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# AN EVALUATION OF THE ARMY RADIO CODE APTITUDE TEST

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AN EVALUATION OF THE ARMY RADIO CODE APTITUDE TEST,

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## AN EVALUATION OF THE ARMY RADIO CODE APTITUDE TEST

### INTRODUCTION

The Navy in 1966 analyzed the Radio Code Aptitude Test to determine whether the number of test items could be reduced. <sup>1/</sup> The test provides a quick work sample index of the speed with which persons learn Morse code. The Navy had received complaints that the test was so highly speeded toward the end, that it led to frustration and demotivation of the examinees. Since the Army Radio Code Aptitude Test, or Auditory Perception Test, contains the identical test items, a sample of answer sheets for Army recruits was analyzed to determine whether the Army test too should be shortened.

### DESCRIPTION OF THE RADIO CODE APTITUDE TEST

The Radio Code Aptitude Test, called ARC in the old ACB, or Auditory Perception in the new ACE, presents the three letters I, N, and T for the examinee to learn. The letters are presented via a tape or disc recording and no reading is required. After extensive training with feedback on learning the code for these letters, they are presented at a faster rate for testing purposes. The initial block of 75 letters for testing is presented at an equivalent of 11 words per minute and the final block of 75 letters at 15 words per minute. The utility of the final block was questioned by the Navy, and 60 of the 75 items were eliminated from the test. The test items on the answers are arranged in five columns of 30 items each and these columns provide a convenient means for assessing the sequential effects of the highly speeded task. The test is scored with a correction for guessing, one half the number wrong is subtracted from the number right.

### METHOD

Answer sheets for 488 Army recruits were selected for analysis. These cases cover the full range of scores. The analysis consisted of scoring each column of 30 items, or part, to determine the number of omits, rights, and wrongs, and the intercorrelation of the parts and total score. The first two parts are presented at 11 words per minute and the last two parts at 15 words per minute. Half of the middle part is presented at 11 words per minute and half at 15.

<sup>1/</sup> Rimland, B. An evaluation of a short form of the Radio Code Aptitude Test. San Diego. US Naval Personnel Research Activity. Research Report 67-2. August 1966

## RESULTS

The mean number of items omitted, right and wrong for each part is shown in Table 1.

Table 1

### MEAN NUMBER OF RADIO CODE ITEMS OMITTED, RIGHT, AND WRONG

N = 488

<u>Part of Test</u>	<u>Omitted</u>	<u>Right</u>	<u>Wrong</u>
First	6.3	18.9	4.8
Second	9.4	14.2	6.4
Third	10.1	12.8	7.1
Fourth	14.6	8.9	6.5
Fifth	15.3	7.8	6.9

These results are consistent with those of the Navy. The number of omits increased and the number of rights decreased. While there is a sharp change between the third and fourth parts, there is also a change between the first and second. It is possible that some examinees tend to give up early in the test, while others do so after the speed is increased.

Another aspect of the meaning of the scores for each part is obtained from the pattern of intercorrelations. The intercorrelations, shown in Table 2, among the parts and total test score are measures of reliability. If random responses increase in the later parts, then the correlation will decrease. Internal-consistency measures of reliability, such as split-half or odd-even split for the total test, are not appropriate because the tasks are so similar, i.e., recognition of the code for the three letters I, N, and T; a measure of stability is appropriate because the intent is to determine the effects of speededness in successive parts.

Table 2

### INTERCORRELATION OF PARTS OF RADIO CODE TEST

<u>Part</u>	<u>Part</u>					<u>Total</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
1		.45	.53	.48	.41	.77
2	.45		.57	.56	.48	.79
3	.53	.57		.61	.54	.83
4	.48	.56	.61		.59	.79
5	.41	.48	.54	.59		.71

The stable patterns of correlation among the parts suggests that the reliability did not decrease for the latter parts. In addition, all parts were about equally correlated with total score, except for the final part which was somewhat lower than the earlier parts.

#### DISCUSSION AND CONCLUSION

The results do not provide a clearcut case for shortening the radio code test. The number of omitted items does increase in the final two parts, which suggests greater frustration, but the test is intended to increase in difficulty in these parts. The reliability of the parts does not seem to be adversely effected. Further considerations in deciding to change the test are administration time and scoring convenience. Neither of these would be materially affected by deleting the final set of items. Another consideration, not included in the analysis, is the predictive validity of the test. It is possible that the final set of items, even though frustrating to many examinees, contributes to the prediction of job training success. In light of the above considerations, the decision was made to retain the radio code test in its present form.