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TS-MGU
HEB/eh
15 November 1943
Report No. 470

STANDARDIZATION OF RECEPTION CENTER SPECIAL TRAINING UNIT TESTS
FORT ONTARIO, SEPTEMBER 1943.

Introduction: As of 1 July 1943, all men obtaining scores on Qualification Test-1 of less than seven were to be retained in Reception Center Special Training Units. In these units the men were to be taught to read, to solve arithmetic problems sufficiently well to adjust satisfactorily to Army life, and to receive military training within their ability range. Two testing programs are under consideration for use in these units. The first would involve careful testing of these men soon after their entry into the units in order that men unlikely to become satisfactory soldiers could be identified with greater accuracy than is possible in the short testing period allowed at the induction stations. The second program is to measure achievement in reading and arithmetic in order that men entering the STU might be placed at the proper level in these courses.

Purpose: The purposes of this study are:

1. To determine whether certain induction station and similar tests are of appropriate difficulty level for use in the Reception Center Special Training Units.
2. To determine the percentage eliminated by critical scores for induction tests and to adjust these scores, if necessary, until the desired percentage is eliminated.
3. To determine whether newly constructed achievement tests in reading and arithmetic are of appropriate difficulty level.
4. To discover if any of above tests are for any reason inappropriate for use in induction stations.

Populations: All men tested were from the Special Training Unit at Ft. Ontario. The men were grouped for academic instruction according to four reading levels determined on the basis of achievement tests prescribed for use in Special Training Units generally. The following groups were tested:

1. A randomly selected group of 100 white English speaking entrants.
2. A second randomly selected group of 100 white English speaking entrants. These were further divided into English speaking and marginal English speaking groups on the basis of a short interview. All doubtful or otherwise handicapped cases were included in the marginal English speaking groups. This second group was tested and sub-divided as described because of peculiarities in the results obtained from testing the first group of entrants.
3. Twenty-five white men in the middle of Training Level I.
4. Twenty-five white men in the middle of Training Level II.

5. Twenty-five white men in the middle of Training Level III,
6. Twenty-five white men in the middle of Training Level IV.
7. One hundred randomly selected white graduates..
8. One hundred randomly selected negro graduates.
9. A small group of 15 Chinese graduates.

Tests:

1. Group Orientation-1 (GO-1)
2. Group Target-1 (GT-1)
3. Reading Test-1 STU(R-1). This test was especially constructed for STU testing and is concerned largely with reading of passages taken from the test book employed in teaching STU men to read. It was intended to be used as a means of placing men at the proper point in reading classes.
4. Arithmetic Test-1, STU, (A-1) consists of a series of rather simple problems in addition, subtraction, division, and multiplication. It is to be employed for a purpose similar to that for which STU (R-1) is intended.
5. Qualification Test-1
6. VC-1a
7. DST-15 is primarily a reading test although writing, information and judgment are involved to some extent. The test is employed, as intended in the case of STU (R-1) and STU (A-1), to place men at the proper level in STU reading courses.
8. DST-16a is an arithmetic test, employed for placement at the proper level in STU arithmetic courses. Recognition and writing of numbers, addition, subtraction, multiplication, and division, and arithmetic reasoning are included in its content.

Procedure:

1. Administration of tests
 - a. All tests were administered by an officer from the Personnel Research Section who was thoroughly familiar with testing methods.
 - b. The following is an indication of the tests administered to each of the groups:
 - (1) The entrants were administered GT-1 and GO-1.

- (2) The twenty-five men at each of the training levels were administered Q-1, STU(A-1) and STU(R-1). Time was allowed on STU(A-1) and STU(R-1) until 90% had finished. Actually about 55 minutes were required for STU(A-1) and 30 minutes for STU(R-1). Time required to finish STU(R-1) and STU(A-1) was noted on the test blanks. In addition marks were made at stated intervals to indicate progress at that point.
- (3) The graduates were administered Q-1, STU(A-1) and STU(R-1), with test administration as just described.

2. Statistical procedures:

- a. Frequency distributions, means and standard deviations were prepared for all tests in all groups.
- b. Cumulative percentiles were computed in the two groups of entrants for GO-1 and GT-1; and in the graduate groups for DST-15, DST-16a, and VC-1a.
- c. The percentage finishing STU(R-1) and STU(A-1) were computed for each group to which they were administered for intervals of a few minutes.

