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Technical Research Note 128

GROUPING ARMY TRAINING COURSES  
BY  
ARMY CLASSIFICATION BATTERY FACTORS

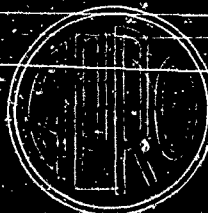
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# GROUPING ARMY TRAINING COURSES BY ARMY CLASSIFICATION BATTERY FACTORS,

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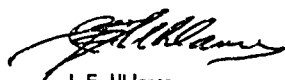
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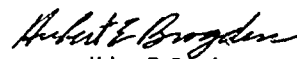
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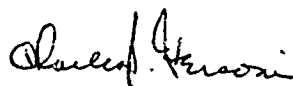
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## PREFACE

The present publication reports on a portion of Subtask c, "Preparation of selected alternate ACB tests," of the NEW CLASSIFICATION TECHNIQUES Task, FY 62 Work Program. The entire research task is responsive to special requirements of the Deputy Chief of Staff for Personnel, the Deputy Chief of Staff for Logistics, and the U. S. Continental Army Command, and furthers the U. S. Army Military Personnel Management objective of developing, and making available for operational use, research findings and products to optimize the selection, classification, management, and utilization of Army personnel.

Development of test materials that will increase the effectiveness of the operational Army Classification Battery is a continuing task. The importance to the Army of personnel decisions made on the basis of the ACB makes it particularly necessary that these tests be kept current. Measures are also needed of human factors not yet provided for in the ACB, including measures of physical proficiency to predict whether an individual will continue to meet the physical requirements of his assignment. Additional measures of personal factors to indicate what a man will do on the job, as opposed to what he can do, are especially needed.

The primary objectives of the NEW CLASSIFICATION TECHNIQUES Task are to explore new test content that will increase the effectiveness of classification and assignment in the Army, and to construct up-to-date tests to maintain the effectiveness of tried and tested measures in operational use. A special requirement involves determination of effective combinations of screening and classification measures to evaluate the potential usefulness to the Army of applicants for enlistment and selective service registrants.

# BRIEF

## GROUPING ARMY TRAINING COURSES BY ARMY CLASSIFICATION BATTERY FACTORS

### Requirement:

Relationship of Army Classification Battery (ACB) tests to jobs in the Army's MOS structure is under continuous scrutiny to maintain effective use of the psychological measures basic to training and job assignment.

### Procedure:

Results of validity studies of ACB tests and aptitude areas as predictors of final grades in 75 Army training courses were analyzed to delineate occupational groupings of Army jobs in terms of test-job interrelationships. The 75 MOS were allocated to ten job groups, and the effectiveness of ACB tests for differentially predicting success in the ten groups was assessed.

### Results:

Nine of the job groups were well differentiated by test combinations which were much like current aptitude area selectors. Such differences as were found suggested that technical level as well as subject content is useful in differentiating between job groups, particularly in the case of electronics versus mechanical trades and services. Academic skills were found to play a part in success in all courses.

### Utilization of Findings:

MOS groupings resulting from the analysis provide guidelines which, in conjunction with across-the-board validation studies of experimental tests now being developed, will eventually be applied in adjustment of the Aptitude Area system.



# GROUPING ARMY TRAINING COURSES BY ARMY CLASSIFICATION BATTERY FACTORS

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## GROUPING ARMY TRAINING COURSES BY ARMY CLASSIFICATION BATTERY FACTORS

### APTITUDE AREAS AND OCCUPATIONAL GROUPINGS

Under the current Aptitude Area System, enlisted men are classified for training on the basis of eight aptitude area scores, each score a composite of standard scores on two tests of the Army Classification Battery (ACB). All enlisted Military Occupational Specialties (MOS) are grouped into ten occupational areas. Each aptitude area serves as a prerequisite to an occupational area, a group of MOS within an occupational area, or two related occupational areas. The correspondence between aptitude areas and occupational areas or subareas was first established in 1955. Since that time, the Combat Aptitude Area has been divided into two areas on the basis of research findings: Infantry (IN) for selection of enlisted men for infantry MOS, and Armor-Artillery-Engineer (AE), selector for all other MOS in the Combat occupational area (Willemin and Karcher, 1958). Also since 1955, changes in the assignment of MOS to occupational areas have been made. While these changes were instigated primarily for management reasons, they have also been kept compatible with research findings on aptitude areas.

Reconstitution of the Aptitude Area System in 1955 was based on findings on 31 MOS (Zeidner, Harper, and Karcher, 1956). Under a continuing research program, studies of the relation of ACB scores to performance in training courses and in Army jobs have been conducted. On the basis of 75 such studies, in which samples of 200 or more men were studied in each training course, a comprehensive analysis of the relation of the ACB to final grades in Army Service School enlisted courses has been completed. The present report interprets the results of a factor analysis of the ACB, extended to the 75 MOS courses, in terms of the occupational groupings suggested by the data.

### METHOD OF ANALYSIS

Study of 35 MOS revealed that, when MOS were grouped according to patterns of ACB validity coefficients in a set of analysis samples, there was little shrinkage in the multiple prediction in applying these weights to validation samples of the same group of MOS (Ralme, Gibson, and Brogden, 1957). Using one of the two sets of samples of 34 MOS--one of the 35 samples was omitted in view of negligible validity of all ACB tests--Gibson carried out a diagonal factor analysis (unpublished) of the ten ACB tests then current, using unity in the diagonals, and extended the factors to the 34 training course criteria. By graphic orthogonal rotation, he was able to subsume virtually all the variance common to ACB tests and criteria in only four of the ten factors. When data on 41 additional MOS training courses were obtained, Gibson's factors were extended to these MOS as well. Although most of the valid variance was still covered by the four rotated factors, there was a suggestion of two possible additional factors. Rotation of the ten test factors yielded a new orthogonal configuration in which one broad general factor, two large group factors, and three small group factors appeared.

Using this six-factor configuration, the 75 MOS were grouped in clusters by inspection and trial fitting. Each grouping showed a unique mean loading on at least one factor. No grouping had a standard deviation on any factor in excess of .100 (except in rare instances on the general factor). Average zero-order ACB test validity coefficients were then obtained for each cluster, and standard regression weights were computed. The results were then evaluated for suggestions as to changes in the aptitude area structure. However, there was no intention of implementing such changes on the basis of the present study alone. Instead, the results were interpreted as additional guidelines for (1) developing new ACB measures and (2) eventual reconstitution of the aptitude area structure.

## RESULTS

The standard matrix of ACB test intercorrelations for a full mobilization population is reproduced in Table A-1 in the Appendix. Table A-2 shows validity coefficients<sup>1/</sup> of ACB tests for the 34 MOS samples used in Gibson's analysis. Table A-3 shows coefficients for the 41 additional samples to which Gibson's original factor solution was later extended. Table A-4 gives the factor loadings of the 34 samples on the ten unrotated diagonal factors. Loadings resulting from Gibson's rotation are given for the 34 MOS in Table A-5, for the 41 additional samples in Table A-6. Final factor loadings of the 75 criteria and the ten ACB tests are presented in Table A-7. These statistics formed the basis of the clustering of MOS into ten occupational groupings.

Table 1 presents the ten occupational clusters, with the means and standard deviations of loadings on each of the six valid factors (See Figure 1 for MOS constituting the ten clusters). Table 2 shows the full standard regression weights of the ACB tests for each job cluster, obtained by multiplying the mean validity coefficients of tests for each cluster by the inverse of the standard matrix of ACB test intercorrelations. Weights for the first two clusters, Electronics Systems and Radio Communications, were highly similar, although the latter group was characterized by a substantially higher multiple validity coefficient (.80 as compared to .66). The two clusters were combined, since the patterns of validity were so similar.

