above mentioned report. Questions began at a lower level than those used for apprentice, and included problems in adding, subtracting, multiplication, dividing and use of fractions. The arithmetic test was used as one evidence in evaluating job aptitude and interest.

3. Tests 100A and 100E

As provided in Handbook X-118C, Tests 100A (Gross Dexterity) and 100E (Following Oral Directions) were used as one indication of ability.

Test 100A, Gross Dexterity, was used as one evidence in evaluating dexterity and safety. Test 100E, Following Oral Directions, was used as one evidence in evaluating following directions.

C. Performance Test of Tree-Climbing

Some of the jobs demanded work in trees. To qualify for these jobs, applicants had to apply for and pass a tree-climbing performance test. The test was evaluated by two raters in terms of reaction to height, demonstrated agility, demonstrated stamina, general attitude during performance evaluation, examiner's opinion of employee's reaction to lifting power saw, and other items the examiner might feel to be necessary. Each item was rated Very Satisfactory, Satisfactory, or Unsatisfactory.

V. NUMBERS OF EXAMINEES AND OF ELIGIBLES

Fifty applicants completed all stages.* Twenty-six of the applicants met the screen-out element as described in the rating schedule, but two of these did not receive an average of 2 credits in each element, as required in job element examining.** Thus, 24 passed the examination and each was selected for promotion.

*One additional applicant completed all stages, but withdrew voluntarily before being rated, ostensibly for unwillingness to accept a lower salary as trainee than his present salary. Two additional applicants were rated by their own supervisors, but failed to complete aptitude and interest blanks or tests.

**One feature of the examination was that applicants had been notified in advance that they would need to have a driver's license, and possession of a driver's license was made part of the screen-out element. Five applicants were screened out because they did not have the license.

PART TWO - RELATIONSHIP BETWEEN THE VARIOUS EVIDENCES AND SELECTION

I. THE EXTENT TO WHICH THE JOB-ELEMENT RATING MAY BE CONSIDERED AS A CRITERION

The job-element ratings were given by an evaluation committee, the members of which took their task very seriously, especially because the new positions would be involved in the beautification program of the Nation's capitol. The committee included the head of the Park Service Regional Office. Each applicant's complete record was reviewed in detail, and members of the committee contacted supervisors and other agency officials who were knowledgeable about competitors whenever there were doubtful points.

Since the various evidences in the examination were appropriately expected to have an effect on the ratings, relationships between particular evidences and final examination rating would be higher than if the ratings had been given independently of the particular evidences. Thus, any error in a particular evidence might be reflected by a corresponding error in the job-element rating.

Nevertheless, since the job-element ratings represent a judgmental process performed by competent agency officials, the extent to which particular pieces of evidence are in conformity with the final judgment of the panel is an indication of the relative merit of the evidence. This is particularly important with respect to the aptitude and interest blank, which, as a self-report, tends to be looked upon with suspicion by officials who see it for the first time.

II. SUPERVISOR'S RATINGS

A. Reliability (See Table I, appendix)

As indicated in Table I, the supervisory appraisal of the category Overall Ability had a reliability of .62 and appeared to be satisfactory as an indication of general satisfaction by a supervisor with the work of the applicant, at least in the laboring-type position. Table I also furnishes reliabilities of the other categories in the supervisory appraisal.

B. Effect of Supervisory Ratings on Selection

In the few cases where both supervisors indicated that the employee was not satisfactory in an important factor, he was not selected. These instances are shown in Table III in the appendix. Thus, the supervisory rating had an effect on the screen-out element as a negative influence. Although presence of positive words in the comments by the supervisor

would not have a positive relationship to selection, presence of negative words in comments by the supervisor correlated -.25 with selection, being in the expected direction.

On the other hand, high supervisory ratings did not have in themselves an important positive effect on selection vs. non-selection. As indicated by the results at the beginning of Table III in the appendix, correlations between the supervisory ratings and selection (counted as 1) vs. non-selection (counted as 0) were actually negative. Presence and number of positive words in the comments were actually negative with selection.

C. Relation Between Applicant's Efforts in Getting Supervisory Ratings and Selection

Each applicant had been permitted to either ask his own supervisor to fill in an appraisal form or have the personnel office ask the supervisor.

An interesting finding was that 35 applicants who themselves asked their own supervisor to fill in an appraisal form and gave an additional supervisor's name for an additional rating, had the greatest percent selected: 49 percent.

Seven who themselves asked their own supervisor but did not furnish another supervisor's name had 43 percent selected. Of eight who did not ask their own supervisor but did name a different supervisor, only one was selected: 13 percent. These results may indicate that an applicant's willingness to ask for references is related to how well he is thought of in the organization. (Two applicants did not respond to a request to indicate their preferences as to how they were to be rated.)

III. APTITUDE AND INTEREST BLANK AND TESTS

A. Effect of Aptitude and Interest Blank on Selection

Self-rating in terms of degrees of ability on the various evidences correlated .516 with selection. Self-rating in terms of interest and willingness correlated .514 with selection. (See Table III, appendix.)

B. Written Tests

Correlations with selection were .701 for the test of potential for reading, .539 for the test of potential for shop arithmetic, .494 for Test 100A, Gross Dexterity, and .565 for Test 100E, Following Oral Directions.

IV. RELATION BETWEEN ITEMS IN THE PERSONNEL FOLDER AND SELECTION

Years of schooling correlated .47 with selection. Age correlated -.42 with selection. Length of experience in the Park Service correlated -.28 with selection, but only one applicant had less than 1½ years of experience, and he was not selected. Length of experience in the Federal service correlated -.21, and total length of experience correlated -.33.

The amount of residual leave was correlated negatively with selection, probably because older people tended not to be selected and had more leave. On the other hand, very small amounts of residual leave were related to non-selection. Thus, of eight employees who had 8 hours or less of either annual or sick leave, six were not selected; and one of the two who were selected had excused use of leave due to automobile accident.

V. INTERCORRELATIONS

Intercorrelations among all measures for all applicants who took particular measures are given in Table IV-A, appendix. Results may differ from tables restricted to sets of measures.

PART THREE - RELATIONSHIPS BETWEEN VARIOUS EVIDENCES AND FINAL RATINGS

The job-element procedure clearly defines two aspects of the rating process:

> Screening applicants who are not at least barely acceptable
>
> Rating acceptable competitors in terms of potential for superior performance

Part Two dealt with the screening function. This Part deals with the relationship between various evidences and evaluation of superiority among those who are at least barely acceptable.

I. ANALYSIS OF EXTENT TO WHICH EVIDENCES AFFECTED SCREEN-OUT AND FINAL RATING

Of the 50 applicants who completed all forms and tests, 26 passed the screen-out element. The 26 who passed the screen-out element were rated by the panel on the following five elements: Reliability and Dependability (screen-out); Job Aptitude and Interest; Following Directions; Ability as a Member of a Team; and Dexterity and Safety. Relationships between the various evidences and the total credits on the elements given for these 26 applicants are indications of the relation between the various evidences and judgments of relative superior potential.

II. DIFFERENCE IN EFFECT OF EVIDENCES ON SELECTION AND ON RATING AFTER MEETING SCREEN-OUT

A. Data

Table A on the next page repeats from Table III the correlation between various evidences in the examination and selection for all 50 applicants, and shows the correlation between the same evidences and number of credits on the elements for the 26 who passed the screen-out.

TABLE A

Correlations Between Various Factors and Judgments of Rating Panel for Screen-Out and for Crediting After Screen-Out
(Table IV-B at the end of this report shows comparative means and standard deviations)

Factor	Correlation with selection-N = 50	Correlation with No. of credits after passing screen-out - N = 26
Supervisor's overall rating* *(N is less because 1 supervisor didn't rate this)	-.1780	+.3253
Self-rating ability	+.5162	+.3600
Self-rating, interest	+.5135	+.6462
Test of potential for reading	+.7006	+.5453
Test of potential for shop arithmetic	+.5387	+.2204
Test 100A	+.4938	+.4952
Test 100E	+.5653	+.5308
Residual sick leave	-.1524	-.3694
Residual annual leave	-.2162	-.1693
Years of schooling	+.4652	+.3985
Age	-.4195	-.2371
Park Service experience	-.2780	-.3311
Federal experience	-.2132	-.3571
Total experience	-.3339	-.0521

Whereas the supervisory rating had only a screen-out effect at the very bottom for selection, as indicated before, it had a positive effect on the number of credits for those who passed the screen-out.