Results:

1. Distributions, means, and standard deviations for GO-1 and ST-1 are given in Table I.

- a. The outstanding feature of Table I is the very low scores attained by these men on GO-1. The mean score of Grade V men at Fort McClellan was 99*, a figure considerably greater than 4.7; the mean for sample #1 in Table I (The Grade V men at McClellan differed from those at Ontario largely in that a goodly proportion of illiterates had been culled out of the McClellan men.) This discrepancy between expected and obtained results on GO-1 must be considered in the light of the GT-1 means. At McClellan Grade V men averaged 17.2, a figure very nearly the same as 16.8, the entry in Table I.
- b. Because of this finding, the second group of entrants (sample #2) were tested after separation into English and non-English speaking groups. The order of testing was reversed for sample #2, GO-1 being administered first and GT-1 second. Frequency distributions and means resulting from this second testing reveal that non-English speaking score considerably

*Grade V men are at least roughly comparable to men failing to attain a critical score of 7 on Q-1.

below English speaking on GO-1 (the difference is statistically significant with a C.R. of 5.7 and suggests that the low mean of the first sample might well be explained as due to presence on non-English speaking persons). The mean GT-1 score of non-English speaking men was not significantly different from that of the English speaking.

- c. It would seem indicated that GT-1 is quite appropriate for use in Special Training Units but that GO-1 is too difficult for non-English speaking groups at the time of their entrance. If GO-1 is to be employed, a lower critical score would have to be set, or its use restricted to graduates.

1. In Table II the means and standard deviations of Q-1 and STU,R-1 for each of the four training levels have been listed.

- a. The mean of the first level Q-1 scores is possibly somewhat below that to be expected. Grade V men at Fort McClellan scoring below 7 on Q-1 had an average of 2.34 and a standard deviation of 2.46.
- b. The rise in the mean score on both tests from level-1 to level-2 is much greater than that anticipated. The training between level-1 and 2 seems to produce a change from near zero to near perfect scores on STU,R-1. Very little additional improvement in test scores results from the additional two training levels. While the change in Q-1 scores is not so marked, the relationship to the various levels parallels that shown by STU,R-1 in that the substantial increase occurs between the first and second levels. Little additional improvement in Q-1 scores is evident beyond the second level. The reasons behind the pattern of Q-1 means are somewhat obscure. The small number of cases at each level precludes extensive speculation.
- c. If the changes in mean STU,R-1 scores from form to form were not so closely paralleled by changes in mean Q-1 scores these changes might very feasibly be interpreted as being due to the close resemblance between STU,R-1 and the test book employed in the reading course. All STU,R-1 items were taken from this text book.
- d. Since STU,R-1 was to be employed as a means of placing men at the proper level in the reading course the entries for the first reading level are of primary interest. It would have been desirable to have tested a larger group just entering the Special Training Unit. Such evidence as is available from Table II suggests that STU,R-1 is somewhat, although not greatly, too difficult for this purpose. Conclusions based on 25 cases must, of course, be tentative.

3. In Table III are given the means and standard deviations for white and colored graduates. These results may be briefly summarized by noting that the Q-1 and STU,R-1 means and S.D.'s are very similar to those obtained for samples from each of the last levels of white men, although the means are possibly a little higher; while the STU,A-1 means and S.D.'s are very similar to those obtained for STU,R-1 in that nearly all scores tended to cluster at the upper end of the scale. It is not surprising that no color differences appear. The colored, it will be noted, scored slightly higher than the white graduates. Since all graduates of STU must conform to the same achievement standards on reading and arithmetic before they are allowed to graduate, variability on these measures should be minimal.

4. The percentile values of Table IV indicate that the critical scores of 12 for GO-1 and 20 for GT-1 recommended for induction station use would eliminate much too large a percentage of STU white men. Adjustments of these scores could be made in terms of Table IV, although it must be remembered that percentiles based on 100 cases fluctuate considerably from sample to sample.

5. Table V is presented without interpretation. Interpretation would seem dependent upon the achievement standards desired and would have to make allowance for the fact that although graduates were tested any interpretation must be in terms of entrants.

