UNANNOUNCED

RESEARCH MEMORANDUM

(9) Research memo-

NUMBER 54-19

(11) May 1954

(14) AGO-RM-54-19

(12) 13

(6) VALIDATION OF COUNTERINTELLIGENCE CORPS INSTRUMENTS

C-11-166-11.

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VALIDATION OF COUNTERINTELLIGENCE CORPS INSTRUMENTS

I. INTRODUCTION

At the close of World War II, the personnel who were available for Counterintelligence Corps (CIC) assignment were considerably lower in caliber than those available during full mobilization. CIC representatives observed that this difference in personnel occurred in character and personality traits as well as in mental traits. In June of 1947, after it was decided that a program would be feasible, The Adjutant General's Office was authorized to establish a research program for the selection of CIC personnel.

In the first phase of this program, a battery of special tests was prepared. The study was suspended, however, in April 1948 at the request of the Director of Intelligence because of the urgency of the work load of CIC agents.

Late in 1949, the research program was resumed. It was then planned to administer experimental tests both at the CIC School and to CIC field agents. Field agents were tested by testing teams (composed of new CIC graduates) trained in test administration by Personnel Research Branch representatives. Validation of these tests and of background variables from Forms 20 and 66 was to be accomplished against follow-up evaluations of on-the-job proficiency. The criterion instrument was to be:

The CIC Criterion Form, DA PMT 2312 (3).

Among special tests prepared in the first phase of this program were the following instruments (2):

Biographical Information Blank, Counterintelligence,
Booklet I, DA PMT 853

Biographical Information Blank, Counterintelligence,
Booklet II, DA PMT 855

(A specific key for selecting CIC agents was also considered for the Army Activities Preference Blank, APB-1, DA PMT 702.) No predetermined keys existed for these instruments. These BIB's were later dropped when it was found that suitable item-analysis samples could not be obtained.

After implementation of the data collection procedures, it was also determined that sufficient follow-up criterion data on the school-tested agents would not be available in a reasonable length of time. Further, it was found that distributions of agents' report ratings and duties performed in ZI and overseas were not comparable. For example, in HUCOM and Austria, agents handled all contacts and interviews on a given case and were responsible

for integrating and developing the case. In ZI, work was parcelled out in such a way that an agent might be responsible for no more than a single contact; integration of all material on the case might be developed at a higher level within the Army area having control of the case.

It was then learned that the CIC Center had established a practice of requiring progress report ratings on each agent in the field. This progress report was suggested by CIC representatives as a means of obtaining more follow-up ratings on agents tested at the school, as well as for agents tested in the field. It also afforded a better opportunity to obtain criterion data for men assigned to overseas jobs. In addition, the use of progress reports would facilitate the testing of equivalence among groups assigned to different areas as well as increase the size of the usable sample.

The progress report ratings at CIC Headquarters were made available for PRB use. A pilot study of the ratings received by a random sample of 100 men indicated that this criterion provided sufficient variability among agents to warrant its use in this study. It was decided, therefore, to discard the Criterion Form, DA TRT 2312 and to use the progress report rating as a measure of on-the-job proficiency.

This research memorandum presents the results obtained for experimental predictor tests validated against this rating criterion.

II. DESIGN OF THE STUDY

A. SAMPLES

The men in this study were enlisted men and officers in CIC School at Fort Holabird or serving as CIC investigative agents assigned to duty in ZI and overseas commands. Various samples of the available cases were used in the several analyses that were made:

1. Samples A-D. Four samples were used in validating the battery of tests prepared for CIC selection. The samples were distinguished according to conditions of testing and nature of the job.

Sample A: N = 155 tested at CIC School and assigned to ZI

Sample B: N = 185 tested at CIC School and assigned overseas

Sample C: N = 128 tested on-the-job and assigned to ZI

Sample D: N = 171 tested on-the-job and assigned overseas

Those in Sample D included men assigned to Germany and Austria; those in Sample B included men assigned to Far East duty as well as Germany and Austria, since no on-the-job testing was done in FECOM.

2. Sample E. This sample was used in validating the predictor tests against a graduation vs. attrition criterion. Sample E included Samples A and B plus additional men who were tested at CIC School. Sample E also included

men tested at CIC School and assigned to administrative rather than investigative jobs. Up to 1123 men were included in Sample E.

3. Sample F. During the course of the data analysis, the CIC Evaluation Panel requested assistance in determining whether the panel interview in use at Fort Holabird was helping to select the right men for the school. To obtain information on this question, additional data were collected on an additional sample of 264 men--Sample F. The additional data were: Aptitude Area I scores, the panel interview rating, and final school grade.

