

## **U.S. Army Research Institute: Development and Validation of Army Selection and Classification Measures (Project A)**

**Project Date:** 1982-1993

### **Description**

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This project was an integrated, state-of-the-art attack on the major research issues that underlie the development of a comprehensive personnel selection and classification system for the U.S. Army.

The overall purpose of the project was to assist the Army in the accomplishment of its assigned mission by providing an improved capability for decision-making in regard to selection and classification of its enlisted personnel. Specifically, the goals of the project were to:

- Validate existing predictors against both existing and project-developed criteria, the latter to include objective measures of actual job performance;
- Develop and validate new and/or improved predictors;
- Validate proximal and intermediate criteria, such as performance in training as predictors of more ultimate measures so that informed decisions can be made throughout the first two enlistments;
- Determine the utility to the Army of increments in various types of performance; and,

PDRI was part of a consortium of three contractors selected by the Army to carry out the project. (The other two organizations were the American Institutes for Research and the Human Resources Research Organization.) This was a long term project; the period of research was nine years. The project was organized into five major tasks, and PDRI was involved with all but one of these tasks.

A description of these tasks, and PDRI's role in each, follows.

### **Task 1. Validate the Relationships Among Predictors and Performance Measures**

Task 1 was devoted to a) developing a longitudinal data base to track large numbers of soldiers in the U.S. Army, and b) performing validation analyses to evaluate relationships between predictor tests and various performance criteria. It was also Task 1's responsibility to help other tasks with their specific analysis problems.

PDRI's role in this task involved consulting with others on the project about the validation and other analyses. The validity analyses included evaluating relationships between preinduction predictors and a) school success measures; b) first- and second-tour Army-wide performance measures; and, c) first/second tour MOS specific measures in 18 different MOS (jobs). They also involved studying relationships between school performance and later job performance effectiveness and between first-tour performance and experiences and performance during second-tour.

## **Task 2. Development of New Preinduction Predictors**

The purpose of Task 2 was to develop new predictors for preinduction screening and classification. PDRI had primary responsibility for this task, which had seven major objectives:

1. Identify measures of human abilities, attributes or characteristics which are most likely to be effective in predicting, prior to entry into the Army, successful soldier performance in general and in classifying persons into MOS where they will be most successful, with special emphasis on attributes not tapped by current preinduction measures.
2. Design and develop new measures or modify existing measures of these “best bet” predictors.
3. Develop materials and procedures for efficiently administering experimental predictor measures in pilot tests and to large samples of soldiers.
4. Estimate and evaluate the reliability of new preinduction measures and their vulnerability to motivational set differences, faking, variances in administrative settings, and practice effects.
5. Determine the interrelationships (or covariance) between the new preinduction measures and current preinduction measures.
6. Determine the degree to which the validity of new preinduction measures generalizes across MOS, i.e., proves useful for predicting measures of successful soldier performance across quite different MOS and, conversely, the degree to which the measures are useful for classification or the differential prediction of success across MOS.
7. Determine the extent to which new preinduction measures increase the accuracy of prediction of success and the accuracy of classification into MOS over and above the levels of accuracy reached by current preinduction measures.

Task 2 research incorporated fifteen major steps in order to achieve these seven objectives, but these can be briefly summarized into five major phases:

- Literature Search
- Administration and Analysis of a Preliminary Battery of Predictors Not Previously Used by the Army (administered to a sample of approximately 9,000 soldiers)
- Development, Pilot Test, and Analysis of Custom-made or Newly Developed Predictors (administered to several samples, ranging in size from 40 to 400)
- Construction, Administration and Analysis of an Experimental Battery in a Concurrent Validity Setting (administered to a sample of over 11,000 soldiers across the U.S. and in Europe)

- Revising, Administration, and Analysis of the Experimental Battery in a Predictive Validity Setting (this four-hour battery of tests, including paper-and-pencil cognitive ability tests, personality and interest inventories, and computer-administered measures of spatial/psychomotor skills was being administered to 55,000 soldiers as they enter the Army)

The research planned for Task 2 of the Army Project was extremely challenging but offers the potential for high reward, both in terms of scientific findings and operational usefulness to the U.S. Army.

### **Task 5. Development of MOS-Specific Job Performance Measures**

The purpose of Task 5 was to develop MOS-specific performance measures for nine Military Occupational Specialties (MOS) or jobs carefully selected to be representative of all Army MOS. PDRI's portion of Task 5 involved developing behaviorally based rating scales to measure soldier effectiveness in these nine MOS. The MOS included Infantryman (11B), Cannon Crewman (13B), Armor Crewman (19E), Single Channel Radio Operator (31C), Light Wheel Vehicle Mechanic (63B), Motor Transport Operator (64C), Administrative Specialist (71L), Medical Specialist (91A), and Military Police (95B).

For each MOS, the behavioral analysis method was used to generate examples of effective, average, and ineffective job performance. These examples were used to identify performance effectiveness dimensions and to develop behavioral definitions and standards of performance for each dimension. Across the nine MOS, behavioral summary rating scales contained from seven to thirteen performance dimensions. In addition, a set of MOS-specific task rating scales was also developed for each of the nine MOS.

All of the rating scales were field tested, refined, and then administered to several thousand peer and supervisor raters as part of a concurrent validation study to evaluate the validity of the preinduction test battery developed in Task 2. The MOS-specific rating scales were also administered to members of the 1986-87 cohort to assess the predictive validity of the upgraded induction battery.

Similar to the scale development effort described in Task 4, Skill Level II MOS-specific behavioral rating scales were also developed for the nine MOS and were administered to both the 1983-84 and 1986-87 cohorts. These scales also served as criteria against which the validity of the predictor battery was assessed.

Finally, selected Task 5 criterion measures were employed as in-service predictors of soldier effectiveness later in soldiers' Army careers. Specifically, using members of the 1983-84 and 1986-87 cohorts, appropriate first-tour (Skill Level I) criteria were correlated measures of Skill Level II soldier effectiveness.