The effects of years of schooling, test of potential for reading, and possibly the test of potential for shop arithmetic, seemed to have less effect on the number of credits than on selection vs. non-selection. Probably, certain educational factors, particularly in the arithmetic test, which is related only in a general way to the work of Gardener, tended to become exhausted after affecting the screen-out. On the other hand, certain indications which may have been less prominent in the screen-out process tended to increase in importance after the "barely acceptable" factors were taken care of in the screen-out process. The self-rating in interest rose to be the factor showing highest correlation with panel judgment: .65. Test 100A showed no decrease and Test 100E showed only a slight decrease.

B. Analysis of Education Effects

The following figures may help to show what happened as an effect of the screen-out process. The figures show correlations between years of education, and the tests and self-rating.

TABLE B

Correlations Between Years of Education and Tests and Self-Ratings

Test or Self Rating	Correlation with Years of Education for Entire Group N = 50	Correlation with Years of Education for Those Who Met Screen-Out N = 26
100A	.4277	.4807
100E	.4811	.3731
Potential for reading	.6560	.2643
Potential for shop arithmetic	.5266	.2472
Self-Rating in ability	.4728	.1714
Self-Rating in Interest	.4685	.0416

The above table indicates that we may separate two aspects of the effects of education. One aspect which affected Test 100A especially was not affected by screen-out of applicants. In fact, screening out the applicants

(and incidentally reducing the standard deviation of Test 100A from 17 to 13 as shown in Table IV-B at the end of this report) seemed to eliminate factors not common to this test and education, thus raising the correlation. It will be noted Test 100A correlates very high with dotting tests, which Spearman had found to be among the best indicators of his general factor. The first aspect of education is that aspect which remains after the application of a screen-out, a screen-out such as used in the present examination.

A second aspect of education appeared, which was affected by the screen-out. Whereas the first aspect was related to Test 100A, this second aspect seemed to be in common with tests like Potential for reading and Potential for arithmetic and with self-ratings of ability and interests. The screen-out process, by eliminating the effect of this second aspect, reduced the correlation between the self-rating in interest and years of education from .47 to .04.

The second aspect of years of education seems to have been affected in the screen-out process. If the judgment of the rating panel can be accepted as satisfactory, this may mean that factors such as our tests of potential and our self-ratings are measures of the aspect of education which should be considered in screen-out for certain trainee jobs.

Again, if the judgment of the rating panel is considered to be satisfactory, the test of potential and self-rating blanks are still useful in providing ranks after screen-out. In fact, the highest correlation with the final panel rating for those who passed the screen-out element is .65 for the self-rating in interest which correlated only .04 with the residual effect of education in the screened-out group (which we have termed the first aspect of education).

A follow up study and studies in other occupations will be conducted to indicate whether it is safe to ignore the first aspect of education and, if it is necessary to consider it, how much weight we should give to tests in which this aspect predominates.

III. Intercorrelations of Various Measures Which Affect Particular Element Domains

For some of the element domains, it is possible to correlate relevant data from different sources: Supervisory appraisals; self-ratings; and sometimes tests.

Results are shown in Table V, at the end of this report, in three parts, as follows:

Part 1: Element Domain - Aptitude and Interest. (Showing intercorrelations of all measures for the group who passed the screen-out.) Measures of aptitude and interest include: Supervisory appraisal of (overall) capabilities or potential, Total self-rating in ability, Total self-rating in interest and willingness; Test Scores; Schooling; Examination rating of element Aptitude and Interest.

Part 1 of Table V shows the intercorrelations of all tests and self-ratings for those who passed the screen-out. Note that all correlations are for only the 26 employees who passed the screen-out.

The measures correlating highest with the examination rating for the element Aptitude and Interest are: Total Self-Rating in Interest and Willingness (.69); Test 100E--Following Oral Directions (.62); Total Self-Rating in Ability (.63); and Test of Potential for Reading (.52).

Part 2: Element Domain - Following Directions. Measures of Following Directions include: Supervisory appraisal of Following Directions, Self-rating of ability in items 46-57 on the Self-Rating Form (see below); Self-Rating of Interest in these items; Total score on each test; and Examination Rating of Element Following Directions.

Items 46-57 on the Self-Rating Form cover the category Carefulness, and seemed more related to Following Directions than items in other categories of the form. Items 46 to 57 are shown under the table.

Part 2 of Table V shows the intercorrelations of the various measures. The intercorrelations of the tests are not given since they appear in Part 1 of Table V.

Two applicants had very low self-rated ability and interest scores in items 46-57. In order to see the extent to which correlations were unduly influenced by these two cases, correlations are given for both the entire group who passed the screen-out, and for the group after eliminating the two cases:

The highest correlation with the examination rating on the element Following Directions was for Test 100E--Following Oral Directions (.70); next were Reading Test (.48); Test 100A--Gross Dexterity (.47); Self-Rating of Interest in items 46-57 (.36); Supervisory Appraisal--Following Directions (.31); and Self-Rating of Ability in items 46-57 (.24).

Part 3: Element Domain - Teamwork. Measures of teamwork include: Supervisory appraisal of working in a crew and self-rating of ability in three teamwork items on the self-rating form. These items are shown under the table. Tests do not seem appropriate for this element, and are not shown in the table. The correlations with the examination rating for the element Teamwork were .66 for the supervisory appraisal of Working in a Crew, .23 for self-rating of interest in the three relevant teamwork items, and .04 for self-rating of ability in the three teamwork items.

IV. DETAILED ANALYSIS OF RELATIONSHIPS BETWEEN ELEMENT RATINGS AND SUPERVISORY APPRAISALS

Each element rated by the panel corresponded to a particular category on the supervisory appraisal form. The correlation between the supervisory appraisal and the element rating has been given above, for three of the elements.

Because of the importance of supervisory ratings in promotion programs, it is useful to note not only the correlation between the supervisory appraisal and the corresponding element rating but also the actual scatter-plot to see the way in which the relationship holds. This kind of analysis is made for each of the elements, in Table VI in the appendix.

PART FOUR - INFORMATION SECURED AFTER THE EXAMINATION

I. ANALYSIS OF NEGATIVE RELATIONSHIP BETWEEN SUPERVISORY RATINGS AND SELECTION, AS AFFECTED BY ASSIGNMENT

Before the examination was held, the rating panel had expected that selection would be influenced to a great extent by supervisory ratings. As seen in Part Two, the supervisory ratings did not have a positive effect on selection, aside from the elimination of those applicants with the lowest supervisory appraisal.

Informal discussions with raters indicated that job assignment might have had an effect on supervisory appraisals which was balanced out by the rating panel during their careful evaluation.

For example, a security check is made of employees assigned to sensitive locations. It is possible that even though assignment of applicants is not made on the basis of ability, and the security check would have to do with eliminating the poorest employees rather than selecting the best, the fact that a security check is made might influence the supervisor to rate an employee high even though there would be no evidence supporting a high degree of ability.

Among the 49 employees appraised for overall capability or potential by the supervisors, job assignment correlated .4214 with supervisory rating but -.2188 with selection. The scatter-plots are shown in Table VII in the appendix. For those who met the screen-out, the correlation with job assignment was +.2894 for panel rating (n = 26) and +.1234 for supervisory appraisal (n = 25).[1]

[1] One applicant was not given an overall supervisory appraisal. Among the 25 who were given appraisals and who met the screen-out, the correlation with job assignment was .2685 for panel rating.

II. MINORITY STATUS

A. Selection

Among the 50 competitors who completed all papers, 42 were Negro, 8 white. Of the 42 Negro competitors, 19 were selected. Of the 8 white competitors, 5 were selected.