For differential classification, Brogden (1955) has demonstrated that with a given battery optimal prediction, both absolute and differential, is obtained by use of the full regression equations. He has also demonstrated (Brogden, 1955) that any given constant may be added to the beta weights of a predictor for all the criteria without changing the effectiveness of differential allocation. Using the ACB beta weights for the

<sup>1/</sup> All validity coefficients were corrected for restriction in range on the aptitude area composite used for selection in the given course at the time.

| Cluster             | Current MOS                                                | Cluster               | Current MOS                                   |
|---------------------|------------------------------------------------------------|-----------------------|-----------------------------------------------|
| Electronics Systems | 223.1 Nike Electronic Maintenance                          | Clerical              | 710.0 Basic Army Administration               |
|                     | 231.1 Light Fire Control Equipment Repair                  |                       | 712.1 Stenography                             |
|                     | 233.1 Light Air Defense Artillery Fire Control Maintenance |                       | 714.1 Postal Operations                       |
|                     | 234.1 Heavy Air Defense Artillery Fire Control Maintenance |                       | 716.1 Personnel Administration Specialist     |
|                     | 281.1 Microwave Radio Equipment Repair                     |                       | 716.2 Personnel Management Specialist         |
| Radio Communication | 282.1 Radar Repair                                         | General Technical     | 717.7 Advanced Army Administration            |
|                     | 271.1 Fixed Station Radio Maintenance                      |                       | 719.1 Transportation Movement Control         |
|                     | 294.1 Field Carrier Equipment Repair                       |                       | 730.0 Finance Procedures                      |
|                     | 296.1 Field Radio Repair                                   |                       | 760.0 Supply Records                          |
|                     | 311.1 Infantry Radio Maintenance                           |                       | 763.1 Ordnance Supply                         |
| Wire Communication  | 312.1 Armor Radio Maintenance                              | General Technical     | 768.1 Unit Supply                             |
|                     | 313.1 Artillery Radio Maintenance                          |                       | 740.0 Tabulating Machine Operator             |
|                     | 311.7 (311.6) Infantry Communications Supervisor           |                       | 743.1 Machine Accounting Specialist           |
|                     | 313.7 (313.6) Artillery Communications Supervisor          |                       | 841.2 Motion Picture Photographer             |
|                     | 320.0 Field Wireman                                        |                       | 843.1 Photographic Laboratory Procedures      |
| Mechanical Trades   | 322.1 Cable Splicing                                       | Services              | 911.2 Medical Aid Procedures, Advanced        |
|                     | 321.1 Manual Central Office Repair                         |                       | 917.1 Dental Assistant                        |
|                     | 341.1 Teletypewriter Equipment Repair                      |                       | 931.1 Medical Laboratory Procedures           |
|                     | 351 Power Equipment Maintenance                            |                       | 931.1 Preventive Medicine Procedures          |
|                     | 411.2 Ammunition Records                                   |                       | 934.1 Food Inspection Procedures              |
| Motor Maintenance   | 421.1 Small Arms Weapons Repairman                         | Radio Code            | 935.1 X-ray Procedures                        |
|                     | 422.1 Field Artillery Repair                               |                       | 951.1 Military Police, Enlisted Advanced      |
|                     | 423.1 Air Defense Artillery Repair                         |                       | 952.1 Disciplinary Guard, Enlisted            |
|                     | 424.1 Turret Artillery Maintenance                         |                       | 953.1 Criminal Investigation                  |
|                     | 424-2 Turret Artillery Repairman                           | Precision Maintenance | 981.1 Cryptanalysis                           |
| Motor Maintenance   | 442.1 Welding                                              |                       | 982.1 Traffic Analysis                        |
|                     | 546 (L) Laundry and Dry Cleaning Machine Operation         |                       | 058.1 Morse Code Interception                 |
|                     | 550.0 Supply Handling                                      |                       | 059.1 Teletype Interception                   |
|                     | 621 Engineer Equipment Maintenance                         |                       | 546.1 (F) Fumigation and Bath Procedures      |
|                     | 631.1 Automotive Mechanics                                 |                       | 910.0 Medical Technician                      |
| Motor Maintenance   | 632.1 Artillery Track Vehicle Maintenance                  |                       | 914.1 Neuropsychiatric Procedures             |
|                     | 632.2 Armor Track Vehicle Mechanic                         | Radio Code            | 941.1 Cooking                                 |
|                     | 635.1 (T) Automotive Repair (Track Vehicle)                |                       | 051.1 (T) Radio Operator (Intermediate Speed) |
|                     | 635.1 (W) Automotive Repair (Wheel Vehicle)                |                       | 051.2 (H) Radio Operator (High Speed)         |
|                     | 675.1 Helicopter Maintenance                               |                       | 403.1 Fire Control Instrument Repair          |
| Motor Maintenance   | 676.1 Reconnaissance Helicopter Repairman                  |                       | 443.1 Machinist                               |
|                     |                                                            | Precision Maintenance | 452.1 Dental Laboratory Procedures            |
|                     |                                                            |                       | 634.1 Fuel and Electrical Systems Repair      |
|                     |                                                            |                       | 635-C (635.2) Automotive Rebuild              |
|                     |                                                            |                       |                                               |

Figure 1. MOS constituting the ten occupational clusters on which analysis was based.

nine job clusters, constants were added so as to maximize the number of near-zero weights. The results, shown in Table 3, indicate that, except for some negative weights for the small Radio Code Operations cluster (two MOS only), weights on three ACB tests serve clearly to differentiate each cluster. Conversely, ACB tests are clearly differentially valid for different clusters.

#### INTERPRETATION OF RESULTS

The use of factor analysis to cluster MOS training courses in terms of aptitude predictors yielded a differentiation of noncombat MOS into seven well defined and two marginally defined occupational groups. For differential classification, the clusters were, in almost every case, well predicted by use of weights on three ACB tests each. Comparison of these sets of predictive tests with the currently-used aptitude area composites showed a high degree of correspondence (Figure 2).

The above comparison is revealing in several respects: First, Wire Communications MOS are best predicted by a composite of tests making up the current General Maintenance (GM) area, plus one component of the Electronics area. Second, both the Mechanical Trades cluster and the Services cluster were best predicted by a combination of tests primarily from the Clerical and Motor Maintenance areas. Third, some value for predicting General Technical MOS is found in the Radio Information measure, the more technically complex of the two electrical-electronics tests. And finally, the Automotive Information test shows a weight for every area (except clerical) for which there is no appreciable RI weight. AI is the mechanical measure with the most concrete factual content and the least loading on abstract reasoning or verbal factors. In a sense, it is at a far lower technical level than RI.

These relationships suggest that MOS training courses might well be clustered on the basis of technical level as well as by content, with the Electronics Systems and Radio Communications at a high level along with certain General Technical MOS; the Wire Communications and Precision Maintenance at an intermediate level; and such clusters as the Mechanical Trades, Motor Maintenance, and Services at a rather concrete, specific level. The importance of RV and ACS for these latter courses may reflect the need for facility in academic skills in all courses, accentuated particularly where the technical level is lower. Validation for on-job criteria would throw some light on this hypothesis. Findings of another research study (Helme, Denton, and Anderson, 1962) of the Common Specialist Automotive Helper course (MOS 630) showed VE to be weighted substantially for the final course grade criterion, but not for the practical performance course criterion nor for the instructors' estimates of on-job capabilities per se. These interpretive hypotheses may be more effectively tested in a forthcoming analysis of 21 MOS, for which data on 17 cognitive and 7 noncognitive experimental measures, as well as the current 11-test ACB, are available.

| <u>Occupational Cluster</u>                  | <u>High Weighted Tests</u>                                                                | <u>Current Aptitude Area</u>                   | <u>Component Tests of Current Aptitude Area</u>                                                                  |
|----------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Electronics Systems and Radio Communications | Mechanical Aptitude<br>Electrical Information<br>Radio Information                        | Electronics                                    | Mechanical Aptitude<br>Electronics Information (replaced Electrical Information and Radio Information July 1957) |
| Wire Communications                          | Pattern Analysis<br>Shop Mechanics<br>Radio Information                                   | Electronics                                    | Mechanical Aptitude,<br>Electronics Information                                                                  |
| Precision Maintenance                        | Pattern Analysis<br>Shop Mechanics<br>Automotive Information                              | General Maintenance<br>or<br>Motor Maintenance | Pattern Analysis,<br>Shop Mechanics<br><br>Mechanical Aptitude,<br>Automotive Information                        |
| Mechanical Trades                            | Reading and Vocabulary<br>Army Clerical Speed<br>Shop Mechanics<br>Automotive Information | General Maintenance                            | Pattern Analysis<br>Shop Mechanics                                                                               |
| Motor Maintenance                            | Automotive Information                                                                    | Motor Maintenance                              | Mechanical Aptitude,<br>Automotive Information                                                                   |
| Clerical                                     | Reading and Vocabulary<br>Arithmetic Reasoning<br>Army Clerical Speed                     | Clerical                                       | Verbal (replaced Reading and Vocabulary July 1957), Army Clerical Speed                                          |
| General Technical                            | Reading and Vocabulary<br>Arithmetic Reasoning<br>Radio Information                       | General Technical                              | Verbal, Arithmetic Reasoning                                                                                     |
| Services                                     | Reading and Vocabulary<br>Army Clerical Speed<br>Automotive Information                   | General Technical or<br>General Maintenance    | Verbal, Arithmetic Reasoning or<br>Pattern Analysis,<br>Shop Mechanics                                           |
| Radio Code Operations                        | Reading and Vocabulary<br>Army Radio Code Aptitude<br>Automotive Information              | Radio Code                                     | Verbal, Army Radio Code Aptitude                                                                                 |
| Negative                                     | Arithmetic Reasoning<br>Pattern Analysis<br>Shop Mechanics                                |                                                |                                                                                                                  |

Figure 2. Occupational clusters resulting from factor analysis compared with current selector composites.