6. The comments on Table V are also appropriate in connection with Table VI. While the rather small groups obtained for each of the levels are not too trustworthy individually, they do possibly indicate a trend which would be of help in deciding the most appropriate time limit for the test.

Conclusions:

1. Marginal English speaking groups score very much lower on GO-1 than do English speaking groups. GO-1 appears, consequently, inappropriate for use with non-English or marginal groups.

2. GT-1 is of appropriate difficulty level for induction station use.

3. Tentatively, STU,R-1 may be judged as having appropriate difficulty level.

4. Critical scores determined at Fort McClellan in GO-1 and GT-1 are too high for use in special training units unless it is administratively possible to eliminate large percentages of STU men.

Table I

GROUP ORIENTATION TEST (GO-1) AND GROUP TARGET TEST (GT-1)
DISTRIBUTIONS, MEANS, AND SIGMAS FOR TWO SAMPLES OF WHITE
ENTRANTS TO THE FT. ONTARIO SPECIAL TRAINING UNIT
WITH SUBDIVISION OF THE SECOND SAMPLE
INTO ENGLISH AND NON-ENGLISH SPEAKING

<u>SAMPLE #I</u>				<u>SAMPLE #II</u>							
				<u>ENGLISH SPEAKING</u>				<u>NON-ENGLISH SPEAKING</u>			
<u>GO-1</u>		<u>GT-1</u>		<u>GO-1</u>		<u>GT-1</u>		<u>GO-1</u>		<u>GT-1</u>	
<u>x</u>	<u>fx</u>	<u>x</u>	<u>fx</u>	<u>x</u>	<u>fx</u>	<u>x</u>	<u>fx</u>	<u>x</u>	<u>fx</u>	<u>x</u>	<u>fx</u>
15	1	28		15		28		15		28-29	
14	1	26-27	2	14	1	26-27	3	14		26-27	
13	2	24-25	6	13	2	24-25	5	13		24-25	2
12	2	22-23	6	12	1	22-23	5	12		22-23	5
11		20-21	16	11	5	20-21	11	11		20-21	3
10	3	18-19	8	10	4	18-19	12	10		18-19	3
9	3	16-17	10	9	9	16-17	8	9		16-17	2
8	3	14-15	12	8	7	14-15	12	8	3	14-15	8
7	3	12-13	5	7	5	12-13	10	7	3	12-13	4
6	7	10-11	3	6	16	10-11	4	6	3	10-11	3
5	4	8-9	4	5	6	8-9	2	5	3	8-9	2
4	4	6-7	0	4	5	6-7	1	4	4	6-7	1
3	6	4-5	3	3	5	4-5		3	3	4-5	2
2	8	2-3	1	2	3	2-3		2	7	2-3	
1	10	0-1	1	1	2	0-1		1	4	0-1	
0	12	-	-	0	2	-		0	5	-	-
M	75	M	75	M	73	N	73	M	35	N	35
M	4.7	M	16.8	M	6.7	M	17.2	M	3.5	M	15.5
S.D.	4.0	S.D.	5.7	S.D.	3.1	S.D.	4.6	S.D.	2.6	S.D.	5.5

Table II

MEANS AND STANDARD DEVIATIONS OF QUALIFICATION TEST -1
AND STU READING TEST -1 FOR 25 MEN HALF-WAY THROUGH EACH
OF THE FOUR ACADEMIC TRAINING LEVELS AT THE FORT ONTARIO
SPECIAL TRAINING UNIT

	<u>Q-1</u>		<u>STU, R-1</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Level #1	1.9	2.3	10.7	7.8
Level #2	7.0	2.9	20.7	3.7
Level #3	8.6	2.8	22.0	2.7
Level #4	7.9	3.8	19.9	6.1

Table III

MEANS AND STANDARD DEVIATIONS OF QUALIFICATION TEST-1,
STU READING TEST-1, AND STU ARITHMETIC-1 IN WHITE,
COLORED, AND CHINESE GRADUATES
OF THE FT. ONTARIO SPECIAL
TRAINING UNIT