B. Job-Element Examination Rating

The total credits assigned by the rating panel to the 26 competitors who met the screen-out were as follows (cumulative percents in parentheses):

	Total Credits	Negro	White
	17	4 (19%)	--
	16	--	1 (20%)
	15	5 (43%)	--
	14	1 (48%)	2 (60%)
	13	2 (57%)	1 (80%)
	12	2 (67%)	--
	11	2 (76%)	--
(required for passing)	10	3 (90%)	1 (100%)
	9	1 (95%)	--
	8	--	--
	7	1 (100%)	--
	Total	21	5

C. Supervisory Rating of Evidences Considered by the Rating Panel

1. Overall supervisory appraisal

The overall supervisory appraisals of capabilities and potential were as follows (cumulative percents in parentheses):

Average Supervisory Appraisal	Selected		Not Selected	
	Negro	White	Negro	White
4.0	--	--	3 (13%)	1 (33%)
3.5	1 (6%)	--	1 (17%)	1 (67%)
3.0	10 (61%)	2 (40%)	12 (70%)	--
2.5	4 (83%)	2 (80%)	3 (83%)	--
2.1	1 (89%)	--	--	--
2.0	2 (100%)	1 (100%)	4 (100%)	--
1.5	--	--	--	1 (100%)
No. Appraised	18	5	23	3
No. Not Appraised	1	--	--	--
Total	19	5	23	3

2. Total interest score, on Aptitude-Interest Blank

The following table is for the aptitude-interest scores (self-ratings) on the Aptitude-Interest Blank for all applicants who filled in the blank (cumulative percents in parentheses):

Interest Score	Negroes	Whites
160-164	1 (2%)	--
155-159	3 (9%)	1 (13%)
150-154	2 (14%)	--
145-149	4 (23%)	--
140-144	4 (33%)	3 (50%)
135-139	2 (37%)	1 (63%)
130-134	--	--
125-129	1 (40%)	1 (75%)
120-124	3 (47%)	1 (88%)
115-119	4 (56%)	--
110-114	1 (58%)	--
105-109	--	--
100-104	1 (60%)	--
95-99	2 (65%)	1 (100%)
90-94	1 (67%)	--
85-89	--	--
80-84	2 (72%)	--
75-79	1 (74%)	--
70-74	1 (77%)	--
65-69	--	--
60-64	2 (81%)	--
0-59	8 (100%)	--
Total -	43	8

3. Total ability score, on Aptitude-Interest Blank

The following table is for the total ability scores (self-ratings) on the Aptitude-Interest Blank for all applicants who filled in the blank (cumulative percents in parentheses):

Ability Score	Negroes	Whites
210-219	2 (5%)	--
200-209	--	--
190-199	1 (7%)	1 (13%)
180-189	2 (12%)	--
170-179	--	--
160-169	4 (21%)	--
150-159	--	4 (63%)
140-149	2 (26%)	1 (75%)
130-139	6 (40%)	1 (88%)
120-129	5 (51%)	--
110-119	1 (54%)	--
100-109	2 (58%)	--
90-99	4 (68%)	--
80-89	2 (72%)	--
70-79	3 (79%)	--
60-69	--	1 (100%)
50-59	1 (82%)	--
40-49	--	--
30-39	2 (86%)	--
20-29	2 (91%)	--
10-19	2 (96%)	--
0-9	2 (100%)	--
Total -	43	8

4. Test of Potential for Reading

The following table is for scores on the test of Potential for Reading for all applicants who took the test blank (cumulative percents in parentheses):

Reading Test Score	Negroes	Whites
25	3 (7%)	2 (25%)
24	3 (14%)	1 (38%)
23	6 (28%)	--
22	4 (37%)	1 (50%)
21	4 (47%)	--
20	2 (51%)	1 (63%)
19	1 (53%)	--
18	--	--
17	1 (56%)	--
16	1 (58%)	1 (75%)
15	1 (60%)	1 (88%)
14	1 (63%)	--
13	--	--
12	1 (65%)	--
11	3 (72%)	--
10	1 (74%)	--
0-9	11 (100%)	1 (100%)
Total -	43	8

5. Test of Potential for Arithmetic

The following table is for scores in the Test of Potential for Arithmetic for all applicants who took the test (cumulative percents in parentheses):

Arithmetic Test Score	Negroes	Whites
45	4 (9%)	2 (25%)
44	3 (16%)	1 (38%)
43	3 (23%)	--
42	2 (28%)	--
41	1 (30%)	1 (50%)
40	2 (35%)	1 (63%)
39	3 (42%)	--
38	3 (49%)	--
37	3 (56%)	1 (75%)
36	1 (58%)	1 (88%)
35	4 (67%)	--
34	1(70%)	--
33	--	--
32	--	--
31	1 (72%)	--
30	--	--
29	2 (77%)	--
28	2 (81%)	--
27	1 (84%)	--
26	--	--
25	1 (86%)	--
0-24	6 (100%)	1 (100%)
Total -	43	8

6. Test 100A - Gross Dexterity

The following table is for scores in Test 100A--Gross Dexterity for all applicants who took the test (cumulative percents in parentheses):

Score, Test 100A	Negroes	Whites
120-124	5 (12%)	3 (38%)
110-119	3 (19%)	3 (75%)
100-109	3 (26%)	--
90-99	8 (44%)	--
80-89	5 (56%)	1 (88%)
70-79	3 (63%)	--
60-69	6 (77%)	--
50-59	2 (81%)	1 (100%)
40-49	2 (86%)	--
30-39	2 (91%)	--
20-29	--	--
10-19	2 (95%)	--
0-9	2 (100%)	--
Total -	43	8

7. Test 100E - Following Oral Directions

The following table is for scores in Test 100E--Following Oral Directions for all applicants who took the test (cumulative percents in parentheses):

Score, Test 100E	Negroes	Whites
150-159	5 (12%)	6 (75%)
140-149	4 (21%)	--
130-139	3 (28%)	--
120-129	6 (42%)	--
110-119	2 (47%)	--
100-109	2 (51%)	--
90-99	4 (60%)	1 (88%)
80-89	3 (67%)	--
70-79	2 (72%)	1 (100%)
60-69	2 (77%)	--
50-59	--	--
40-49	5 (88%)	--
30-39	3 (95%)	--
20-29	--	--
10-19	1 (98%)	--
0-9	1 (100%)	--
Total -	43	8

D. Summary

There were too few subjects for definitive comparisons.

However, the tendencies indicated by the results may be summarized, for further checking in additional studies.

The point reached by approximately 75% of the white applicants may be a point of comparison.

With the total Job Element rating, 57% of the Negro applicants reached the number of credits reached by 80% of white applicants. In comparison for the evidences used by the rating panel:

Evidence	Percent of Negro and of Whites receiving a rating reached by about 75% of Whites
Supervisory overall appraisal among all 50 appraised applicants	83% Negro, 75% White
Test of Potential for Reading, among all 51 applicants	58% Negro, 75% White
Test of Potential for Arithmetic, among all 51 applicants	56% Negro, 75% White
Interest Score, Aptitude-Interest Form, among all 51 applicants	40% Negro, 75% White
Ability Score, Aptitude-Interest Form, among all 51 applicants	26% Negro, 75% White
Supervisory overall appraisal among 26 non-selected applicants	17% Negro, 67% White
Test 100A--Gross Dexterity, among all 51 applicants	19% Negro, 75% White
Test 100E--Following Oral Directions, among all 51 applicants	12% Negro, 75% White

III. TURNOVER FIRST SIX MONTHS

A. Withdrawal and Turnover Figures

The agency reported general satisfaction with the selected trainees.

However, seven applicants withdrew. Two applicants--one a laborer and one a messenger-automotive vehicle operator, had withdrawn before completing tests and forms. The following five applicants withdrew from the program after taking tests and forms, four of these after being selected:

Applicant No. 1. One employee withdrew after taking the test, but before selections were made, asking that his name be withdrawn. He wished to continue in his assignment as tractor-operator because "to take a reduction in salary of over $.20 per hour is not worth while."

Applicant No. 2. Before the program began, but after being selected, another tractor-operator refused the assignment to gardener-trainee "as the monetary loss would be too great for my present situation."

Applicant No. 3. One applicant left the trainee position after he began the program, and returned to his former position as laborer, because home studies proved too great a burden in the light of his large family and the necessity of holding a second job.

Applicants Nos. 4 and 5. Two employees left for what appeared to be low motivation and potential for training, and returned to laborer jobs.

B. Withdrawals and Turnover, By Prior Job

The following table on the next page shows withdrawals, examination outcomes and turnover for applicants in different original positions.

The results support the hypothesis of the worker-trainee examination, that motivation for a new job is related to the extent to which the job offers a substantial increment in one's career pattern. Among 4 tractor and motor vehicle operators, 3 withdrew. Among 40 laborers, for whom the gardener-trainee program represented an opportunity for substantial career improvement, only 4 withdrew. One clerk-typist was selected and remained on the job, but he had done tree work, and had indicated motivation by the fact that he applied for a position outside his present work environment.

Number of Applicants with Various Outcomes, By Original Jobs

Original Job	No. of Applicants	No. and % of Applicants in Original Job Who Took All Tests and Forms	No. and % of Applicants in Original Job Who Were Selected	No. and % of Applicants Who Withdrew After Filing or Quit Job
Laborer	40	39 (98%)	20 (50%)	4 (10%) (1 before tests; 3 quit job)
Caretaker	4	4 (100%)	3 (75%)	0 (0%)
Tractor-Operator	3	3 (100%)	2 (67%)	2 (67%) (1 after tests; 1 quit job)
Gardener-Helper	2	2 (100%)	0 (0%)	--
Janitor	1	1 (100%)	0 (0%)	--
Messenger-Motor Vehicle Operator	1	0 (0%)	--	1 (100%) before tests
Clerk-Typist *	1	1 (100%)	1 (100%)	0 (0%)*
Mail & File Clerk	1	1 (100%)	0 (0%)	--

* Had done tree work

C. Scores on Evidences, and Ratings in Examination for Those Who Withdrew

1. Scores on Evidences

Table VIII-A in the appendix gives the scores on the various evidences for the five applicants who withdrew after taking tests and forms, described as applicants 1 through 5 in Section A above. Table VIII-A also shows for each of the five applicants the percent of all those selected who got higher or lower scores, on each evidence.