B. VARIABLES[1/]

1. Predictor Variables. The predictor tests are described in a previous report (1), except for the tests of the Army Classification Battery and for the panel interview rating added after the study was underway.

4. Word Fluency Test, DA PRT 851.

In Part I, the examinee is required to copy a list of words. In Part II, the examinee lists as many words as he can think of that start with a specified letter.

5. Knowledge of Slang Test, DA PRT 852.

This test consists of 80 items. In each item, a lead word or phrase is given followed by five possible answers, one of which is the slang word meaning the same as the word or phrase given. Each of the five possible answers gives the first and last letters of a word with a dash to indicate missing letters (for example: B - - F for complain).

6. Related Forms Test, DA PRT 2311.

This form consists of 30 items. Each item consists of Group A and Group B, each of these groups having three figures or forms in it. Three more figures or forms are given, and the examinee is asked to indicate for each of these three forms whether it should be classified with Group A or classified with Group B.

7. Inspection Speed Test, DA PRT 2306.

Part I consists of 44 pairs of forms and designs. The examinee indicates whether or not the pairs are the same or different. Part II consists of 40 black and white objects each of which has four possible answers. The examinee selects the answer that is exactly like the stimulus object.

8. Army Clerical Speed Test, ACS-1, DA PRT 686.

Section I of the ACS-1 consists of number reversals where the examinee indicates if the reversal is right or wrong. Sections 2 and 3 consist

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1/ For convenience, code numbers used in the program plans of this study are retained in this research memorandum.

of words with a figure code as the key for each word. The words are then repeated in random order with all figure codes as possible answers. The examinee must mark the correct figure code for each word.

9. Broken Words Test, Counterintelligence, DA PRT 861.

This test consists of 26 broken words, that is, parts of the letters of each word are missing. The examinee is to write the word which each broken word would be if the missing parts were put in.

10. Broken Pictures Test, Counterintelligence, DA PRT 896.

This test consists of 30 broken pictures. The examinee identifies the object pictured as it would be if the missing part were present.

Variables 11-19, inclusive, were nine observation tests presented on a continuous reel of 16mm film. Each part is separated by a blank strip of film. The first three parts are silent motion picture sequences; the fourth is a talking picture; the last five are voice recordings on sound track only. The time required to show the various films ranges from 1 minute 25 seconds to 6 minutes 25 seconds.

11.	Visual	DA PRT 874, Subject: Harbor House
12.	Visual	DA PRT 875, Subject: Sergeant Sequence
13.	Visual	DA PRT 876, Subject: Three Monkeys
14.	Visual and Auditory	DA PRT 877, Subject: Chromium
15.	Auditory	DA PRT 878, Subject: Indian Story
16.	Auditory	DA PRT 879, Subject: Submarine Log
17.	Auditory	DA PRT 880, Subject: The Document
18.	Auditory	DA PRT 881, Subject: Raid Commander
19.	Auditory	DA PRT 882, Subject: Conversation

After each test, the examinee answers the questions in the Observation Test Booklet about the action he has seen in the film. A second set of test questions for Variable 12 are not administered until after the third film (Variable 13) and its test questions have been administered. Similarly, questions for Variable 16 are not administered until after the sound track and questions for Variable 17 have been presented. This delay is interposed so that the scores on Variables 12 and 16 will be influenced by retroactive inhibition.

In addition to the foregoing predictor instruments, the Army standard scores on the following AGCT tests were obtained from Forms 2D:

29. Reading and Vocabulary Test

30. Arithmetic Reasoning Test

31. Pattern Analysis Test

32. Mechanical Aptitude Test

2. Criterion Variables. The validity results presented in this research memorandum used the following criterion variables:

58. Average Progress Report Score for ZI investigative assignment

59. Average Progress Report Score for overseas investigative assignment

60. Average Progress Report Score for administrative assignment

61. CIC School Graduation vs. Attrition

Section I of the CIC Progress Report provides for ratings of Inadequate, Adequate, and Excels in nine job elements. Numerical ratings of 0, 1, or 2 respectively were assigned by PRB to represent the three rating categories applied to each job element. A check on the possibility of the existence of a grade or experience bias revealed only that warrant officers received slightly higher progress report scores than did officers and enlisted men. There appeared to be no difference between ratings received by officers and enlisted men. The same was true for experience. This latter is expected when it is considered that warrant officers are certain to have had longer experience in a given specialty. It was decided, therefore, that nothing would be gained by adjustment of the criterion scores to control this effect.

