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RESEARCH MEMORANDUM 60-21

Construction of Item Pools
for Experimental AQB Tests...
MA and ELI

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PERSONNEL RESEARCH BRANCH

Research and Development Division
The Adjutant General's Office
Department of the Army

79 12 18 244

Army Project Number
2195-60-001

Input Quality c-11

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Research Memorandum 60-21

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CONSTRUCTION OF ITEM POOLS FOR EXPERIMENTAL AQB TESTS--MA AND ELI

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AGO-PRB-RM-60-21

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November 1960

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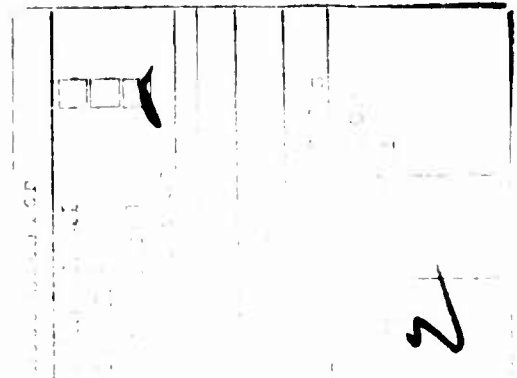
JOB

CONSTRUCTION OF ITEM POOLS FOR EXPERIMENTAL AQB TESTS--MA AND ELI

PURPOSE

Research on the maintenance of Army induction and classification test batteries involves the development of alternate forms of each test for periodic replacement. The initial form of the Army Qualification Battery, developed and standardized for operational use in a relatively short time, was considered an interim measure (Bayroff, Seeley, and Anderson, 1959). In developing the component tests, items were selected almost exclusively from operational tests, and the types of item which could be included were limited. Development of alternate forms of the AQB tests was therefore undertaken even before AQB-1 was completed.

AQB-1 consists of two parts. Part A is made up of the four subtests of the Armed Forces Qualification Test: Vocabulary, Arithmetic Reasoning, Tool Functions, and Spatial Relations. Part B is composed of four new tests constructed to parallel tests of the Army Classification Battery: Mechanical Aptitude, Electrical Information, Automotive Information, and Clerical Speed. With the introduction of Forms 7 and 8 of the Armed Forces Qualification Test, newly developed alternate forms of the four AFQT subtests automatically became available. Alternate forms of the four tests of Part B were needed, as well as AQB counterparts of two additional ACB measures not included in AQB-1: the General Information Test and the Classification Inventory. GIT and CI forms for the AQB have been prepared by the Combat Selection Task for standardization. The two tests would provide scores needed for use in two aptitude areas introduced in 1958, Infantry--Combat (IN) and Armor-Artillery-Engineer--Combat (AE). For alternate forms of the Automotive Information Test, a pool of 324 items has been prepared by personnel of the Input Quality and the New Classification Techniques Tasks. The large pool of items was designed to provide content for alternate forms of the AQB Automotive Information Test and also for revisions of ACB tests in the mechanical domain. Construction of the items and their arrangement in booklets appropriate for the desired item analysis have been reported in a prior Research Memorandum (Helme, Kotula, and Anderson, 1959). The Army Clerical Speed Test consists of speeded items all of approximately the same difficulty. No need exists, therefore, to develop item pools for item analysis. The only other ACB test not represented in the AQB is the Army Radio Code Aptitude Test, for which no counterpart is contemplated. The construction of item pools for alternate forms of the Mechanical Aptitude and Electrical Information tests are described in the present Research Memorandum.



MECHANICAL AND ELECTRICAL INFORMATION ITEM POOLS

For the Mechanical Aptitude item pool, 92 items were prepared. All items are pictorial, consisting either of a drawing which serves as the basis for a verbal question and four verbal alternative responses, or of a verbal question and four pictorial alternatives. Adoption of a uniform four-alternative format was a departure from the MA test of the AQB-1 in which items are presented with two, three, and four choices. However, the four-alternative format conforms to that of almost all Army classification and screening tests, and probably makes for greater reliability. Items were arranged in two forms of equal length intended to be parallel: MA Form A (PT 3941) and MA Form B (PT 3943).

The Electrical Information item pool contains 90 items arranged in two forms of 45 items each: ELI Form A (PT 3969) and ELI Form B (PT 3971). Fifteen items in Form A and 16 in Form B are pictorial.

Since the tests are intended for use principally with Category IV personnel, an attempt was made to provide a reasonable number of items that would be likely to fall in the .50 to .90 p-value range. In all four forms, the items were arranged in approximate order of difficulty as judged by the project director. A time limit of 20 minutes for each test was established on the basis of previous experience with mechanical and electrical items. A single manual was prepared covering administration of all four forms: Manual for Administering the Mechanical Aptitude Test and the Electrical Information Test of the AQB (PT 3945). Scoring keys were also prepared for MA Form A, PT 3942; for MA Form B, PT 3944; for ELI Form A, PT 3970; for ELI Form B, PT 3972.

SOURCES OF ITEMS

The various sources of the items used in the MA and ELI item pools are shown in Tables 1 and 2, together with the number of items from each source. In some instances, items were lifted unchanged from the source indicated; in most cases, however, some modification was made.

Table 1

ITEM POOL FOR MECHANICAL APTITUDE TESTS OF THE AQB

Source	Number of Items	
	Form A PT 3941	Form B Pt 3943
Original Items	27	29
Craftsman Aptitude Test, PT 3680	4	4
Basic Classification Battery - Shop Mechanics, Experimental Form, 1943	1	1
General Mechanical Aptitude Test, CM-142a, 1945	5	4
Ft. Bliss AAA and GM School, Electronics and Engineering Dept, Examination A, March 1956	1	2
U.S.A.F. Airman Classification Battery, Bk 2 AF PRT 8, 1955	6	2
U.S.A.F. Airman Classification Battery, Bk 3 AF PRT 10, 1955	2	4
Total Items Used	46	46

Table 2

ITEM POOL FOR ELECTRICAL INFORMATION TESTS OF THE AQB

Source	Number of Items	
	Form A PT 3941	Form B PT 3943
Original Items	26	28
General Electrical Information Test, PT 3762	6	5
Electronics Selection Battery, Bk 2, DA PT 3649	1	0
Basic Classification Battery - Electrical Information, Experimental Form, 1943	6	3
U.S.A.F. Airman Classification Battery, Bk 3, AF PRT 10, 1955	1	5
California State Dept. of Educ. Tests to Accompany Courses in Elec. Wiring and for Elec. Linemen, 1951	2	4
Total Items Used	45	45

REFERENCES

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

1. Bayroff, A. G., Seeley, L. C., and Anderson, A. A. Development of the Army Qualification Battery, AQB-1. Technical Research Report 1117. October 1959.
2. Helme, W. H., Kotula, L. J., and Anderson, A. A. Construction of Alternate Forms of the Automotive Information Test. Research Memorandum 59-15. December 1959.