Most significant may be Applicants Nos. 4 and 5, whose withdrawal from the program seemed most related by their supervisors to lack of interest and aptitude. Fewer than 20% of all the selected applicants were lower than each of these two applicants in Supervisory Appraisal, Overall; Interest, on Interest-Analysis Blank; Test 100E, Oral Directions; Residual Annual Leave; and Park Service Experience. More than 70 percent of all the selected applicants were higher than each of these two applicants in Interest, on Interest-Analysis Blank; Ability, on Interest-Analysis Blank; Test 100E--Following Oral Directions; Residual Sick Leave; Residual Annual Leave; and Park Service Experience.

The last column shows the average difference, for each evidence, between the percent who got higher and the percent who got lower scores. This difference shows the extent to which the average for all five employees who withdrew was in the lower range of scores for each evidence. It is therefore an average measure of the relation between the evidence and later withdrawal and turnover. The highest differences are 60 percent for the Test of Potential in Arithmetic; 53% for the Test of Potential in Reading; 43 percent for Ability on the Aptitude-Interest Blank; 34 percent for Supervisory Appraisal, Overall; 33 percent for Residual Sick Leave; and 27 percent for Test 100E--Following Oral Directions. The difference for Interest on the Aptitude-Interest Blank is only 12 percent on the average, because Applicants 1 through 3 quit for other motivating reasons than lack of interest in gardener-trainee work, discussed in Sections A and B, above. Applicants Nos. 1 and 2 were tractor operators who, although interested in the gardener items on the Aptitude-Interest Blank, did not perceive the gardener-trainee as a career field. Applicant No. 1 withdrew even before he was rated, and Applicant No. 2 withdrew before entering the program. Applicant No. 3 withdrew because he needed to keep a second job, which was not possible with home studies required by the trainee program. It is

interesting to note that Applicants Nos. 1 and 3 were relatively low in self-ratings of ability on the Aptitude-Interest Blank, just as were Applicants Nos. 4 and 5, which was one pre-indication that gardening may not be part of their career pattern.

2. Examination Ratings

Of the seven who withdrew, three withdrew before the examination ratings were given.

Table VIII-B in the Appendix gives the credits on each element and in the total job-element examination for the four applicants, Applicants 2 to 5, who withdrew after being selected (described in Section A).

All four who withdrew after being rated and selected received only the minimum credit (2 points) on the element "Aptitude and Interest." (Table VIII-B shows "0% lower" for each applicant in this element.) Thus, the panel's rating of this element was in a sense substantiated by later turnover. The rating of this element reflected the panel's judgment, considering all the evidences shown in Table VIII-A and discussed above under "Scores in Evidences."

The last column in Table VIII-B is comparable to the last column in Table VIII-A. The size of each percent shows the extent to which the applicants who withdrew are in the lower range of credits on the element.

The average difference for the element Aptitude and Interest is 50%. For comparison, eliminating Applicant No. 1 in Table VIII-A, who withdrew before he was rated on the elements, the highest average differences were:

Evidence in Table VIII-A	Ave. Difference for Applicants 2-5
Test, Potential for Arithmetic	54%
Supervisory Appraisal, Overall	52%
Test 100E, Following Oral Directions	45%
Ability, on Aptitude-Interest Blank	43%
Test, Potential for Reading	41%
Residual Sick Leave	33%
Interest, on Aptitude-Interest Blank	28%

The above figures indicate that the rating of the element Aptitude and Interest predicted later turnover about as well as the most predictive of the single evidences, but not better.

The total examination rating included elements not related to turnover, as can be seen in the other entries in Table VIII-B.

Table VIII-B shows the number of credits in each element, and also the percent of those selected who got more or fewer credits. The last column shows the average difference, for each element, between the percent who got higher and the percent who got lower credits. This difference shows the extent to which the four employees who quit after being selected were in the lower range of scores for the element. It is therefore a measure of the relation between the element rating and later turnover.

Most predictive of later turnover is the element rating for Aptitude and Interest. Next most predictive is the element Reliability and Dependability. The examination rating as a whole is predictive of turnover, but since it includes elements that are not all related positively to prevention of turnover, it is less related than the first two elements in the table.

IV. STUDY OF MULTIPLE-CHOICE QUESTIONS IN PART II OF APTITUDE-INTEREST BLANK

Part II of the Aptitude-Interest Blank included six multiple-choice self-descriptive questions on safety record, and two on reliability.

Examples are: (Applicants were told to circle each answer that applies, and to fill in Job Nos. where required.)

What is your safety record on jobs where you used power equipment such as power tools, power lawn mowers, etc.? Circle each answer that applies. Also, fill in the Job Numbers if you did operate the equipment on a job.

A. I did not operate such power equipment on a job in the last 3 years.
B. In the last 2 years, on Job Number(s) (fill in Job Nos.) ____ I operated such power equipment and I was not injured to need medical attention.
C. In the last year, on Job Number(s) (fill in Job. Nos.) ____ I operated such power equipment, and I was not injured, to need medical attention.
D. Within the last 2 years, I operated such power equipment on the job, and I have been injured, to need medical attention.

How often have you been late for work, or left before you were supposed to?

A. Several times a week.
B. No more than once a week.
C. No more than once a month.
D. No more than once in six months.
E. Never

These questions were not scored before the applicants were selected, although the answers were available to the rating panel. The purpose of inclusion of these direct questions was experimental, to see whether such questions get meaningful answers.

The following table shows the numbers and cumulative percents of selected and of non-selected applicants who gave various numbers of negative answers or omits to the eight questions:

No. of Negative Answers or Omits	Remained in Program N = 20	Withdrew Initially After Taking Tests N = 2	Quit Trainee Job N = 3	Non-Selected Applicants Who Had Not Withdrawn N = 26
6 - 7	--	--	--	6 - 23%
5	--	--	1 - 33%	2 - 31%
4	1 - 5%	--	1 - 67%	1 - 35%
3	1 - 10%	1 - 50%	1 - 100%	1 - 38%
2	4 - 30%	--	--	4 - 54%
1	8 - 70%	1 - 100%	--	4 - 69%
0	6 - 100%	--	--	8 - 100%

The above table indicates that three or more negative answers or omits were given to the multiple-choice questions by only 10% of those who remained in the program, by 38% of those who were not selected, by one of two who withdrew after taking tests, and by all three who quit after entering the training program.

As predictors of turnover, the multiple-choice questions seemed to be quite powerful, even more so than any other evidence in the examination. It seemed to be as predictive of turnover as the job-element examination ratings for the elements Reliability and Dependability, and Dexterity and Safety which were the areas for which the questions were prepared.

Table IX in the Appendix presents results for competitors Nos. 1 through 5 in the same format as Tables VIII-A and VIII-B. The average difference in the last column of Table IX, indicating the extent to which the competitors who withdrew are in the lower range of scores for the multiple-choice questions ("lower" meaning more negative answers) is 47%. Omitting Applicant No. 1, to be comparable to Table VIII-B, the average difference is 62%.

TABLE I

Reliability of Supervisory Ratings, on Checklist
(Not by Rating Schedule, but by simple Checklist statements)

Element or Factor	Reliability	Means (4 = max.) Superv. 1	Means (4 = max.) Superv. 2	S. D. Superv. 1	S. D. Superv. 2	N	% in non-modal cells
Reliability:							
Absences	.4656	3.74	3.74	0.4867	0.5323	43	30.2
Quit early	.2262	3.86	3.88	.3465	.3865	43	18.6
Overall	.6334	3.91	3.88	.2905	.3205	43	14.0
Follow Directions	.4547	3.36	3.23	.6773	.7648	44	70.5
Work in a crew	.2723	2.68	2.80	.7316	.8141	44	75.0
Safety:							
Notices danger spots	.4133	3.68	3.70	.4657	.4562	44	43.2
Accidents	.0298	3.86	3.86	.3432	.4041	44	22.7
Potential Ability	.6983	3.95	3.98	.2131	.1524	42	4.8
Overall Ability	.6218	2.84	2.81	.5251	.6907	43	51.2

NOTE ON SMALL CELL FREQUENCIES CAUSING QUESTIONABLE r

The last column is "% in non-modal cells." A very high or very low reliability can be caused by chance if almost all cases are in the cell with the modal frequency. For example, for "Potential Ability," four ratings are 4-4, while only two ratings vary between supervisors. These two carry the load in determining the value of the reliability coefficient, in this case .6983, which is therefore of small reliability. Of special value are: absences, with non-modal percent of 30% and reliability of .47; follow directions with non-modal percent of 70.5 and reliability of .45; Safety - Notices danger spots with 43% and .41; and overall ability with 51% and .62.