III. STATISTICAL ANALYSIS AND RESULTS

Means and standard deviations of the tests in the CIC battery are presented in Table 1. Validity coefficients against the progress report criterion for Samples A-D are presented in Table 2. The validity coefficients of the special aptitude tests were not higher than could be expected by chance.

In view of the failure of the tests to predict agent performance, it remained to determine whether some of the tests would be useful in predicting performance in CIC school. To minimize restriction in the criterion range, pass-fail (graduation-attrition) in CIC school was used as a criterion rather than numerical grade. Another reason for selecting a pass-fail criterion was that numerical grades were not available for students who failed to complete the course. Analysis was performed on a maximum N (Sample E--personnel tested at CIC school) for each variable. The biserial correlations of the various predictor tests against CIC School Graduation vs. Attrition are given in Table 3. Tests having a high verbal component, all of which intercorrelated appreciably, were found to have the best validity coefficients. From inspection of these data it was apparent that no battery could be selected which would produce a

multiple R of more than about .30. Because of the severe restriction in range apparent in the means and standard deviations of the selector (Aptitude Area I), it is likely, however, that the validity of a number of measures would be considerably higher in an unselected group of Army enlisted men.

Analysis of AA-I scores and panel interview ratings against CIC School Final Grade in Sample F is presented in Table 4. AA-I plus panel interview produced a correlation of sums of .41 which is surprisingly high in view of the restriction in range on AA-I (a minimum score of 110 is required for admission to CIC School).

IV. DISCUSSION

The validity coefficient of .41 for the combination of panel interview and AA-I scores when used as predictors of CIC school success was better than the validity of a battery of specially designed abilities tests. The panel interview is used routinely by the CIC, and AA-I scores are available on all applicants from the Forms 20 and 66. In the interests of economy, it would be possible to decentralize the panel interview and administer it in the Army areas rather than at the CIC School.

The attempt to measure job performance was unsuccessful in part because of differences in the nature of the job from one Army area to another. This was particularly true of ZI and overseas assignments. Although there is but one MOS for CIC Investigators, there is considerably heterogeneity of duties performed under this MOS. Another complicating factor (making validation difficult against a rating criterion) is the possibility that, since the agent performs much of the job on his own without supervision, adequate ratings based on direct observation cannot be obtained.

Various difficulties in administration and scoring of instruments were encountered. In the case of the Observation Tests (films) there was considerable variation in equipment and facilities from installation to installation. Some of the tests, e.g., the Word Fluency Test and the Broken Words Test, required write-in responses. Time required and difficulties encountered during scoring bear out the previous belief that objective machine-scorable tests are preferable for field use.

The use of testing teams for administration of tests was found to be satisfactory. However, the gathering of criterion data by these teams was somewhat less satisfactory. It is believed that problems arising from field administration of tests can most effectively be handled by personnel who are familiar with the design of the study. On the other hand, the use of the mark-sensing card technique, a cooperative effort between Fort Holabird personnel and PRB, was very successful in facilitating the gathering of school success and follow-up criterion data.

Table 1

Means and Standard Deviations for CIC Battery

Variables	Sample A: N	M	σ	Sample B: N	M	σ	Sample C: N	M	σ	Sample D: N	M	σ
04 Word Fluency	155	82.66	13.00	183	83.90	11.26	128	81.26	13.78	171	86.04	12.56
05 Knowledge of Slang	155	41.44	11.09	183	42.87	11.50	128	39.51	10.44	-	-	-
06 Related Forms	-	-	-	-	-	-	128	23.16	16.73	-	-	-
07 Inspection Speed	155	51.46	7.79	183	52.27	7.40	128	49.19	8.70	171	53.10	7.01
08 Army Clerical Speed	155	139.50	26.60	183	142.00	28.35	128	128.30	22.55	171	139.40	26.65
09 Broken Words	155	17.49	3.04	183	17.39	2.88	128	16.89	3.15	171	16.44	3.34
10 Broken Pictures	155	14.43	4.49	183	15.02	4.01	128	13.64	4.16	171	13.48	4.60
11 Observation Test I	155	17.06	2.81	183	16.57	3.12	128	16.47	3.18	171	17.59	2.80
12 Observation Test II	155	8.28	2.22	183	8.01	2.07	128	8.11	2.09	171	8.94	2.21
13 Observation Test III	155	9.26	2.29	183	9.08	2.44	128	9.14	2.42	171	9.42	2.11
14 Observation Test IV	155	15.62	3.64	183	15.28	3.51	128	15.20	3.42	171	15.92	3.43
15 Observation Test V	155	17.97	3.38	183	17.43	3.42	128	16.86	3.80	171	13.73	3.09
16 Observation Test VI	155	9.30	2.27	183	9.22	2.13	128	8.95	2.39	171	9.07	2.43
17 Observation Test VII	155	6.27	1.91	183	6.18	1.85	128	6.34	1.87	171	6.05	1.77
18 Observation Test VIII	155	14.51	1.97	183	14.26	2.26	128	13.91	2.74	171	14.13	2.61
19 Observation Test IX	155	12.87	2.62	183	13.13	2.64	128	12.80	3.20	171	12.53	2.99
29 Reading and Vocabulary	76	127.72	14.66	98	127.61	11.85	82	124.13	13.04	157	128.62	11.26
30 Arithmetic Reasoning	76	122.06	12.47	98	123.17	12.24	82	120.60	10.10	157	123.21	13.68
31 Pattern Analysis	76	119.43	14.90	97	120.24	16.29	81	117.74	16.31	156	121.61	15.35
32 Mechanical Aptitude	61	122.00	13.64	99	120.94	14.37	55	120.91	15.83	110	123.27	15.74