Table 1

TEN MOS CLUSTERS BASED ON FINAL ROTATION OF TEN ACB  
FACTORS, SHOWING MEANS AND STANDARD DEVIATIONS  
OF FACTOR LOADINGS ON EACH CLUSTER

| MOS Cluster           | Factor Loadings    |            |             |             |              |           |                    |            |             |             |              |           |
|-----------------------|--------------------|------------|-------------|-------------|--------------|-----------|--------------------|------------|-------------|-------------|--------------|-----------|
|                       | Means <sup>a</sup> |            |             |             |              |           | S. D. <sup>a</sup> |            |             |             |              |           |
|                       | I<br>(RV)          | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | X<br>(RI) | I<br>(RV)          | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | X<br>(RI) |
| Electronics Systems   | 380                | -015       | 032         | 107         | 053          | 495       | 127                | 075        | 072         | 081         | 064          | 064       |
| Radio Communications  | 592                | 035        | 013         | 180         | 040          | 483       | 099                | 034        | 077         | 048         | 059          | 034       |
| Wire Communications   | 492                | 060        | -042        | 232         | 062          | 347       | 051                | 054        | 054         | 038         | 104          | 049       |
| Precision Maintenance | 404                | 012        | -054        | 428         | 074          | 424       | 079                | 101        | 104         | 060         | 079          | 061       |
| Mechanical Trades     | 529                | 093        | -011        | 419         | 210          | 175       | 086                | 089        | 046         | 078         | 093          | 090       |
| Motor Maintenance     | 384                | 005        | 024         | 360         | 281          | 290       | 083                | 037        | 037         | 081         | 090          | 094       |
| Clerical              | 658                | 250        | 041         | 088         | 080          | 115       | 063                | 055        | 057         | 090         | 074          | 052       |
| General Technical     | 595                | 072        | 055         | 080         | 006          | 255       | 089                | 074        | 074         | 084         | 072          | 050       |
| Services              | 310                | 132        | 032         | 158         | 105          | 060       | 087                | 081        | 075         | 128         | 059          | 041       |
| Radio Code Operations | 175                | 190        | 350         | 120         | 025          | 140       | 015                | 030        | 060         | 060         | 035          | 080       |

<sup>a</sup>Decimal points omitted.

Table 2  
STANDARD REGRESSION WEIGHTS<sup>a</sup> OF TEN ACB TESTS  
IN PREDICTING MOS COURSE CRITERIA  
IN EACH MOS CLUSTER

| MOS Cluster                                     | RV  | AR | PA  | MA | ACB Tests |     |     |     |    | EI  | RI | Multiple<br>R |
|-------------------------------------------------|-----|----|-----|----|-----------|-----|-----|-----|----|-----|----|---------------|
|                                                 |     |    |     |    | ACS       | ARC | SM  | AI  |    |     |    |               |
| Electronics Systems                             | -06 | 25 | 11  | 29 | -13       | -01 | -13 | -02 | 20 | 26  | 64 |               |
| Radio Communications                            | -02 | 25 | 18  | 24 | -01       | 01  | -05 | -06 | 23 | 27  | 80 |               |
| Wire Communications                             | 01  | 19 | 19  | 14 | 02        | 01  | 05  | 00  | 13 | 15  | 66 |               |
| Precision Maintenance                           | -09 | 10 | 26  | 24 | -11       | 06  | 18  | 12  | 07 | 09  | 73 |               |
| Mechanical Trades                               | 14  | 17 | 14  | 10 | 12        | -02 | 09  | 25  | 02 | -08 | 74 |               |
| Motor Maintenance                               | 04  | 16 | 06  | 18 | 03        | -05 | -02 | 34  | 08 | 04  | 67 |               |
| Clerical                                        | 25  | 39 | -02 | 13 | 22        | 00  | -13 | -10 | 08 | 04  | 72 |               |
| General Technical                               | 22  | 31 | 09  | 21 | -01       | 00  | -15 | -13 | 11 | 16  | 66 |               |
| Services                                        | 11  | 11 | 00  | 12 | 15        | 00  | -07 | 07  | 06 | -09 | 40 |               |
| Radio Code Operations                           | 11  | 01 | -17 | 18 | 07        | 33  | -30 | 17  | 09 | 03  | 48 |               |
| Electronics Systems and<br>Radio Communications | -04 | 25 | 15  | 27 | -07       | 00  | -09 | -04 | 22 | 27  |    |               |

<sup>a</sup>Decimal points omitted.



Table 3  
REDUCED REGRESSION WEIGHTS<sup>a</sup> OF TEN ACB TESTS  
IN PREDICTING MOS COURSE CRITERIA  
IN EACH MOS CLUSTER

| MOS Cluster                                     | RV | AR  | PA  | MA  | ACB Tests |     |     |     |     |    |    |
|-------------------------------------------------|----|-----|-----|-----|-----------|-----|-----|-----|-----|----|----|
|                                                 |    |     |     |     | ACS       | ARC | SM  | AI  | EI  | RI |    |
| Added Constant:                                 |    |     |     |     |           |     |     |     |     |    |    |
|                                                 | 00 | -16 | -06 | -15 | +02       | 00  | +08 | +04 | -08 | 00 | 00 |
| Electronics Systems and<br>Radio Communications | -- | --  | --  | 12  | --        | --  | --  | --  | 14  | 27 |    |
| Wire Communications                             | -- | --  | 13  | --  | --        | --  | 13  | --  | --  | 15 |    |
| Precision Maintenance                           | -- | --  | 20  | --  | --        | --  | 26  | 16  | --  | -- |    |
| Mechanical Trades                               | 14 | --  | --  | --  | 14        | --  | 17  | 29  | --  | -- |    |
| Motor Maintenance                               | -- | --  | --  | --  | --        | --  | --  | 38  | --  | -- |    |
| Clerical                                        | 25 | 23  | --  | --  | 24        | --  | --  | --  | --  | -- |    |
| General Technical                               | 22 | 15  | --  | --  | --        | --  | --  | --  | --  | 16 |    |
| Services                                        | 11 | --  | --  | --  | 17        | --  | --  | 11  | --  | -- |    |
| Radio Code Operations                           | 11 | -15 | -23 | --  | --        | 33  | -22 | 21  | --  | -- |    |

<sup>a</sup>All weights from -.09 to .09 omitted from table. Decimal points omitted.

## SUMMARY

A diagonal factor analysis of the ten ACB tests in use up to July 1957 was extended to 75 criteria--final grades in enlisted MOS training courses representing all occupational areas except Combat. Orthogonal rotation in the predicted criterion space yielded a set of six factors accounting for virtually all valid variance of the ACB: one large general factor, two large group factors (electronic and mechanical), and three small group factors (clerical, motor mechanics, and radio code operations). On the basis of the final loadings, the 75 MOS were grouped in ten clusters. Using average validity coefficients of each ACB test for given clusters, the full standard regression equations for each cluster were derived.

The results indicated good differentiation of prediction for nine clusters; two clusters differed only in level of prediction and were combined. The job clusters and the test combinations resembled current occupational areas and aptitude area selector composites to a considerable degree. Patterns of validity suggested that MOS courses may, for classification purposes, be clustered on the basis of technical level as well as on content, and that academic skills as represented by variance predicted by verbal and clerical speed tests play a part in all courses.

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## APPENDIX

Tables A-1 through A-7. Statistical Data forming the basis for clustering MOS into ten occupational groupings.

Table A-1

STANDARD MATRIX OF INTERCORRELATIONS OF ARMY CLASSIFICATION BATTERY TESTS,  
 BASED ON LARGE-SAMPLE DATA REPRESENTATIVE OF WORLD WAR II  
 MOBILIZATION ENLISTED POPULATION<sup>a</sup>

| ACB Test |          | Intercorrelations <sup>b</sup> |          |          |          |          |          |          |          |           |  |
|----------|----------|--------------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|--|
| 1. RV    | <u>1</u> |                                |          |          |          |          |          |          |          |           |  |
| 2. AR    | 68       | <u>2</u>                       |          |          |          |          |          |          |          |           |  |
| 3. PA    | 55       | 60                             | <u>3</u> |          |          |          |          |          |          |           |  |
| 4. MA    | 50       | 55                             | 50       | <u>4</u> |          |          |          |          |          |           |  |
| 5. ACS   | 50       | 50                             | 50       | 45       | <u>5</u> |          |          |          |          |           |  |
| 6. ARC   | 40       | 45                             | 40       | 35       | 45       | <u>6</u> |          |          |          |           |  |
| 7. SM    | 60       | 60                             | 50       | 70       | 45       | 30       | <u>7</u> |          |          |           |  |
| 8. AI    | 40       | 45                             | 40       | 60       | 25       | 25       | 65       | <u>8</u> |          |           |  |
| 9. EI    | 45       | 50                             | 45       | 50       | 30       | 35       | 58       | 50       | <u>9</u> |           |  |
| 10. RI   | 25       | 30                             | 25       | 30       | 20       | 25       | 35       | 30       | 50       | <u>10</u> |  |

<sup>a</sup>From USAFRO Technical Research Report 996 (Campbell, Johnson, Brown, and Birnbaum, 1952).