TABLE II
Regression Effect

For some cases, only one supervisor was given. The amount of expected regression in estimating average ratings is as follows, based on cases where there were two supervisors for "Overall Value" where r was .62:

Overall Value, Superv. No. 1	Tot. Freq.	Frequency where Superv. No. 2 gave: 4	3	2	1	Ave. by Superv. No. 2	Est. Ave. of 2 raters
4	3	3	-	-	-	4.0	4.0
3	30	3	21	6	-	2.9	2.95
2	10	-	3	6	1	2.2	2.1

Where only one rater rated the applicant (9 applicants), the average rating used for further study was 4 if Supervisor No. 1 rated 4, 3 if Supervisor No. 1 rated 3 and 2.1 if Supervisor No. 1 rated 2.

TABLE III

Correlations with Select vs. Non-Select, on the Basis of Application of Rating Schedule in Job-Element Examination

(One applicant who withdrew after completing forms and taking tests was eliminated from consideration in this table)

Factor	Group	N	r With Select = 1, Non-Select = 0; or Other Indications
Supervisory rating, overall ability	(1) All, except one selected applicant whose supervisor did not feel able to give overall rating	51	-.1852 (Negative) But only one had rating below Satisfactory, and he was not selected
	(2) Omitting 2 applicants who had not themselves submitted forms, and whose non-selection was influenced by this	49	-.1780 (Negative)
Supervisory Rating, Reliability--absences	All applicants	52	Some effect. 2 cases rated lower than 3, not selected
Supervisory Rating, Reliability, overall	All applicants	52	Some effect. 3 cases rated "not dependable" by both supervisors, not selected. 3 cases rated "not dependable" by only one supervisor, 2 selected, 1 not selected
Supervisory Rating, Potential bility	All applicants	52	Some effect. One rated lacking by both supervisors one by one supervisor. Neither selected.
Supervisory Rating, Following directions	All applicants	52	No effect--4 cases rated "only simple directions" by 2 supervisors, 2 selected, 2 not selected: 9 cases so rated by one supervisor; 5 selected, 4 not selected
Supervisory Rating, Safety--at fault	All applicants	52	No effect--3 cases: 2 selected, 1 not selected

TABLE III (Continued)

Factor	Group	N	r With Select = 1, Non-Select = 0; or Other Indications
No. of negative words in comments by supervisor	(1) All applicants	52	-.2076 (Negative)
	(2) Omitting 2 applicants who did not submit forms	50	-.1827 (Negative)
Presence of negative words in comments by supervisor (Presence = 1; Absence = 0)	(1) All applicants	52	-.2523 (Negative)
	(2) Omitting 2 applicants who did not submit forms	50	-.2044 (Negative)
No. of positive words in comments by supervisor, if no negative words appear	(1) All applicants	52	-.1422 (Negative)
	(2) Omitting 2 applicants who did not submit forms	50	-.1635 (Negative)
Presence of positive words without any negative in comments by supervisor (Presence = 1; Absence = 0)	(1) All applicants	52	-.0786 (Negative)
	(2) Omitting 2 applicants who did not submit forms	50	-.1019 (Negative)
Self-Rating in ability (A = 0, D = 3)	All who filled in blanks	50	+.5162
Self-Rating in interest and willingness (L = 1; W = 1)	All who filled in blanks	50	+.5135
Test of potential for reading	All who filled in blanks and took tests	50	+.7006
Test of potential for shop arithmetic	All who filled in blanks and took tests	50	+.5387
Test 100A	All who filled in blanks and took tests	50	+.4938
Test 100E	All who filled in blanks and took tests	50	+.5653
Possession of driver's license	All who filled in blanks and took tests	50	+.32 (based on 5 cases with no license, not selected)

TABLE III (Continued)

Factor	Group	N	r With Select = 1, Non-Select = 0; or Other Indications
Amount of residual sick leave	(1) All who filled in blanks and took tests	50	-.1524 (Negative) However, effective at almost no leave: Amt. sick leave: f / No. not selected 0-8 hrs.: 6* / 4 (67%) 9-40 hrs.: 12 / 4 (33%) 41-80 hrs.: 12 / 5 (42%) 81 hrs. +: 20 / 13 (65%)** *One had excused use of sick leave due to auto accident, and was selected. **Related to age.
	(2) All above except one person who used up sick leave due to auto accident	49	-.1401 (Negative) But: Amt. sick leave: f / No. not selected 0-8 hrs.: 5 / 4 (80%) 9-80 hrs.: 24 / 9 (38%) 81 hrs. +: 20 / 13 (65%)
Amount of residual annual leave	All who filled in blanks and took tests	50	-.2162 (Negative) However, effective at almost no leave: Amt. annual leave: f / No. not selected 0-8 hrs.: 5* / 4 (80%) 9-40hrs.: 8 / 2 (13%) 41-80 hrs.: 7 / 2 (29%) 81 hrs. +: 30 / 18 (60%) *One had excused use of leave due to auto accident.

TABLE III (Continued)

Factor	Group	N	r With Select = 1 Non-Select = 0; or Other Indications		
Amount of annual and/or sick leave	(1) All who filled in blanks and took tests	50	Amt. of leave	f	No. not selected
			0 to 8 hrs. in both annual and sick leave	3*	2 (67%)
			0 - 8 hrs. in either	8	6 (75%)
			*car accident		
	(2) Omitting one applicant who used excused leave due to auto accident	49	Amt. of leave	f	No. not selected
			0 - 8 hrs. in both	2	2 (100%)
			0 - 8 hrs. in either	7	6 (86%)
Years of schooling	All who filled in blanks and took tests	50	+.4652		
			Yrs. of schooling	f	No. not selected
			0 - 6	7	7 (100%)
			7	5	3 (60%)
			8	5	3 (60%)
			9 +	33	13 (39%)
Age	All who filled in blanks and took tests	50	-.4195 (Negative)		
			Age	f	No. not selected
			50 +	6	6 (100%)
			40-49	10	5 (50%)
			20-39	34	15 (44%)

TABLE III (Continued)

Factor	Group	N	r With Select = 1 Non-Select = 0; or Other Indications
Length of experience in Park Service	All who filled in blanks and took tests	50	-.2780 (Negative) Yrs. exp. / f / No. not selected 1 / 1 / 1 (100%) 1½ / 6 / 2 (33%) 2-2½ / 12 / 6 (50%) 3-5 / 12 / 4 (33%) 5½ -10 / 10 / 5 (50%) 10½ + / 9 / 8 (89%)
Length of experience in Federal Service	All who filled in blanks and took tests	50	-.2132 (Negative)
Total length of experience	All who filled in blanks and took tests.	50	-.3339 (Negative)

TABLE IV-A. Intercorrelations Among Measures, for Every Applicant Who Took Particular Measures. Max. N=51.

(Two applicants who filled in no forms and took no tests, and were therefore not selected, are not counted for any comparison, although they were given supervisory evaluations. One applicant who withdrew after taking tests, and was not considered further, was counted for the tests.) [1]

Measure	Self-Rating, Ability	Self-Rating, Interest	Test, Reading	Test, Arith.	Test 100A	Test 100E	Years Schooling	Select = 2 vs. Non-Select = 1
Supervisory appraisal of (overall) capabilities or potential	-.0955 (N=50)	+.0105 (N=50)	-.3114 (N=50)	-.0375 (N=50)	-.0394 (N=50)	-.0755 (N=50)	-.2395 (N=50)	-.1780 (N = 49)
Total Self-Rating in Ability on Int.-Apt. Form	--	+.7429 (N=51)	+.6119 (N=51)	+.5650 (N=51)	+.4514 (N=51)	+.6375 (N=51)	+.4627 (N=51)	+.5162 (N = 50)
Total Self-Rating in Interest & Willingness on Int.-Apt. Form	+.7429 (N=51)	--	+.6276 (N=51)	+.5958 (N=51)	+.5491 (N=51)	+.7021 (N=51)	+.4405 (N=51)	+.5135 (N = 50)
Test: Potential for Reading	+.6119 (N=51)	+.6276 (N=51)	--	+.7757 (N=51)	+.6138 (N=51)	+.7724 (N=51)	+.6542 (N=51)	+.7006 (N = 50)
Test: Potential for Arithmetic	+.5650 (N=51)	+.5958 (N=51)	+.7757 (N=51)	--	+.6782 (N=51)	+.7101 (N=51)	+.5209 (N=51)	+.5387 (N = 50)
Test 100A	+.4514 (N=51)	+.5491 (N=51)	+.6138 (N=51)	+.6782 (N=51)	--	+.6818 (N=51)	+.3944 (N=51)	+.4938 (N = 50)
Test 100E	+.6375 (N=51)	+.7021 (N=51)	+.7724 (N=51)	+.7101 (N=51)	+.6818 (N=51)	--	+.4462 (N=51)	+.5653 (N = 50)
Years of Schooling	+.4627 (N=51)	+.4405 (N=51)	+.6542 (N=51)	+.5209 (N=51)	+.3944 (N=51)	+.4462 (N=51)	--	+.4652 (N = 50)

[1] Compare Table V, Part 1, for those who passed screen-out.

