OPTIMIZATION OF TRAINING FOR MARGINAL PERSONNEL

DOROTHY V. MEW
Psychologist
Training Analysis and Evaluation Group

The Training Analysis and Evaluation Group was tasked by the Chief of Naval Education and Training to study the implications for the Navy training system and its management resulting from an All-Volunteer Force. To get at this pervasive problem of the 70's is a difficult undertaking. There are many opinions, but few facts. No clear-cut data exist on the effects of zero draft on the manpower resource. Thus, we puzzled about how to approach the issue. We finally decided on a broad brush view and examined a number of variables that would (in our judgment) presumably influence Navy training. Our attempt was to bring together the latest statements regarding an All Volunteer Force and to analyze and put into perspective those characteristics that would influence the Navy training system. The following classes of variables were examined:

- Personnel
- Factors Affecting Enlistment and Retention
- Incentives for Enlistment and Retention
- Manpower Utilization
- Job Design
- Training

Personnel: It was concluded that personnel patterns, i.e., the distribution of numbers and kinds of people, will differ under an AVF. An increase in the number of personnel in the lower ability groups is anticipated. It is also expected that minority groups, including women, will comprise a larger segment of the Navy as more and more opportunities open up for them. Both eventualities could result in requirements for special training considerations and/or require changed manpower utilization practices.

Factors Affecting Enlistment and Retention: The question of who will enlist or remain in the service, i.e., the type of man or woman for whom the Navy offers the greatest appeal in the job market, becomes critical for the training community. Such factors as the social climate of today and economic conditions determine the quality and quantity of personnel available for training to meet the fleet requirements. As for today's climate:

- the youth of today is not interested simply in any kind of job. Having matured in a relatively affluent society, he seeks employment which will allow him to develop along personal lines. Personal recognition and growth in competency are more important motivations than simply having a job.
- organizations are viewed today as having the responsibility for providing the means of achieving personal goals. The achievement of organizational goals at the expense of individual goals is no longer considered acceptable.

The principle implication of today's climate for organizational functioning is that consideration should be given to restructuring the work environment to permit maximum satisfaction of the individual's personal needs.

Economic factors are strong indicators of the quality of men who will enlist in the military. Under an AVF, the military, being only one of a number of employers, must bid on the open market for workers. Prospects will weigh the military compensation they expect to achieve against the earnings to be obtained as a civilian. Recent improvements in military pay structure have given the military a relative advantage in competing for the necessary skills. This advantage is even more pronounced in the current sluggish economy.

Incentives for Enlistment and Retention: Pay being more comparable to civilian salaries than ever before, training benefits will loom as a major consideration in job choice. The availability of educational and training opportunities in the service which can be subsequently transferred to the civilian job market will prove enticing to prospective enlistees.

A large percentage of jobs within the military are represented in civilian occupations. Thousands of men and women annually choose a military career as a means of obtaining education and training not otherwise available to them. Thus military employment is for many simply one of the alternatives to working in a steel mill, coal mine or automobile factory.

Manpower Utilization: A popular misconception is that of an unlimited labor pool. That this pool is finite has been brought home to us again and again in every major war in which we have been engaged since WWI. During WWI special battalions of sub-standard men were formed. There are no data as to their effec-

tiveness following special developmental training; hence no guidelines resulted--only an unheeded warning. The problems associated with filling technical slots have continued to plague us over the years. In WWII, Korea and Vietnam, technically trained men were transferred to combatant positions while their jobs were filled with men having less ability and training.

The AVF has caused a new awareness of the requirement to effectively utilize our manpower. In the first quarter of the AVF, Category IV, marginal men, comprised 27% of Navy accessions, leveling off to approximately 16% by year's end. (No Category IV females are being accepted into the Navy.) This is not without precedent. During the Korean conflict Category IV accessions ranged from 33% to 37%. Numerous social and economic factors enter into enlistment decisions. However, it is safe to assume that should economic conditions again be such that a competitive job market exists, we would be hard put to meet our industrial and military manpower needs (unless we optimize the performance of marginal males).

Job Design: Major efforts are needed to redesign elements of the Navy work situation. Two aspects are of interest here: the environmental context of jobs and the structure of jobs.

The environmental context comprises the conditions under which an employee performs his job. It refers to the social surroundings in which work occurs and recognizes the existence of other individuals upon whom the worker may mutually depend for recognition, advancement, cooperation, and satisfaction of other personal needs. The way in which workers are required to relate to each other, the way performance is measured and rewards are made available, the way positions of authority are structured, and career progression are all important aspects of the work environment. Effort should be devoted to identifying the needs which individuals are interested in fulfilling on the job and in restructuring the job to permit maximum satisfaction of these needs.