<sup>b</sup>Decimal points omitted.

Table A-2

VALIDITY COEFFICIENTS<sup>a</sup> OF ARMY CLASSIFICATION BATTERY TESTS  
FOR 34 ARMY MOS COURSE CRITERIA

| Current<br>MOS | Course Title               | N   | RV | AR | PA | MA | ACB Tests |     |     | SM | AI | EI | RI |
|----------------|----------------------------|-----|----|----|----|----|-----------|-----|-----|----|----|----|----|
|                |                            |     |    |    |    |    | ACS       | ARC | ARC |    |    |    |    |
| 271-2          | Fixed Sta Radio Rep        | 310 | 58 | 69 | 58 | 61 | 38        | 52  | 57  | 42 | 67 | 62 |    |
| 281            | Microwave-Mult Channel Rep | 216 | 36 | 52 | 41 | 48 | 23        | 16  | 44  | 40 | 55 | 54 |    |
| 282            | Radar Rep                  | 242 | 38 | 46 | 40 | 55 | 22        | 24  | 32  | 38 | 50 | 48 |    |
| 296            | Field Radio Rep            | 280 | 54 | 62 | 60 | 57 | 39        | 42  | 59  | 50 | 63 | 48 |    |
| 320            | Field Wireman              | 330 | 45 | 49 | 48 | 43 | 31        | 32  | 52  | 43 | 58 | 40 |    |
| 403            | FC Instrument Rep          | 214 | 52 | 49 | 58 | 59 | 34        | 31  | 54  | 50 | 52 | 37 |    |
| 411            | Ammunition Supply          | 767 | 54 | 55 | 45 | 42 | 44        | 28  | 50  | 42 | 38 | 20 |    |
| 421            | Small Arms Weapons Mech    | 418 | 53 | 60 | 60 | 61 | 48        | 34  | 69  | 64 | 44 | 26 |    |
| 422            | Arty Mech-Light Weapons    | 196 | 64 | 64 | 57 | 58 | 54        | 29  | 63  | 60 | 49 | 13 |    |
| 424.2          | Turret Arty Rep            | 183 | 66 | 70 | 60 | 62 | 52        | 41  | 66  | 61 | 44 | 28 |    |
| 442            | Welder                     | 236 | 55 | 50 | 59 | 59 | 37        | 33  | 56  | 56 | 38 | 19 |    |
| 443            | Machinist                  | 296 | 38 | 59 | 57 | 58 | 33        | 30  | 66  | 46 | 46 | 34 |    |
| 452            | Dental Lab                 | 100 | 38 | 44 | 52 | 60 | 24        | 29  | 53  | 40 | 40 | 28 |    |
| 632.2          | Armor Træk Veh Maint       | 248 | 48 | 56 | 54 | 65 | 36        | 36  | 58  | 63 | 56 | 34 |    |
| 634            | Fuel and Elec Systems Rep  | 523 | 51 | 61 | 56 | 70 | 22        | 35  | 63  | 71 | 61 | 45 |    |
| 635-c          | Track Veh Chassis Rebuild  | 103 | 33 | 48 | 52 | 60 | 42        | 47  | 64  | 62 | 56 | 38 |    |
| 635-T          | Track Veh Rep              | 448 | 62 | 64 | 56 | 67 | 47        | 34  | 69  | 69 | 49 | 27 |    |
| 635-W          | Automotive Mech            | 154 | 31 | 48 | 45 | 57 | 28        | 17  | 51  | 64 | 45 | 28 |    |

Table A-2 (continued)

| Current<br>MOS | Course Title             | N   | RV | AR | PA | MA | ACB Tests <sup>a</sup> |     |    | SM | AI | EI | RI |
|----------------|--------------------------|-----|----|----|----|----|------------------------|-----|----|----|----|----|----|
|                |                          |     |    |    |    |    | ACS                    | ARC |    |    |    |    |    |
| 710            | Clerk                    | 311 | 62 | 68 | 39 | 43 | 52                     | 42  | 41 | 20 | 44 | 30 |    |
| 712            | Stenography              | 569 | 49 | 50 | 38 | 33 | 46                     | 32  | 24 | 16 | 28 | 15 |    |
| 714            | Postal Operations        | 293 | 65 | 71 | 51 | 48 | 52                     | 39  | 47 | 36 | 38 | 26 |    |
| 716.1          | Personnel Admin          | 286 | 59 | 66 | 43 | 45 | 55                     | 40  | 52 | 26 | 45 | 21 |    |
| 716.2          | Personnel Mgt (Enl)      | 556 | 67 | 70 | 48 | 49 | 53                     | 39  | 44 | 20 | 40 | 30 |    |
| 717            | Adv Army Admin           | 406 | 65 | 63 | 44 | 46 | 53                     | 26  | 35 | 34 | 37 | 31 |    |
| 743            | Machine Acctg            | 383 | 60 | 69 | 59 | 50 | 53                     | 45  | 39 | 27 | 47 | 33 |    |
| 763            | Ord Storage Spec         | 291 | 69 | 75 | 50 | 58 | 57                     | 36  | 65 | 45 | 44 | 33 |    |
| 911.2          | Medical Aidman, Adv      | 308 | 61 | 61 | 57 | 52 | 44                     | 50  | 48 | 34 | 50 | 41 |    |
| 917            | Dental Asst              | 367 | 51 | 54 | 44 | 41 | 29                     | 27  | 38 | 22 | 49 | 37 |    |
| 941            | Cook                     | 305 | 37 | 39 | 34 | 34 | 32                     | 28  | 36 | 33 | 28 | 12 |    |
| 951            | Military Police, Enl Adv | 159 | 61 | 67 | 51 | 52 | 39                     | 32  | 49 | 24 | 44 | 38 |    |
| 952            | Disciplinary Guard, Enl  | 144 | 52 | 59 | 41 | 52 | 24                     | 32  | 48 | 47 | 45 | 33 |    |
| 953            | Criminal Investigation   | 192 | 62 | 63 | 51 | 57 | 42                     | 24  | 41 | 31 | 54 | 49 |    |
| 051 (I)        | Radio Op (Interm Speed)  | 150 | 22 | 18 | 12 | 19 | 22                     | 32  | 07 | 13 | 16 | 09 |    |
| 051 (H)        | Radio Op (High Speed)    | 233 | 23 | 27 | 12 | 31 | 23                     | 48  | 16 | 30 | 27 | 22 |    |

<sup>a</sup>Decimal points omitted.