TABLE IV-B

Comparative Means and Standard Deviations for the Total Group of 50, and for Group of 26 Passing Screen-Out

Factor	Total Group		Group Pass. Screen-Out		Maximum Score (for tests, etc.)
	Mean	Standard Deviation	Mean	Standard Deviation	
Supervisor's overall appraisal of capabilities, potential* *(N is 49 and 25; 1 supervisor didn't appraise this)	2.83	.5645	2.74	.4032	4
Self-rating, ability	113.88	55.206	141.27	37.104	240
Self-rating, interest	108.30	43.252	127.69	29.900	160
Test of potential for reading	16.54	7.786	21.58	3.128	25
Test of potential for arithmetic	35.00	10.180	40.04	4.645	45
Test 100A	41.30	17.010	48.00	12.819	124
Test 100E	102.68	43.884	127.19	23.612	159
Residual sick leave (hours)	131.96	185.950	126.39	153.156	-
Residual annual leave (hours)	126.16	97.728	113.77	92.766	-
Years of schooling	9.34	2.224	10.27	1.767	-
Age	35.64	10.436	31.62	7.277	-
Park Service experience (No. of 6 month periods)	11.94	10.736	10.08	9.162	-
Federal experience (No. of 6 month periods)	14.98	12.490	13.81	12.500	-
Total experience (No. of 6 month periods)	36.06	19.476	29.92	13.342	-

TABLE V. Intercorrelations Among Supervisory Appraisals, Self-Ratings, Tests, and Element Ratings for Several Element Domains[1]

PART 1. Element Domain: Aptitude and Interest
Group: All who passed screen-out. N = 26 (except where noted)

Evidence	Self Rating, Ability	Self-Rating, Interest	Test, Reading	Test, Arithmetic	Test 100A	Test 100E	Years of Schooling	Exam. Rating in Element
Supervisory appraisal of capabilities or potential (N=25)	+.0219	+.2273	-.0116	+.0049	-.2085	+.3469	-.0365	+.3614
Total Self-Rating of ability on Apt.-Int.Form (A=0; D = 3)	--	+.6857	+.0845	+.0876	-.0293	+.4423	+.1714	+.6303
Total Self-Rating in Interest and Willingness on Apt.-Int. Form (L=1; W=1)	+.6857	--	+.3642	+.3903	+.1974	+.5940	+.0416	+.6922
Test: Potential for Reading	+.0845	+.3642	--	+.6233	+.4240	+.3625	+.2643	+.5194
Test: Potential for Arithmetic	+.0876	+.3903	+.6233	--	+.2836	+.2651	+.2472	+.3850
Test 100A, Gross Dexterity	-.0293	+.1974	+.4240	+.2836	--	+.2325	+.4807	+.2215
Test 100E, Following Oral Directions	+.4423	+.5940	+.3625	+.2651	+.2325	--	+.3731	+.6230
Years of Schooling	+.1714	+.0416	+.2643	+.2472	+.4807	+.3731	--	+.4058

[1]See Table IV-A for intercorrelations for all applicants.

TABLE V, PART 2

Element Domain: Following Directions

Group: All who passed screen-out - N = 26

Correlations in parenthesis are for 24 applicants, omitting two applicants who had unusually low scores in self-rated ability and interest.[1]

Evidence	Supervisory Appraisal, Following Directions	Self-Rating, Ability in Carefulness Items*	Self-Rating, Interest in "Carefulness" Items*	Exam. Rating in Element: Following Directions
Supervisory appraisal, Following Directions	--	+.0179 (-.1077)	+.2077 (+.2403)	+.3068 (+.3022)
Self-rating of ability in items 46-57 of Apt.-Int. Form *	+.0179 (-.1077)	--	+.7299 (+.2243)	+.2420 (+.0409)
Self-rating of interest in items 46-57 of Apt.-Int. Form*	+.2077 (+.2403)	+.7299 (+.2243)	--	+.3619 (+.2349)
Test, Potential for Reading	-.1480 (-.2049)	+.1786 (-.2262)	+.3560 (-.0646)	+.4797 (+.4122)
Test, Potential for Arithmetic	-.1243 (-.1448)	+.0799 (-.2584)	+.3583 (+.2855)	+.1447 (-.0348)
Test 100A, Gross Dexterity	.0000 (-.0372)	+.3096 (+.1017)	+.3547 (+.1241)	+.4660 (+.4014)
Test 100E, Following Oral Directions	+.1506 (+.1433)	+.1941 (+.0156)	+.4427 (+.5462)	+.7013 (+.6699)

[1]Note that eliminating 2 competitors with very low self-rated ability and interest scores in items 46-57 reduced the correlation of ability and interest from .73 to .22. S. D. for 26 cases were 9.20 for ability and 6.32 for interest; and for 24 cases were 6.54 for ability and 2.65 for interest.

(* see next page)

(Continued)

*Items 46-57 were - -

Take care not to hurt other workers
Do just what the boss asks you to do
Work hard all day
Follow orders that are always changing
Remember directions
Follow written directions
Read signs
Report unsafe conditions and points that need maintenance, to the boss
Open and unpack cartons by hand
Label, tag or stencil supplies with available information
Clean hand tools and place them in a designated area
Watch a machine, always being ready to stop it in case something goes wrong

TABLE V, PART 3

Element Domain: Teamwork

Group: All who passed screen-out - N = 26

Evidence	Supervisory Appraisal, Working in Crew	Exam. Rating on Element
Supervisory appraisal, Working in Crew	--	+.6579
Self-rating of ability in 3 Teamwork items*	-.0090**	+.0428**
Self-rating of Interest in 3 Teamwork items*	+.2694**	+.2338**

*Items are: 26. Work with others in a crew; 27. Work with a crew using equipment, taking care not to injure someone else; 28. Work carefully with others in a crew, to prevent serious injury or death to one of the workers.

**Self-Rating on Ability: Only 3 applicants had low scores; all received low supervisory appraisals and low exam rating in this domain.

Self-Rating in Interest: Only 2 applicants had a low score --(3) while all others got the maximum score (6). The 2 with low score had low supervisory appraisal and low exam rating in this domain.

TABLE VI

Relationships Between Element Ratings and Supervisory Appraisals

Element and Appraisal Factor and Pearson r	Relationship shown by scatter-plot and cumulative percentages			
Element: Reliability and Dependability (Screen-out) vs. Supervisory Appraisal Factor: Reliability and Dependability	Average Supervisory Appraisal (Sum of 3 phases)*	Element Rating 4	3	2
	12	5-56%	7-78%	2-25%
	11.5	2-78%	-	1-38%
	11	2-100%	2-100%	1-50%
	10.5	-	-	1-63%
	10	-	-	1-75%
	9.5	-	-	1*-88%
	9	-	-	1*-100%
	n	9	9	8

Group: All who passed screen-out

N = 26

r = .4632

*The supervisory appraisal for this factor included three phases: Unauthorized absences, unauthorized early quits, and overall dependability. The appraisal sheet for absences and for quits included the following checklist categories; arbitrary values used to quantify the appraisals are shown in parentheses: Never (4); no more than once in 6 months (3); no more than once a month (2); no more than once a week (1); more often than once a month (0). Overall dependability had two categories: Dependable and reliable (4); not dependable and reliable (3). Note that the values used to quantify the appraisals are arbitrary, and do not reflect the 4-credit scale used by examiners to rate elements. To quantify the appraisals systematically, the highest category was consistently given an arbitrary value of 4, and categories below values in descending order.)

In the above group, all of whom passed the screen-out element, only two received an overall appraisal of "not dependable" by any supervisor. The one whose total was 9 was so appraised by one supervisor, his only appraiser; the one whose total was 9.5 was so appraised by one supervisor, but was appraised as dependable by another.