The structure of jobs refers to the technological aspect of jobs. It includes the way tasks are packaged into jobs and the way jobs (not people) are related to each other. In short, it encompasses all aspects of jobs which dictate the skills and intellectual requirements needed for effective accomplishment by performers. Identification of the actual requirements of particular jobs with the aim of reassigning tasks to constitute "new" jobs would be extremely useful for at least two reasons related to expected AVF manpower: better integration of lower mental group individuals into the Navy job force and better utilization of women. For example, one might be able to remove tasks having high intellectual ability requirements from certain jobs and reassign them to other similar jobs for accomplishment. The more "routine" tasks of a job could then be performed by appropriately trained lower mental category personnel. Similar logic applied along task dimensions, such as physical demands of a job, would assist in the problem of better utilization of women.

Training the Marginal Man: Another misconception I'd like to take issue with is that the marginal male is exclusively a Category IV, and that since we are accepting only high school graduates at present, the input of marginal personnel is not a problem. It is important to point out that 'marginal' must also be defined in relation to specific job requirements. A man may be a high school graduate, be able to pass the written screening tests and still be unable to benefit from some specific type of technical training without training in communication skills. There is a large body of personnel in the military who are having difficulty in acquiring job knowledge due to their limited reading comprehension. Reading comprehension is the one training problem which has consistently come to the fore in this study. It is a critical issue in preparing the marginal man to fill positions of a technical nature (where critical shortages exist in the military). Nor is the problem restricted to the military. A recent study asked how many Americans are prevented, by reading deficiencies, from filling out application forms for such common needs as personal bank loans or driver's licenses. Thirteen (13%) percent (18.5 million) of the adults sampled filled out the forms with fewer than 10% errors. Three percent (3%) (4.3 million) missed more than 30% of the items (an item being a blank form).

As previously mentioned, the Navy is presently accepting only high school graduates, but clearly a high school education is no guarantee of reading ability. The Department of Defense reported in 1968 that of a group of 46,000 men who scored below the 20th percentile on the AFQT, 43% had completed high school, yet 90% of these read at or below the eighth grade level. The California school system (one of the more progressive) reports that the mean reading level of high school graduates in that state is now grade 10.

Language skills are a primary means of learning about job tasks, job requirements, and how to accomplish the job. Thus in formal training programs which precede most jobs, information is acquired in large part through reading. In day-to-day performance on the job, some tasks (reading job manuals and forms of various kinds) are inherently

reading tasks. The reading difficulty of these manuals and the reading rates of persons making use of them have become the object of considerable research. For example, one investigator examined the reading levels of twenty (20) Navy training manuals. These ranged from 8.8 to 18.6. The mean reading levels for AFQT\mental categories range from 7 to 12 as follows:

Category I - 12
Category II - 11
Category III - 9
Category IV - 7

In FY '74 only 2% of Navy accessions were in mental Category I (as compared with 5% in 1972) and 61% were in Category III (as compared with 43% in 1972). It follows that there is a need to re-examine reading requirements in light of actual job demands. The military is now in process of doing this. The industrial community will need to examine technical publications, manuals and diagrams, etc. to determine whether they can be brought into line with more realistic levels of comprehension.

Application of Instructional Methods: Other significant findings indicate that the marginal man can be trained to function adequately in specific occupations which have for the most part been heretofore denied to him. There is evidence to indicate that training makes for homogeneity within this group usually considered to be highly variable in performance. Performance and/or time to train can be made to vary as a function of the training method or strategy employed; for example, emphasizing procedural aspects and using proceduralized performance aids in training, or varying the amount of instructor intercession during training (including lower instructor-to-student ratios).

This points to a need for training systems which capitalize on current instructional technology. For instance, individualized training programs have not been developed for use in those training programs where the majority of lower mental category personnel will begin their careers.

In view of the AVF, the military is devoting considerable effort to matching man and job requirements. Effort is being concentrated in the following areas of training:

(1) Identification of job elements and jobs suitable for marginal personnel, in order to identify representative sets of job elements and jobs which marginal individuals can be trained to perform at an adequate skill level.

(2) Measurement and training of basic skills to improve skills basic to learning most jobs. These skills include oral communication, reading, arithmetic and ability to use hand tools. The objective of this effort is to establish criterion of performance levels that are necessary for entry into training for representative military jobs, to develop new methods for training these basic skills, and to develop standardized ways of measuring these skills.