Table A-3

VALIDITY COEFFICIENTS<sup>a</sup> OF ACB TESTS FOR 41 ADDITIONAL MOS COURSE CRITERIA

| Current MOS | Course Title                            | N    | RV | AR | PA | MA | ACB Tests |     |    | EI | RI |     |
|-------------|-----------------------------------------|------|----|----|----|----|-----------|-----|----|----|----|-----|
|             |                                         |      |    |    |    |    | ACS       | ARC | SM |    |    |     |
| 223         | SAM Electronics Maintenance             | 1023 | 37 | 44 | 42 | 40 | 22        | 27  | 36 | 28 | 44 | 39  |
| 231         | Electronic FC Equip Repair              | 210  | 16 | 30 | 33 | 41 | 01        | 19  | 39 | 40 | 47 | 36  |
| 233         | Light FC Equip Maint                    | 347  | 20 | 38 | 23 | 41 | 17        | 27  | 27 | 24 | 41 | 41  |
| 234         | Heavy FC Equip Maint                    | 308  | 45 | 63 | 57 | 56 | 36        | 44  | 50 | 41 | 64 | 58  |
| 294         | Carrier Equipment Repair                | 898  | 68 | 75 | 64 | 64 | 52        | 46  | 61 | 37 | 71 | 58  |
| 311.1       | Infantry Radio Maint                    | 743  | 50 | 64 | 60 | 60 | 41        | 34  | 54 | 44 | 58 | 49  |
| 311.7       | Infantry Communications Supv            | 483  | 44 | 57 | 52 | 46 | 40        | 40  | 49 | 31 | 44 | 32  |
| 312.1       | Armor Radio Maint                       | 567  | 44 | 48 | 45 | 56 | 36        | 35  | 46 | 45 | 61 | 54  |
| 313.1       | Arty Radio Maint                        | 503  | 42 | 55 | 55 | 55 | 37        | 23  | 47 | 38 | 60 | 50  |
| 313.7       | Arty Communications Supv                | 498  | 46 | 52 | 52 | 46 | 38        | 40  | 41 | 30 | 43 | 37  |
| 322         | Cable Splicing                          | 235  | 34 | 54 | 48 | 52 | 33        | 17  | 48 | 48 | 48 | 37  |
| 331         | Manual Central Office Rep               | 367  | 45 | 54 | 46 | 53 | 38        | 30  | 52 | 44 | 55 | 46  |
| 341         | Teletype Maintenance                    | 903  | 55 | 61 | 60 | 57 | 43        | 39  | 57 | 42 | 53 | 41  |
| 351         | Power Equipment Maint                   | 965  | 71 | 75 | 71 | 75 | 61        | 38  | 78 | 76 | 66 | 34  |
| 423         | Heavy Artillery Repair                  | 257  | 67 | 64 | 65 | 65 | 53        | 40  | 67 | 51 | 56 | 27  |
| 424.1       | Turret Arty Maint                       | 600  | 43 | 54 | 48 | 50 | 30        | 25  | 49 | 51 | 38 | 21  |
| 546 (F)     | Fumigation and Bath Proc                | 239  | 19 | 32 | 24 | 34 | 28        | 16  | 31 | 32 | 18 | -07 |
| 546 (L)     | Ldry and Dry Cleaning Machine Operation | 375  | 49 | 49 | 50 | 48 | 39        | 30  | 49 | 42 | 32 | 14  |
| 550         | Supply Handling                         | 693  | 51 | 60 | 36 | 51 | 49        | 35  | 49 | 52 | 33 | 00  |
| 621         | Engineer Equip Maint                    | 811  | 50 | 53 | 46 | 54 | 31        | 21  | 58 | 63 | 44 | 18  |



Table A-3 (continued)

| Current<br>MOS | Course Title                                   | N    | RV | AR | PA | MA | ACB Tests <sup>a</sup> |     |  |  | SM | AI | EI | RI |
|----------------|------------------------------------------------|------|----|----|----|----|------------------------|-----|--|--|----|----|----|----|
|                |                                                |      |    |    |    |    | ACS                    | ARC |  |  |    |    |    |    |
| 631            | Automotive Mechanics                           | 352  | 46 | 56 | 49 | 62 | 33                     | 20  |  |  | 56 | 69 | 52 | 40 |
| 632.1          | Arty Track Veh Maint                           | 565  | 39 | 44 | 30 | 48 | 28                     | 23  |  |  | 51 | 58 | 44 | 27 |
| 675            | Helicopter Maintenance                         | 631  | 41 | 37 | 30 | 42 | 22                     | 22  |  |  | 41 | 36 | 35 | 23 |
| 676            | Reconnaissance Helicopter Rep                  | 297  | 29 | 38 | 32 | 42 | 31                     | 24  |  |  | 43 | 48 | 42 | 37 |
| 719            | Transportation Mov Con                         | 453  | 56 | 62 | 45 | 44 | 54                     | 45  |  |  | 40 | 15 | 49 | 32 |
| 730            | Finance Procedures                             | 614  | 54 | 65 | 45 | 37 | 59                     | 36  |  |  | 30 | 16 | 34 | 20 |
| 740            | Tabulating Mech Op                             | 224  | 56 | 64 | 53 | 52 | 43                     | 29  |  |  | 37 | 22 | 47 | 38 |
| 760            | Supply Records                                 | 766  | 51 | 57 | 42 | 40 | 51                     | 39  |  |  | 37 | 24 | 35 | 19 |
| 768            | Unit Supply                                    | 384  | 58 | 71 | 56 | 52 | 53                     | 45  |  |  | 45 | 38 | 45 | 28 |
| 841            | Motion Picture Photo                           | 384  | 55 | 53 | 51 | 48 | 35                     | 39  |  |  | 43 | 29 | 45 | 33 |
| 843            | Still Photo and Photo<br>Laboratory Procedures | 1223 | 51 | 47 | 44 | 49 | 37                     | 38  |  |  | 43 | 28 | 47 | 44 |
| 910            | Medical Technician                             | 471  | 33 | 28 | 20 | 29 | 23                     | 20  |  |  | 23 | 22 | 24 | 15 |
| 914            | Neuropsychiatric Proc                          | 462  | 34 | 31 | 26 | 25 | 37                     | 16  |  |  | 12 | 06 | 20 | 05 |
| 931            | Medical Lab Proc                               | 334  | 42 | 42 | 28 | 27 | 35                     | 29  |  |  | 27 | 18 | 40 | 34 |
| 933            | Preventive Medicine Proc                       | 233  | 45 | 54 | 38 | 38 | 45                     | 31  |  |  | 33 | 16 | 39 | 28 |
| 934            | Food Inspection Proc                           | 326  | 61 | 66 | 52 | 50 | 40                     | 28  |  |  | 49 | 37 | 42 | 36 |
| 935            | X-Ray                                          | 216  | 40 | 49 | 45 | 42 | 27                     | 33  |  |  | 35 | 22 | 39 | 29 |
| 981            | Cryptanalysis                                  | 477  | 56 | 69 | 53 | 52 | 35                     | 24  |  |  | 40 | 28 | 40 | 37 |
| 982            | Traffic Analysis                               | 687  | 60 | 62 | 43 | 46 | 36                     | 35  |  |  | 37 | 24 | 41 | 29 |
| 058            | Morse Interception                             | 559  | 44 | 48 | 38 | 28 | 31                     | 41  |  |  | 17 | 14 | 29 | 31 |
| 059            | Teletype Interception                          | 498  | 43 | 50 | 38 | 38 | 17                     | 24  |  |  | 35 | 22 | 34 | 25 |

<sup>a</sup>Decimal points omitted.

Table A-4  
FACTOR LOADINGS ON TEN UNROTATED DIAGONAL  
FACTORS<sup>a</sup> FOR 34 MOS COURSE CRITERIA

| Current<br>MOS | Factor Loadings <sup>b</sup> |            |             |            |            |             |             |              |            |           |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |
| 271-2          | 58                           | 40         | 18          | 22         | -08        | 20          | 04          | -05          | 26         | 29        |
| 281            | 36                           | 38         | 12          | 21         | -11        | -10         | 04          | 06           | 28         | 30        |
| 282            | 38                           | 27         | 14          | 32         | -12        | 01          | -18         | 38           | 25         | 26        |
| 296            | 54                           | 34         | 25          | 20         | -04        | 09          | 12          | 07           | 22         | 16        |
| 320            | 45                           | 25         | 20          | 12         | -03        | 06          | 19          | 07           | 26         | 10        |
| 403            | 52                           | 19         | 30          | 28         | -07        | 01          | 06          | 10           | 13         | 10        |
| 411            | 54                           | 25         | 10          | 08         | 11         | -04         | 10          | 11           | C2         | -03       |
| 421            | 53                           | 33         | 27          | 26         | 07         | -02         | 24          | 21           | -07        | -01       |
| 422            | 64                           | 28         | 17          | 19         | 13         | -11         | 11          | 22           | 04         | -18       |
| 424.2          | 66                           | 34         | 17          | 20         | 07         | 01          | 12          | 19           | -08        | 01        |
| 442            | 55                           | 17         | 30          | 27         | -05        | 02          | 08          | 18           | -08        | -04       |
| 443            | 38                           | 45         | 29          | 26         | -06        | -01         | 28          | -04          | 01         | 08        |
| 452            | 38                           | 25         | 30          | 36         | -14        | 05          | 11          | -03          | 01         | 06        |
| 632.2          | 48                           | 32         | 23          | 35         | -05        | 05          | 08          | 23           | 13         | 03        |
| 634            | 51                           | 36         | 22          | 38         | -26        | 06          | 19          | 23           | 11         | 12        |
| 635-c          | 33                           | 35         | 30          | 35         | 09         | 20          | 30          | 20           | 12         | 05        |
| 635-t          | 62                           | 30         | 16          | 31         | 03         | -04         | 16          | 26           | -03        | -03       |
| 635-w          | 51                           | 37         | 21          | 34         | -05        | -10         | 11          | 32           | 07         | 33        |
| 710            | 62                           | 35         | -08         | 04         | 18         | 07          | -10         | -13          | 14         | 06        |
| 712            | 49                           | 23         | 05          | 01         | 19         | 03          | -20         | -04          | 06         | -01       |
| 714            | 65                           | 37         | 05          | 05         | 12         | 01          | -07         | 02           | -01        | 04        |
| 716.1          | 59                           | 35         | 00          | 07         | 21         | 04          | 07          | -12          | 11         | -06       |
| 716.2          | 67                           | 33         | 01          | 07         | 14         | 01          | -13         | -18          | 06         | 08        |
| 717            | 65                           | 26         | 00          | 08         | 17         | -12         | -23         | -04          | 09         | 13        |
| 743            | 60                           | 38         | 18          | 07         | 12         | 07          | -18         | -07          | 14         | 08        |