TABLE VI (Continued)

Element:	
Screen-out, and Reasons for Screen-out vs. Appraisal Factor: Reliability and Dependability	"Reliability and dependability" is the screen-out element, and is the only element rated for all applicants in the examination. Those who failed to be rated acceptable in this element were not rated further. Since this is the screen-out, all evidences supporting an ineligible rating were considered here. The standard provides that lack of potential ability and interest affects the screen-out, since reliable work demands a minimum. For example, the agency had advertised in the announcement that possession of a driver's license would be needed. Failure to get a license was taken as an evidence of lack of ability or interest. The following scatter-plot shows the average supervisory appraisal for applicants screened out for evidences that could be identified by comments on the examination rating blanks. (Additional evidences were no doubt considered by the panel, but not recorded. It would not be practical to expect the rating panel to record all evidences that were considered in each case.)
Group: All who failed screen-out	
N = 24	

(See chart on next page)

(Screen-Out Continued)

TABLE VI(Continued)

Reason for Screen-Out Given on Rating Blank

Average Supv. Appraisal[1]	Reason Not Given	No License	No License No Poten. Ability	No Poten. Ability	No Poten. Ability, Poor Attend.	Poor Attend.
12	1	3 (75%)	1	5 (71%)	4 (44%)	-
11.5	-	-	-	1 (86%)	** 3 (78%)	1 (50%)
11	-	-	-	-	-	-
10.5	-	* 1 (100%)	-	1 (100%)	-	-
10	-	-	-	-	1 (89%)	
9.5	-	-	-	-	-	1* (100%)
9	-	-	-	-	1* (100%)	-
n	1	4	1	7	9	2

[1] Sum of 3 phases of Reliability and Dependability.

*Rated not dependable by both supervisors.

**Rated not dependable by one of two supervisors: 1 case of the 3.

The above scatter-plot includes 14 who received maximum appraisals in dependability (12); and 10 who received less than maximum appraisals. Among the 14 who received maximum appraisals in dependability, 4 were screened out for poor attendance records, showing that supervisory appraisals do not always reflect accurate records. On the other hand, of the 10 who received less than maximum appraisals, attendance was mentioned as a consideration in the screening out for 7.

This scatter-plot is a supplement to the first one in this section, above, for persons who passed the screen-out. A comparison of both scatter-plots shows that the appraisal did not differentiate those who passed the screen-out from those who failed, except for the few appraised as undependable by two supervisors. However, the first scatter-plot showed that after the various evidences were used to screen competitors, the appraisal served to differentiate element ratings of 4 and 3 from a rating of 2. The present scatter-plot shows that the appraisal had its greatest effect on screening out when poor attendance was found in the records.

TABLE VI (Continued)

Element: Job Aptitude and Interest,
vs. Supervisory Appraisal Factor: Overall Capabilities or Potential

Group: All who passed screen-out, except 1 not appraised in this factor

N = 25

r = .3614

The supervisory appraisal factor closest to the element Job Aptitude and Interest was an overall appraisal, which follows, with assigned values in parentheses: "From your appraisal, indicate in your opinion, your summary rating of the applicant's capabilities or potential for target position: Outstanding (4); excellent (3); satisfactory (2); unsatisfactory (1).

Following is the scatter-plot:

Average Supervisory Appraisal [1]	Element Rating [2] 4	3	2	1
3.5	-	1	-	-
3	5	4	4	1
2.5	1	2	3	-
2	-	-	4	-
n	6	7	11	1

[1] In overall capabilities or potential

[2] In job aptitude and interest

The correlation of .36 is based on the fact that 4 of the 11 who got 2 credits in the element were appraised by supervisors as lower than the others.

Note: Only 1 applicant was appraised as "unsatisfactory"; he is not represented in the above scatter-plot because he was screened-out. He had also been appraised by supervisor as undependable.

Element: Following Directions,
vs. Supervisory Appraisal Factor: Following Directions

The categories in the supervisory appraisal for Following Directions and arbitrary values were: Often gets directions which change what he is doing, and he does not have trouble following them (4); sometimes gets new directions and does not have trouble (3); simple directions and does not have trouble (2); usually has to have simple directions repeated (1).

Following is the scatter-plot:

(See chart on next page.)

(Continued)

TABLE VI(Continued)

Element: Following Directions,
vs. Supervisory Appraisal Factor: Following Directions

Group: All who passed screen-out

n = 26

r = .3068

Average Supervisory Appraisal[1]	Element Rating[1]				
	4	3	2	1	0
4	3-38%	3-60%	-	-	1
3.5	1-50%	-	2-20%	-	-
3	4-100%	-	3-50%	1-50%	-
2.5	-	1-80%	1-60%	-	-
2	-	1-100%	4-100%	1-100%	-
n	8	5	10	2	1

[1]For Following Directions

Element: Ability as a Member of a Team,
vs. Supervisory Appraisal Factor: Ability to Work as a Member of a Crew

Group: All who passed screen-out

n = 26

r = .6579

The categories in the supervisory appraisal for crew work and arbitrary values were: Cooperating where dangers are constant (4); close cooperation (3); cooperating in regular run of work (2); no experience in work where he had to cooperate (1).

The scatter-plot is as follows:

Average Supervisory Appraisal[1]	Element Rating[2]		
	4	3	2
3.5	-	1-10%	-
3.0	1	4-50%	1-7%
2.5	-	4-90%	3-27%
2.0	-	1-100%	11-100%
n	1	10	15

[1]Work in crew

[2]Teamwork

TABLE VI (Continued)

Element: Dexterity and Safety,

vs. Supervisory Appraisal Factor: Safety and Dexterity

Group: All who passed screen-out except 1 not appraised in this factor

n = 25

r = -.0112

The supervisory appraisal categories for safety were not in a unitary scale. The highest category was really a different area than the other categories. The categories and arbitrary values were: Has observed and reported dangerous or unsafe conditions in his work area (4); Has never had an at-fault accident with equipment on job (3); Has not had such accident in last 2 years; Has had one such accident in last 2 years (1); Has had more than one such accident in last 2 years (0).

The following scatter-plot is for the average supervisory appraisal. (There were 2 cases where one supervisor appraised the applicant 4 for observation but 1 for safety record. In the examination, one was screened-out; the other was given a rating of 2 for the element Dexterity and Safety. In the other cases, no deficient safety record was appraised by a supervisor when his appraisal was for observation.)

Average Supervisory Appraisal[1]	Element Rating[1] 4	3	2	1
4	1	5-50%	-	4-67%
3.5	-	-	2-25%	-
3	-	3-80%	4-75%	2-100%
2.5	-	1-90%	1*-88%	-
2	-	1-100%	-	-
1	-	-	1-100%	
n	1	10	8	6

[1] In Safety, Dexterity

*Includes 1 case appraised 4 and 1 by one supervisor; and appraised 4 and 3 by another supervisor. The appraisal of 4 and 1 was counted as 1.5 so the average appraisal was 2.5.

The following scatter-plot is for the supervisory-appraised area of observing unsafe conditions alone, compared to the element rating:

(See chart on next page.)

TABLE VI (Continued)

(Continued)

Average Supervisory Appraisal[1]	Element Rating--Dexterity and Safety			
	4	3	2	1
Observing & reporting danger, noted by 2 super.	1	4-40%	1-11%	3-50%
Observing & reporting danger, noted by 1 super.	-	2-60%	4-56%	2-83%
No observing & reporting danger	-	4-100%	4-100%	1-100%
n	1	10	9	6

[1]Observation of unsafe conditions

There is no consistent relationship in the above chart. High degrees of observation noted in supervisory appraisals are associated with element ratings varying from 1 to 4.

Element Rating -- Total Credits vs. Supervisory Factor: Overall capabilities or potential

Group: All who passed screen-out and were appraised overall

n = 25

r = .3253
(For those meeting passing score of 10 credits, r = .5444)

The supervisory appraisal form concluded with the overall appraisal of capabilities or potential, discussed above in its relationship to the element Job Aptitude and Interest.

The following scatter-plot relates this overall appraisal to the total credits in all the job elements in the examination.

Supervisory Overall Appraisal of Potential	Total Credits for All Elements									
	17	16	15	14	13	12	11	10	9 *	7*
3.5	-	-	1	-	-	-	-	-	-	-
3	4	-	2	2	2	-	1	1	1	1
2.5	-	1	1	1	2	1	-	-	-	-
2						1	1	2	-	-
n	4	1	4	3	4	2	2	3	1	1

(* See next page.)

TABLE VI (Continued)

* (from previous page)

The minimum passing score was 10. Total credits of 9 and of 7 were failing. Competitors had to meet the passing total score as well as meet the screen-out.