Table 2

Validity Coefficients of CIC Variables Against Average Progress Report Scores for ZI and Overseas Investigative Assignments.

	Variables	School Tested		Field Tested	
		Assigned ZI Sample A	Assigned O/S Sample B	Assigned ZI Sample C	Assigned O/S Sample D
		r	r	r	r
04	Word Fluency	.11	-.03	-.01	.11
05	Knowledge of Slang	.01	.05	.06	-
06	Related Forms	-	-	.12	-
07	Inspection Speed	.06	.13	.04	-.10
08	Army Clerical Speed	.09	.02	.04	.01
09	Broken Words	-.04	-.05	.00	-.03
10	Broken Pictures	-.10	-.06	-.06	-.02
11	Observation Test I	.04	.05	.01	-.02
12	Observation Test II	.10	.08	.08	.08
13	Observation Test III	.06	.04	.07	.02
14	Observation Test IV	-.08	-.01	.12	-.05
15	Observation Test V	.06	.06	.00	-.04
16	Observation Test VI	.09	.03	-.06	.00
17	Observation Test VII	-.10	-.02	.07	-.12
18	Observation Test VIII	.09	.06	.00	.03
19	Observation Test IX	.07	.10	.00	-.05
29	Reading and Vocabulary	.00	.20	.11	.01
30	Arithmetic Reasoning	.13	.12	-.11	.01
31	Pattern Analysis	.00	-.03	-.15	-.04
32	Mechanical Aptitude	-.11	.00	-.10	-.14

Table 3

Biserial Correlation of Various Predictor Tests vs. CIC School Graduation vs. Attrition. Sample E

No.	Variable	N_T	pss	r_{bis}
4.	Word Fluency	1123	60	.21
5.	Knowledge of Slang	1123	60	.28
7.	Inspection Speed	1123	60	.14
8.	Army Clerical Speed	1123	60	.14
9.	Broken Words	1122	60	.15
10.	Broken Pictures	1123	60	.01
11-19	Observation Tests I - IX*	1117	60	.22
29.	Reading and Vocabulary	458	76	.22
30.	Arithmetic Reasoning	458	76	.23
31.	Pattern Analysis	457	75	.05
32.	Mechanical Aptitude	416	74	.18

* For this analysis observation tests were combined to yield a single score.
** Point of cut: the percent passing CIC School

Table 4

Intercorrelations Among Final Grade at CIC School, Evaluation Panel Rating, and Aptitude Area I Score. Sample F--N = 264

Variable	Mean	Standard Deviation	Intercorrelation 1	2	
Final Grade	86.83	3.52	1		
Panel Rating	38.01	5.89	2	.33	
AA-1 Score	127.33	8.71	3	.32	.21

Correlation of sums $r_{3(1+2)} = .41$

PERSONNEL

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REFERENCES

Reports of the Personnel Research Branch, Personnel Research and Procedures Division, The Adjutant General's Office, Department of the Army.

1. PRB Report 750. Report on construction of an experimental battery of ability tests for the selection of CIC agents. March 1948.

2. PRB Report 761. Construction of a Biographical Information Blank, Counterintelligence. August 1948.

3. Research Memorandum 52-26. Construction of criterion instrument for the validation of the Counterintelligence Corps Test Battery. April 1952.