Table A-4 (continued)

| Current<br>MOS | Factor Loadings <sup>b</sup> |            |             |            |            |             |             |              |            |           |  |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|--|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ARC) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |  |
| 763            | 69                           | 38         | 00          | 16         | 15         | -06         | 11          | 01           | -02        | 07        |  |
| 911.2          | 61                           | 27         | 20          | 13         | 03         | 18          | -03         | -05          | 12         | 15        |  |
| 917            | 51                           | 26         | 10          | 08         | -07        | 00          | -05         | -11          | 24         | 14        |  |
| 941            | 37                           | 19         | 10          | 10         | 07         | 06          | 06          | 10           | 00         | -06       |  |
| 951            | 61                           | 35         | 09          | 13         | -03        | -03         | -04         | -19          | 08         | 16        |  |
| 952            | 52                           | 32         | 03          | 20         | -15        | 05          | 02          | 11           | 07         | 09        |  |
| 953            | 62                           | 28         | 10          | 20         | 00         | -12         | -21         | -05          | 25         | 25        |  |
| 051-i          | 22                           | 04         | -02         | 09         | 12         | 23          | -15         | 07           | 06         | -01       |  |
| 051-h          | 23                           | 15         | -07         | 20         | 09         | 39          | -11         | 19           | 08         | 06        |  |

<sup>a</sup>Pivoted on ACB Tests.<sup>b</sup>Decimal points omitted.

Table A-5  
FACTOR LOADINGS OF 34 MOS COURSE CRITERIA  
ON TEN ACB FACTORS RESULTING FROM FIRST  
ORTHOGONAL ROTATION

| Current<br>MOS | I<br>(RV) | Factor Loadings <sup>b</sup> |                          |                         |                         |             |             |                           |     | IX <sup>a</sup><br>(EI) | X<br>(RI) |
|----------------|-----------|------------------------------|--------------------------|-------------------------|-------------------------|-------------|-------------|---------------------------|-----|-------------------------|-----------|
|                |           | II <sup>a</sup><br>(AR)      | III <sup>a</sup><br>(PA) | IV <sup>a</sup><br>(MA) | V <sup>a</sup><br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII <sup>a</sup><br>(AI) |     |                         |           |
| 271-2          | 45        | -06                          | 06                       | -02                     | -10                     | 26          | 37          | -23                       | -06 | 53                      |           |
| 281            | 25        | -02                          | 00                       | -05                     | -04                     | 06          | 30          | -02                       | 00  | 60                      |           |
| 282            | 24        | -07                          | 01                       | 15                      | -09                     | 21          | 26          | 03                        | 03  | 56                      |           |
| 296            | 39        | -08                          | 10                       | -07                     | -05                     | 13          | 45          | -10                       | 01  | 42                      |           |
| 320            | 33        | -12                          | 09                       | -18                     | -06                     | 06          | 40          | -08                       | 03  | 30                      |           |
| 403            | 36        | -10                          | 08                       | 10                      | -10                     | 14          | 48          | 03                        | 00  | 31                      |           |
| 411            | 49        | 01                           | 03                       | -14                     | 00                      | 08          | 32          | 05                        | 00  | 17                      |           |
| 421            | 39        | 04                           | 03                       | -10                     | 07                      | 12          | 63          | 09                        | -05 | 17                      |           |
| 422            | 56        | 00                           | -01                      | -10                     | 08                      | 09          | 51          | 19                        | 15  | 11                      |           |
| 424.2          | 55        | 06                           | 02                       | -09                     | 03                      | 19          | 52          | 11                        | -06 | 19                      |           |
| 442            | 38        | -02                          | 07                       | 07                      | -03                     | 15          | 55          | 13                        | -05 | 15                      |           |
| 443            | 27        | 11                           | 03                       | -08                     | 02                      | 03          | 61          | -19                       | -03 | 31                      |           |
| 452            | 22        | 00                           | 00                       | 13                      | -09                     | 10          | 56          | -10                       | 02  | 24                      |           |
| 632.2          | 31        | -03                          | 01                       | -01                     | -03                     | 24          | 56          | 10                        | 08  | 33                      |           |
| 634            | 26        | 04                           | 00                       | -06                     | -22                     | 23          | 64          | 05                        | 00  | 42                      |           |
| 635-c          | 16        | -03                          | 06                       | -13                     | 12                      | 28          | 65          | -08                       | -02 | 26                      |           |
| 635-t          | 45        | 00                           | -06                      | -10                     | 00                      | 18          | 57          | 18                        | -03 | 22                      |           |
| 635-w          | 16        | 08                           | -01                      | -07                     | 05                      | 14          | 55          | 21                        | 07  | 33                      |           |
| 710            | 67        | 01                           | -08                      | -06                     | 12                      | 16          | 09          | -15                       | 03  | 29                      |           |
| 712            | 54        | 04                           | 03                       | 05                      | 13                      | 15          | 07          | 02                        | 07  | 17                      |           |
| 714            | 65        | 07                           | 00                       | -07                     | 10                      | 15          | 23          | 00                        | 01  | 24                      |           |
| 716.1          | 61        | 01                           | -05                      | -13                     | 14                      | 08          | 26          | -18                       | 03  | 19                      |           |
| 716.2          | 70        | 04                           | -05                      | 04                      | 06                      | 09          | 16          | -14                       | -02 | 28                      |           |
| 717            | 68        | -03                          | -02                      | 08                      | 09                      | 06          | 10          | 07                        | 01  | 33                      |           |
| 743            | 63        | 04                           | 11                       | 09                      | 09                      | 17          | 23          | -10                       | 06  | 35                      |           |

Table A-5 (continued)

| Current<br>MOS | I<br>(RV) | Factor Loadings <sup>b</sup> |                          |                         |                         |             |             |                           |                         | X<br>(RI) |
|----------------|-----------|------------------------------|--------------------------|-------------------------|-------------------------|-------------|-------------|---------------------------|-------------------------|-----------|
|                |           | II <sup>a</sup><br>(AR)      | III <sup>a</sup><br>(PA) | IV <sup>a</sup><br>(MA) | V <sup>a</sup><br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII <sup>a</sup><br>(AL) | IX <sup>a</sup><br>(EI) |           |
| 763            | 64        | 04                           | -14                      | -15                     | 08                      | 08          | 37          | -01                       | 01                      | 23        |
| 911.2          | 53        | -07                          | 09                       | 04                      | -02                     | 23          | 32          | -16                       | -06                     | 31        |
| 917            | 44        | -05                          | 02                       | -04                     | -11                     | 04          | 20          | -16                       | 03                      | 38        |
| 941            | 32        | -01                          | 07                       | -04                     | 03                      | 09          | 31          | 04                        | 04                      | 11        |
| 951            | 57        | 06                           | -08                      | 04                      | -07                     | 03          | 25          | -19                       | -05                     | 36        |
| 952            | 40        | 09                           | -04                      | -05                     | -16                     | 18          | 33          | 04                        | 02                      | 34        |
| 953            | 56        | -09                          | -03                      | 13                      | -04                     | 07          | 17          | 01                        | 02                      | 54        |
| 051-i          | 21        | -09                          | 04                       | 05                      | 08                      | 30          | 00          | 00                        | -01                     | 05        |
| 051-h          | 17        | -03                          | -02                      | -01                     | 04                      | 52          | 10          | 00                        | 01                      | 13        |

<sup>a</sup>Null factor in criterion space.<sup>b</sup>Decimal points omitted.