Although Table III showed that the overall appraisal was not a factor in meeting the screen-out element, and although the two competitors shown on previous page who met the screen-out but failed to get 10 credits in the element got a relatively high appraisal, the appraisal did have an effect on the relative ranks of those who passed the examination. The mean element credits for those appraised 3 or 3.5 and who passed the examination (got 10 credits or more) was 14.5. The mean element credits for those whose appraisal was 2.5 was 13.8. The mean element credits for those whose appraisal was 2 was 10.8.

Element Rating -- Total Credits vs. Supervisory Appraisal:

Total of all items on Supervisory Appraisal

all who passed the screen-out and were given supervisory evaluations on all factors

n = 25

r = .3203

(For those meeting passing score of 10 credits, r = .5096)

Total of All Supervisory Appraisal Items	Total Credits for All Elements									
	17	16	15	14	13	12	11	10	9*	7*
30.5-31			1							
29.5-30			1		1					
28.5-29	1	1	1		1		1			1
27.5-28	2				1			1	1	
26.5-27	1		1		1					
25.5-26				2		1				
24.5-25				1		1		1		
23.5-24										
22.5-23										
21.5-22							1			
20.5-21										
19.5-20										
18.5-19										
17.5-18								1		
n	4	1	4	3	4	2	2	3	1	1

* 7 and 9 fail

The results for this scatter-plot are much like those for the previous one, showing that the relationship holds for applicants who pass the examination.

TABLE VII. Relation of Job Assignment to Relationship Between Supervisory Appraisal of Overall Capabilities or Potential, and Selection[1]

(Frequencies and Cumulative Percents)

Average Supervisory Rating	Selected			Not Selected		
	Executive Mansion	NCP--Central	Other Assignments	Executive Mansion	NCP--Central	Other Assignments
4	--	--	--	2 - 67%	2 - 20%	--
3.5	--	1 - 13%	--	1 - 100%	1 - 30%	--
3	--	3 - 50%	9 - 60%	--	3 - 60%	9 - 69%
2.5	--	4 - 100%	2 - 73%	--	2 - 80%	1 - 77%
2.1	--	--	1 - 80%	--	--	--
2	--	--	3 - 100%	--	2 - 100%	2 - 92%
1.5	--	--	--	--	--	1 - 100%
Total n	0	8	15	3	10	13

[1]With Executive Mansion valued 2, National Capitol Parks-Central 1, and Others 0, and with Selected valued 1 and Non-Selected valued 0, Pearsonian correlations with Assignment are +.4214 for supervisory appraisal and -.2188 for selection.

TABLE VIII-A

Scores on Evidences for Applicants Who Withdrew After Taking Tests and Forms

(Applicants 1 to 5, in body of text, Part Four - III A)

Scores on evidences, and % of 24 selected who got lower and higher scores for - -

Evidence	Applicant #1	Applicant #2	Applicant #3	Applicant #4	Applicant #5	Ave. Difference % Higher-% Lo
Ave. Supervisory Appraisal. overall (n for % = 23)	(43% lower) 3 (4% higher)	(17% lower) 2.5 (57% higher)	(17% lower) 2.5 (57% higher)	(17% lower) 2.5 (57% higher)	(0% lower) 2 (87% higher)	34%
Interest, on Apt.-Int. Blank	(75% lower) 149 (25% higher)	(62% lower) 144 (33% higher)	(67% lower) 145 (29% higher)	(8% lower) 90 (87% higher)	(0% lower) 62 (96% higher)	12%
Ability, on Apt.-Int. Blank	(29% lower) 127 (71% higher)	(58% lower) 155 (37% higher)	(17% lower) 120 (75% higher)	(4% lower) 77 (92% higher)	(25% lower) 122 (71% higher)	43%
Test, Potential for Reading	(0% lower) 10 (100% higher)	(0% lower) 16 (96% higher)	(8% lower) 20 (79% higher)	(33% lower) 22 (50% higher)	(50% lower) 23 (29% higher)	53%
Test, Potential for Arithmetic	(4% lower) 35 (87% higher)	(7% lower) 37 (71% higher)	(29% lower) 38 (67% higher)	(33% lower) 39 (62% higher)	(0% lower) 34 (96% higher)	60%
Test 100A, Gross Dex.	(71% lower) 122 (29% higher)	(71% lower) 123 (25% higher)	(0% lower) 51 (96% higher)	(79% lower) 125 (0% higher).	(29% lower) 89 (67% higher)	- 7% (minus)
Test 100E, Fol. Oral Directions	(71% lower) 154 (25% higher)	75% lower) 156 (21% higher)	(8% lower) 98 (87% higher)	(0% lower) 85 (96% higher)	(17% lower) 107 (79% higher)	27%
Education	(0% lower) 7 (92% higher)	(62% lower) 12 (4% higher)	(8% lower) 8 (83% higher)	(46% lower) 11 (37% higher)	(46% lower) 11 (37% higher)	18%
Residual sick leave	not figured	(83% lower) 196 (12% higher)	(8% lower) 373 (8% higher)	(12% lower) 20 (83% higher)	(21% lower) 27 (75% higher)	33%

(Continued)

TABLE VIII-A (Continued)

Evidence	Applicant #1	Applicant #2	Applicant #3	Applicant #4	Applicant #5	Ave. Difference % Higher - % Lower
Residual Annual Leave	not figured	(62% lower) 94 (33% higher)	(79% lower) 244 (17% higher)	(8% lower) 21 (87% higher)	(4% lower) 18 (92% higher)	19%
Park Svc. exp. (No. of 6 mo.periods)	not figured	(42% lower) 6(42% higher)	(96% lower) 43 (0% higher)	(0% lower) 3 (83% higher)	(17% lower) 4 (75% higher)	11%
Federal exp. (No. of 6 mo. periods)	not figured	(33% lower) 6 (54% higher)	(96% lower) 43 (0% higher)	(8% lower) 5 (67% higher)	(58% lower) 8 (33% higher)	- 10% (minus)
Total exp. (No. of 6 mo. periods)	not figured	(29% lower) 23 (62% higher)	(87% lower) 53 (8% higher)	(58% lower) 31 (37% higher)	(8% lower) 11 (87% higher)	3%
Ratio: sick leave over Park Svc. exp.	not figured	(83% lower) 33 (8% higher)	(50% lower) 9 (46% higher)	(25% lower) 7 (54% higher)	(25% lower) 7 (54% higher)	- 8% (minus)
Age* *(%'s are inverse)	(25% lower)* 35 (75% higher)	(42% lower) 30 (46% higher)*	(8% lower) 43 (87% higher)*	(54% lower) 29 (37% higher)*	(79% lower) 23 (4% higher)*	8%

TABLE VIII-B

No. of Credits for Applicants Nos. 2 to 5 (%'s refer to 24 selected)

No. of credits, and % who got lower and higher credits, for - -

Element	Applicant #2	Applicant #3	Applicant #4	Applicant #5	Ave. Difference, % Higher -% Lower
Aptitude and Interest	(0% lower) 2 (50% higher)	(0% lower) 2 (50% higher)	(0% lower) 2 (50% higher)	(0% lower) 2 (50% higher)	50%
Reliability and Dependability	(0% lower) 2 (71% higher)	(29% lower) 3 (33% higher)	(29% lower) 3 (33% higher)	(0% lower) 2 (71% higher)	38%
Follow Directions	(67% lower) 4 (0% higher)	(4% lower) 2 (54% higher)	(46% lower) 3 (33% higher)	(4% lower) 2 (54% higher)	5%
Teamwork	(0% lower) 2 (46% higher)	(54% lower) 3 (4% higher)	(96% lower) 4 (0% higher)	(0% lower) 2 (46% higher)	- 13.5% (minus)
Dexterity & Safety	3 (54% lower) (4% higher)	2 (17% lower) (46% higher)	3 (54% lower) (4% higher)	2 (17% lower) (46% higher)	- 11% (minus)
Total	13 (33% lower) (54% higher)	12 (25% lower) (67% higher)	15 (58% lower) (21% higher)	10 (0% lower) (83% higher)	27%

TABLE IX

Number of Negative Answers Given By Applicants Who Withdrew After Taking Tests and Forms

(Comparable in format to Tables VIII A and B)

("Higher" means fewer negative answers. "Lower" means more negative answers)

Applicant #1	Applicant #2	Applicant #3	Applicant #4	Applicant #5	Ave. Difference % Higher - % Low e
(12% lower) 3 (79% higher)	(37% lower) 1 (25% higher)	(4% lower) 4 (87% higher)	(0% lower) 5 (96% higher)	(12% lower) 3 (79% higher)	47%

END