<u>TEST</u>	<u>WHITE</u>			<u>COLORED</u>			<u>CHINESE</u>		
	<u>MEAN</u>	<u>S.D.</u>	<u>N.</u>	<u>MEAN</u>	<u>S.D.</u>	<u>N.</u>	<u>MEAN</u>	<u>S.D.</u>	<u>N.</u>
Q-1	8.9	3.6	95	9.3	2.8	99	7.4	2.7	13
STU, R-1	21.1	4.0	95	22.0	2.8	99	18.7	4.7	13
STU, A-1	73.5	13.5	96	68.7	11.6	99	84.3	8.2	13

Table IV

PERCENTAGES OF FORT ONTARIO WHITE ENGLISH SPEAKING
SPECIAL TRAINING UNIT ENTRANTS SCORING AT OR BELOW
EACH SCORE ON GO-1 AND GT-1

<u>GO-1</u>		<u>GT-1</u>	
<u>Score</u>	<u>Percent</u>	<u>Score</u>	<u>Percent</u>
15	100.0	28-29	100.0
14	100.0	26-27	100.0
13	98.6	24-25	95.9
12	95.9	22-23	89.0
11	94.5	20-21	82.2
10	87.7	18-19	67.1
9	82.2	16-17	50.7
8	69.9	14-15	39.7
7	60.3	12-13	23.3
6	53.4	10-11	9.6
5	31.5	8-9	4.1
4	23.3	6-7	1.4
3	16.4	4-5	0.0
2	9.6	2-3	0.0
1	5.5	0-1	0.0
0	2.7		

Table V

PERCENTAGES OF FORT ONTARIO SPECIAL TRAINING UNIT WHITE AND
COLORED GRADUATES FINISHING STU ARITHMETIC TEST-1, DURING
OR BEFORE THE TIME INTERVALS LISTED

<u>TIME IN MINUTES</u>	<u>WHITE GRADUATES</u>	<u>COLORED GRADUATES</u>
0-4	0.0	0.0
5-9	0.0	0.0
10-14	0.0	3.1
15-19	2.1	4.1
20-24	18.7	7.1
25-29	38.5	19.4
30-34	61.5	27.6
35-39	74.0	49.0
40-44	91.7	69.4
45-49	97.9	91.8
50-54	100.0	94.9
55-59	100.0	96.9
60-64	100.0	100.0

Table VI

PERCENTAGES OF FORT ONTARIO WHITE AND COLORED FINISHING
STU, READING TEST-1, DURING OR BEFORE THE
TIME INTERVAL LISTED..

ENGLISH SPEAKING WHITES

<u>TIME IN MINUTES</u>	<u>LEVEL-I</u>	<u>LEVEL-II</u>	<u>LEVEL-III</u>	<u>LEVEL-IV</u>	<u>WHITE GRADUATES</u>	<u>COLORED GRADUATES</u>
0-1	0.0	0.0	0.0	0.0	0.0	0.0
2-3	0.0	0.0	0.0	0.0	0.0	0.0
4-5	0.0	0.0	0.0	0.0	1.1	0.0
6-7	0.0	0.0	0.0	0.0	3.2	0.0
8-9	5.9	0.0	25.0	4.3	12.6	12.1
10-11	5.9	12.0	46.4	17.4	46.3	31.3
12-13	11.8	12.0	64.3	65.2	61.1	44.4
14-15	17.6	24.0	78.3	73.9	73.7	68.7
16-17	41.2	68.0	82.1	87.0	92.6	90.9
18-19	47.1	72.0	92.9	91.3	96.8	97.0
20-21	52.9	88.0	100.0	91.3	100.0	100.0
22-23	70.6	88.0	100.0	91.3	100.0	100.0
24-25	70.6	100.0	100.0	91.3	100.0	100.0
26-27	70.6	100.0	100.0	91.3	100.0	100.0
28-29	76.5	100.0	100.0	91.0	100.0	100.0
30-31	82.4	100.0	100.0	91.0	100.0	100.0
32-33	88.2	100.0	100.0	91.0	100.0	100.0
34-35	88.2	100.0	100.0	91.0	100.0	100.0
36-37	100.0	100.0	100.0	91.0	100.0	100.0
38-39	100.0	100.0	100.0	100.0	100.0	100.0

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