Table A-6

FACTOR LOADINGS OF 41 ADDITIONAL MOS COURSE CRITERIA ON TEN ACB FACTORS  
RESULTING FROM FIRST ORTHOGONAL ROTATION

| Current<br>MOS | Factor Loadings <sup>a</sup> |            |             |            |            |             |             |              |     |     | IX<br>(EI) | X<br>(RI) |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|-----|-----|------------|-----------|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) |     |     |            |           |
| 223            | 28                           | -04        | 08          | 02         | -08        | 10          | 27          | -11          | -01 | -01 | 38         |           |
| 231            | -02                          | -03        | 04          | -04        | -17        | 12          | 43          | -09          | 06  | 06  | 38         |           |
| 233            | 13                           | 00         | -08         | 02         | 00         | 22          | 18          | -14          | 03  | 03  | 46         |           |
| 234            | 34                           | -04        | 11          | -02        | -01        | 21          | 38          | -20          | 00  | 00  | 56         |           |
| 294            | 60                           | -13        | 02          | 00         | -01        | 12          | 36          | -23          | 01  | 01  | 54         |           |
| 311.1          | 40                           | -02        | 06          | 02         | 02         | 10          | 43          | -09          | 00  | 00  | 50         |           |
| 311.7          | 40                           | 03         | 07          | -04        | 06         | 11          | 38          | -20          | -01 | -01 | 26         |           |
| 312.1          | 30                           | -20        | 01          | 00         | -01        | 23          | 34          | -03          | 01  | 01  | 50         |           |
| 313.1          | 33                           | -10        | 06          | 04         | 04         | 03          | 38          | -07          | 06  | 06  | 55         |           |
| 313.7          | 40                           | -03        | 11          | 06         | 01         | 16          | 31          | -14          | -05 | -05 | 31         |           |
| 322            | 26                           | 06         | 02          | -05        | 08         | 04          | 44          | 06           | 05  | 05  | 44         |           |
| 331            | 34                           | -09        | -01         | -07        | 03         | 12          | 38          | -05          | 00  | 00  | 42         |           |
| 341            | 45                           | -05        | 07          | 00         | -01        | 11          | 45          | -12          | -04 | -04 | 34         |           |
| 351            | 57                           | -06        | 01          | -11        | 07         | 15          | 66          | 17           | 08  | 30  | 19         |           |
| 423            | 56                           | -10        | 02          | 00         | 00         | 10          | 54          | -02          | 06  | 06  | 19         |           |
| 424.1          | 33                           | 12         | 03          | -04        | -03        | 12          | 45          | 10           | 03  | 03  | 22         |           |
| 546 (F)        | 19                           | 13         | -08         | -03        | 15         | 10          | 33          | 08           | 16  | 01  | -01        |           |
| 546 (L)        | 42                           | 03         | 03          | 02         | 01         | 10          | 43          | 05           | -01 | 08  | 08         |           |
| 550            | 50                           | 14         | -13         | -13        | 14         | 25          | 36          | 17           | 16  | 16  | 02         |           |
| 621            | 35                           | 04         | -03         | -12        | -08        | 11          | 52          | 21           | 08  | 08  | 17         |           |

Table A-6 (continued)

| Current<br>MOS | Factor Loadings <sup>a</sup> |            |             |            |            |             |             |              |            |           |  |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|--|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |  |
| 631            | 29                           | 00         | -02         | -07        | -02        | 16          | 51          | 26           | 02         | 43        |  |
| 632.1          | 24                           | -03        | -10         | -19        | -02        | 20          | 41          | 16           | 04         | 23        |  |
| 675            | 29                           | -07        | -08         | -02        | -11        | 12          | 30          | 03           | 00         | 18        |  |
| 676            | 17                           | -08        | -01         | -14        | 08         | 18          | 36          | 08           | -03        | 31        |  |
| 719            | 60                           | -07        | -02         | 00         | 13         | 15          | 14          | -25          | 08         | 30        |  |
| 730            | 66                           | 08         | 03          | 01         | 24         | 11          | 07          | -07          | 08         | 25        |  |
| 740            | 56                           | 01         | 02          | 15         | 02         | 05          | 19          | -09          | 06         | 46        |  |
| 760            | 55                           | 03         | 00          | -02        | 15         | 16          | 18          | -08          | 05         | 17        |  |
| 768            | 59                           | 10         | 06          | 00         | 11         | 21          | 29          | -04          | 06         | 30        |  |
| 841            | 47                           | -07        | 06          | 08         | -10        | 15          | 29          | -13          | -01        | 28        |  |
| 843            | 41                           | -17        | 00          | 06         | -05        | 17          | 26          | -14          | -08        | 34        |  |
| 910            | 28                           | -07        | -06         | 02         | -02        | 14          | 12          | 05           | 02         | 13        |  |
| 914            | 41                           | -06        | -01         | 14         | 14         | 05          | 01          | 03           | 13         | 12        |  |
| 931            | 41                           | -13        | 01          | -09        | 04         | 13          | 05          | -08          | 01         | 30        |  |
| 933            | 49                           | -01        | -02         | 00         | 14         | 08          | 13          | -14          | 06         | 30        |  |
| 934            | 56                           | 06         | 00          | -01        | -04        | 05          | 29          | 00           | -06        | 35        |  |
| 935            | 56                           | 03         | 06          | 08         | -05        | 11          | 26          | -17          | 02         | 30        |  |
| 981            | 56                           | 14         | 00          | 12         | -06        | 02          | 22          | -03          | -02        | 46        |  |
| 982            | 58                           | 04         | -03         | 06         | -08        | 14          | 15          | -08          | 04         | 32        |  |
| 058            | 45                           | 04         | 14          | 07         | -02        | 24          | 02          | -10          | -05        | 29        |  |
| 059            | 38                           | 10         | 00          | 03         | -16        | 05          | 22          | -12          | 01         | 28        |  |

<sup>a</sup>Decimal points omitted.

Table A-7  
FINAL FACTOR LOADINGS OF 75 MOS COURSE CRITERIA ON TEN ACB FACTORS  
RESULTING FROM SECOND ORTHOGONAL ROTATION

| Current<br>MOS | Factor Loadings <sup>a</sup> |            |             |            |            |             |             |              |            |           |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |
| 223            | 42                           | 02         | 03          | -02        | -03        | 01          | 12          | -02          | 03         | 37        |
| 231            | 16                           | 08         | 01          | -02        | -11        | -05         | 25          | 03           | 13         | 50        |
| 233            | 27                           | 07         | -08         | 03         | 10         | 08          | 01          | 04           | 02         | 48        |
| 234            | 54                           | 04         | 05          | -03        | 07         | 03          | 16          | 00           | 00         | 58        |
| 271            | 64                           | 11         | -01         | -06        | 05         | 10          | 19          | -05          | -01        | 53        |
| 281            | 46                           | 03         | -01         | -02        | -06        | -04         | 04          | 17           | 02         | 52        |
| 282            | 43                           | -07        | -02         | 10         | -06        | 16          | 06          | 10           | 07         | 52        |
| 294            | 78                           | -01        | -08         | -09        | 09         | 00          | 14          | -03          | 01         | 46        |
| 296            | 55                           | 01         | 03          | -10        | 01         | -02         | 27          | 05           | 03         | 43        |
| 311.1          | 58                           | -03        | 03          | 01         | 05         | -04         | 20          | 08           | -01        | 47        |
| 311.7          | 50                           | 05         | 05          | -04        | 16         | -07         | 24          | -04          | -04        | 29        |
| 312.1          | 47                           | -09        | -09         | -09        | 00         | 13          | 17          | 10           | 01         | 50        |
| 313.1          | 53                           | -13        | 00          | -03        | 01         | -09         | 11          | 09           | 03         | 51        |
| 313.7          | 51                           | -02        | 06          | -01        | 08         | 05          | 19          | -05          | -05        | 32        |
| 320            | 46                           | 03         | 03          | -19        | -02        | -07         | 27          | 07           | 05         | 30        |
| 322            | 41                           | -04        | 05          | 03         | 05         | -12         | 20          | 25           | 01         | 42        |
| 331            | 49                           | -01        | -06         | -07        | 04         | -01         | 20          | 13           | -02        | 40        |
| 341            | 58                           | -01        | 02          | -02        | 05         | -03         | 29          | 01           | -03        | 35        |
| 351            | 67                           | -10        | 00          | -04        | 08         | -03         | 52          | 33           | 04         | 28        |
| 403            | 50                           | -10        | 03          | 05         | -07        | 05          | 35          | 05           | 04         | 34        |
| 411            | 54                           | 04         | 03          | -07        | 07         | -01         | 26          | 17           | 00         | 09        |
| 421            | 47                           | -01        | 06          | 01         | 08         | -09         | 52          | 23           | -08        | 23        |
| 422            | 58                           | -10        | 02          | 00         | 14         | -04         | 44          | 31           | 10         | 06        |
| 423            | 64                           | -08        | -04         | -01        | 08         | -04         | 44          | 07           | 05         | 21        |
| 424.1          | 42                           | 04         | 10          | 08         | 04         | -03         | 34          | 21           | 04         | 23        |