(3) Development and evaluation of methods for efficient training of marginal personnel in the performance of selected job elements. The purpose here is to develop efficient training methods for job elements previously identified as being suited to marginal persons.

(4) Determination of optimal sequences for training in the elements of representative jobs and procedures for integrating elements into complete jobs. The purpose is to seek principles which can be applied to many jobs.

(5) Modification of training courses for jobs suited to marginal persons, such as Commissary School, Equipment Operator, or Aviation Mechanic.

Applying the fruits of research and training technology to the marginal man problem shows these kinds of training emphases in the military. Course objectives are being carefully reviewed and validated, course materials are being simplified. New handout supplemental materials are being developed and lesson plans being modified. More appropriate ways of sequencing the material to be learned are being investigated. Self-paced individualized learning utilizing currently available audio-visual equipment is rapidly being implemented. Task analysis techniques upon which to base new criterion performance type tests are being stringently applied, and procedures for evaluating the effectiveness of particular training programs are being developed.

The basic realization of the post-70's is the shortage of trained manpower. There are just not enough qualified males to meet the nation's expanding technology! While there may be females in sufficient numbers to fill the gap, social restrictions leave little doubt that it will be some time before they can be fully integrated to meet the manpower needs of the military. It is all too clear that we cannot continue to misuse the marginal segment of the male population. There is an urgent requirement for the military to systematize the training of marginal personnel.

I would like for you to consider another bit of evidence. In view of the past record of the military in relation to the marginal man, one is prompted to ask if the classifi-

cation procedures truly capture the issues involved. To cite one long forgotten statistic, in 1943 for every 100 men inducted into the Army, the net increase was 5 enlisted men available for duty. Men were being accepted who were subsequently found sub-standard (did not meet set standards for duty). At the same time, men were being released for like reasons. Perhaps organizational responsiveness is at issue here also. Perhaps we need to be more responsive to the needs of the marginal individual when organizational policies and procedures are being developed, so that he may be integrated into the system.

In order to integrate the marginal man into the military environment, a number of key issues must be examined. For example, to what extent is technology reducing the number of jobs he can learn to perform? The job of gunner's mate, for instance, has commonly been filled by lower ability men. The job now calls for knowledge of fire control systems and basic electronics (both requiring greater mental facility than heretofore required by that particular job). Another issue is that of the influence of social class and ethnic variables and their effect upon learning and performance.

To date there have been no real attempts to develop optimum ways for training the marginal man because of the nature of the jobs he traditionally performs. The jobs have characteristically been menial. However, evidence from research suggests that the marginal man may be capable of performing at a higher level than we have come to expect. To prepare him for more technical jobs (or job elements) of the 70's, we will need to do a number of things. We will need to (1) determine more precisely the extent of his abilities (this is the domain of test development), (2) determine more precisely the range of jobs the marginal man can do given appropriate training. This requires effort to gain an understanding of the skills and knowledge requirements for all navy jobs and in some way correlating this with marginal man's abilities. The Navy is currently expending much effort on systematic analyses of navy jobs using the technique of task analysis, and (3) determine the efficacy of synthetic replicas of job environments for training the marginal man (this is the domain of job simulation). I would hasten to add a fourth dimension—that of motivation. We need to examine ways of motivating the marginal man on the job and also attend to his satisfaction systems as a member of the Navy. (This is the domain of incentives, job satisfaction and attitude development.)

My purpose in this presentation has been to highlight the problems associated with zero draft conditions and not to provide solutions. As I've indicated, it is not a simple problem with straightforward remedies. Attempts to provide immediate solutions are obviously hampered by major lacks of substantive data.

In view of this, I think it is the prime responsibility of many people in the Navy to take every advantage of the available instructional technology, and to search for innovative techniques to train this marginal segment of the labor force to perform effectively in the operational environment.

ABOUT THE AUTHOR

MS. DOROTHY V. MEW is a Psychologist with the Training Analysis and Evaluation Group, Orlando, primarily involved with implications of an all-volunteer force for Navy training. Prior to joining the Center, she was with the Ordnance Center and School, Aberdeen Proving Ground, Maryland, where she was involved in training evaluation and research. Ms. Mew was graduated Magna Cum Laude with an A.B. degree from Lincoln University, Pennsylvania, and received an M.A. degree in Experimental Psychology from the University of Delaware. She has done additional graduate work in Education, Psychology, and Computer Sciences at Roosevelt University and University of Maryland. Ms. Mew is a winner of Psi Chi National Research Award and is a Fellow of Rohm & Haas and National Institutes of Health.