Table A-7 (continued)

| Current<br>MOS | Factor Loadings <sup>a</sup> |            |             |            |            |             |             |              |            |           |  |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|--|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(NA) | V<br>(ACS) | VI<br>(ARC) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |  |
| 424.2          | 61                           | 04         | 06          | 03         | 10         | 04          | 44          | 23           | -07        | 17        |  |
| 442            | 46                           | -07        | 07          | 10         | -05        | 05          | 48          | 12           | -01        | 21        |  |
| 443            | 43                           | 11         | 05          | 02         | 09         | -24         | 39          | 04           | -04        | 42        |  |
| 452            | 36                           | -02        | -01         | 14         | -01        | -08         | 41          | -04          | 06         | 38        |  |
| 546 (F)        | 17                           | -03        | 01          | 10         | 24         | -07         | 29          | 20           | 07         | 05        |  |
| 546 (L)        | 45                           | -03        | 05          | 07         | 07         | -02         | 38          | 09           | -01        | 10        |  |
| 550            | 45                           | 04         | -02         | 07         | 32         | 07          | 37          | 34           | 08         | -01       |  |
| 621            | 42                           | 02         | 02          | 04         | -02        | -02         | 43          | 32           | 10         | 17        |  |
| 631            | 44                           | -04        | 02          | 05         | -06        | 03          | 33          | 39           | 02         | 40        |  |
| 632.1          | 32                           | 06         | -09         | -05        | 02         | 05          | 34          | 32           | 04         | 17        |  |
| 632.2          | 44                           | -05        | 01          | 04         | 04         | 06          | 43          | 22           | 08         | 40        |  |
| 634            | 45                           | 13         | 02          | 07         | -11        | 03          | 47          | 19           | 10         | 51        |  |
| 635 (C)        | 28                           | 01         | 02          | -10        | 16         | -03         | 52          | 13           | -07        | 47        |  |
| 635 (T)        | 53                           | 01         | -03         | 04         | 03         | 03          | 48          | 30           | -03        | 22        |  |
| 635 (W)        | 28                           | -04        | 06          | 08         | 03         | -05         | 38          | 37           | 04         | 38        |  |
| 675            | 36                           | 04         | -10         | 02         | -04        | 06          | 24          | 09           | 05         | 17        |  |
| 676            | 28                           | -01        | -04         | -10        | 04         | 03          | 25          | 24           | -07        | 34        |  |
| 710            | 70                           | 06         | -09         | -05        | 29         | 08          | 00          | 05           | -03        | 12        |  |
| 712            | 53                           | -07        | 05          | 03         | 24         | 12          | 03          | 09           | 00         | 03        |  |
| 714            | 68                           | 04         | 03          | -01        | 22         | 06          | 15          | 15           | -04        | 10        |  |
| 716.1          | 64                           | 07         | -07         | -10        | 28         | -07         | 17          | 04           | -04        | 11        |  |
| 716.2          | 75                           | 04         | -04         | 05         | 21         | 03          | 05          | 00           | -04        | 12        |  |
| 717            | 73                           | -08        | 01          | 09         | 14         | 08          | -02         | 15           | -03        | 09        |  |
| 719            | 66                           | -02        | -08         | -09        | 29         | 04          | 04          | -07          | 01         | 20        |  |
| 730            | 66                           | -06        | 06          | 00         | 35         | 03          | -02         | 09           | -03        | 07        |  |

Table A-7 (continued)

| Current<br>MOS | Factor Loadings <sup>a</sup> |            |             |            |            |             |             |              |            |           |  |
|----------------|------------------------------|------------|-------------|------------|------------|-------------|-------------|--------------|------------|-----------|--|
|                | I<br>(RV)                    | II<br>(AR) | III<br>(PA) | IV<br>(MA) | V<br>(ACS) | VI<br>(ARJ) | VII<br>(SM) | VIII<br>(AI) | IX<br>(EI) | X<br>(RI) |  |
| 740            | 69                           | -08        | 01          | 11         | 11         | 01          | -02         | 01           | 04         | 31        |  |
| 743            | 71                           | -06        | 10          | 03         | 23         | 08          | 10          | 01           | 01         | 25        |  |
| 760            | 56                           | -02        | 00          | -02        | 28         | 06          | 13          | 06           | -02        | 09        |  |
| 763            | 69                           | 08         | -11         | -01        | 19         | -06         | 26          | 21           | -03        | 11        |  |
| 768            | 64                           | 00         | 10          | 03         | 26         | 07          | 18          | 11           | 00         | 22        |  |
| 841            | 57                           | 00         | 00          | 01         | 03         | 08          | 20          | -08          | 03         | 25        |  |
| 843            | 54                           | -03        | -10         | -04        | 01         | 11          | 15          | -07          | -05        | 32        |  |
| 910            | 31                           | -02        | -08         | 01         | 04         | 13          | 11          | 08           | 03         | 08        |  |
| 911.2          | 63                           | 01         | 02          | -04        | 11         | 12          | 23          | -07          | -04        | 30        |  |
| 914            | 40                           | -19        | -02         | 06         | 18         | 07          | -03         | 04           | 05         | 00        |  |
| 917            | 57                           | 07         | -03         | -06        | 00         | -02         | 05          | -03          | 08         | 28        |  |
| 931            | 47                           | 00         | -06         | -16        | 10         | 11          | -02         | 04           | -01        | 18        |  |
| 933            | 55                           | -03        | -04         | -03        | 23         | 00          | 00          | 02           | -01        | 19        |  |
| 934            | 66                           | 06         | 03          | 06         | 02         | -01         | 14          | 12           | -03        | 21        |  |
| 935            | 46                           | 03         | 05          | 05         | 08         | 01          | 13          | -08          | 04         | 30        |  |
| 941            | 36                           | -04        | 06          | -03        | 07         | 00          | 25          | 10           | 02         | 11        |  |
| 951            | 69                           | 12         | -07         | 09         | 07         | -05         | 08          | -04          | -01        | 24        |  |
| 952            | 51                           | 15         | 01          | 08         | -01        | 08          | 22          | 17           | 09         | 28        |  |
| 953            | 71                           | -10        | -07         | 08         | -01        | 09          | -04         | 09           | 04         | 34        |  |
| 981            | 70                           | 04         | 07          | 19         | 03         | -01         | 01          | 08           | 01         | 28        |  |
| 982            | 66                           | 07         | -02         | 08         | 10         | 11          | 05          | 01           | 07         | 18        |  |
| 051 (I)        | 19                           | -06        | -01         | -05        | 16         | 28          | 07          | -01          | -04        | 06        |  |
| 051 (H)        | 16                           | 06         | -03         | -03        | 22         | 40          | 18          | 06           | -01        | 22        |  |
| 058            | 51                           | 04         | 13          | 00         | 12         | 23          | -02         | -06          | -04        | 20        |  |
| 059            | 48                           | 14         | 03          | 10         | 00         | -01         | 10          | -03          | 08         | 22        |  |

<sup>a</sup>Decimal points omitted.

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FACTORS by William M. Helms and David J. Fitch. October 1962.  
Report on New Classification Techniques G-11 Proj. -31 pp  
Incl 3 tables, 2 figures, 6 Ref. (USAPRO Technical Research  
Note No. 128)

(DA Project QJ95-60-001)

Present report interprets results of a factor analysis of Army  
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(final grades in enlisted training courses) in terms of test-  
job interrelationships and occupational groupings. Of the ten  
job groups into which the 75 MOS were allocated, nine were well  
differentiated by ACB test combinations closely resembling  
current aptitude area selectors. Validity patterns suggested  
feasibility of clustering MOS courses for classification  
purposes on the basis of technical level as well as on content.  
Academic skills were found to play a part in success in all  
courses. Results of the analysis were interpreted as additional  
guidelines for developing new ACB measures and for eventual  
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US Army Personnel Research Office, OCED, DA  
GROUPING ARMY TRAINING COURSES BY ARMY CLASSIFICATION BATTERY  
FACTORS by William H. Helms and David J. Fitch, October 1962.  
Rpt. on New Classification Techniques C-II Proj.--31 pp  
Incl 3 tables, 2 figures, 6 Ref. (USAFED Technical Research  
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Present report interprets results of a factor analysis of Army  
Classification Battery (ACB) tests, extended to 75 MOS criteria  
(final groups in enlisted training courses) in terms of test  
job interrelationships and occupational groupings. Of the ten  
job groups into which the 75 MOS were allocated, nine were well  
differentiated by ACB test combinations closely resembling  
current aptitude area selectors. Validity patterns suggested  
feasibility of clustering MOS courses for classification  
purposes on the basis of technical level as well as on content.  
Academic skills were found to play a part in success in all  
courses. Results of the analysis were interpreted as additional  
guidelines for developing new ACB measures and for eventual  
reconstitution of the Aptitude Area system.

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