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Technical Report 28

An Experimental Evaluation of a Basic Education Program in the Army

by

S. James Goffard

April 1956

The George Washington University
HUMAN RESOURCES RESEARCH OFFICE
operating under contract with
THE DEPARTMENT OF THE ARMY

AN EXPERIMENTAL EVALUATION OF A BASIC EDUCATION PROGRAM IN THE ARMY

by

S. James Goffard

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HUMAN RESOURCES RESEARCH OFFICE
operating under contract with
THE DEPARTMENT OF THE ARMY

Technical Report 28
April 1956

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BRIEF

This research was designed to evaluate experimentally the effects of a brief period (usually three weeks) of special prebasic training on the potential military usefulness of marginally literate men. Three types of special training were considered: instruction in which academic skills--reading, writing, and arithmetic--were emphasized; instruction in which the emphasis was entirely military--in effect, an extra period of basic training; and instruction in which academic and military skills were emphasized equally.

The effectiveness of these types of prebasic training was measured by comparisons made at the end of eight weeks of basic training between marginally literate men who had been given some type of special prebasic training and similar men who had not been given special training. These comparisons were made on the basis of: (1) scores on a standardized performance test of military proficiency; (2) scores on a standardized written test of military proficiency; (3) evidence from company commanders and training cadre of troublesomeness during basic training; and (4) measures of attitudes toward the Army, attitudes toward basic training, personal morale, social adjustment, attitudes toward education, and general optimism.

All three types of special training appear to produce about the same results:

(1) A very slight improvement in performance proficiency
(2) A very slight improvement in written proficiency
(3) No appreciable change in general troublesomeness
(4) No appreciable changes in attitudes, optimism, social adjustment, or personal morale

Comparisons between different subgroups of subjects, classified according to various background characteristics, consistently yielded these same results.

Compared with average trainees, marginally literate men are:

(1) Somewhat less proficient on the performance test
(2) A good deal less proficient on the written test
(3) Considerably more troublesome
(4) Somewhat more favorably disposed toward the Army and toward basic training, but less favorably disposed toward education

Special prebasic training of the type and duration considered in this study appears to have made an almost negligible contribution to the potential military usefulness of marginally literate men at the end of basic training. The striking corroboration of these findings by a recent and very similar Air Force study (Project 1000) lends considerable additional weight to this conclusion.

It is suggested that special prebasic training conceived in more broadly psychological or clinical terms might prove more effective than the types of training examined in this study.

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AN EXPERIMENTAL EVALUATION OF A BASIC EDUCATION PROGRAM IN THE ARMY

PART I
SUMMARY AND CONCLUSIONS

THE MILITARY PROBLEM

Of the men available for military service, roughly 10 per cent are judged to be so poorly educated as to be only marginally useful to the Army. Under total mobilization the pool of available manpower will be limited; these men, despite their deficiencies, will have to be inducted. The Army will therefore be faced with the problem of making effective use of large numbers of semi-literate men.

One possible solution to this problem is to give such men special consideration by assigning them to jobs that require little reading, writing, or arithmetic. For many reasons this is felt to be an impractical procedure, to be used only as a last resort. Special training of some sort, designed to "salvage" these men for regular duty, is believed to offer a more practical answer to the problem.

Whether this solution is acceptable, however, depends, first, upon the effectiveness of the training in salvaging such men and, second, upon the cost of the training in time, money, and additional manpower. The research reported here was concerned with only the first of these two factors, an evaluation of the effectiveness of a brief period of special prebasic training comparable to the training now being given in the Transitional Training Units (TTU's) to men who cannot meet certain educational requirements.

THE RESEARCH PROBLEM

The present study was designed to find out whether certain specific types of special training, given for approximately three weeks prior to basic training, could effectively compensate for deficiencies of educationally marginal men and increase their potential military usefulness.

The primary subjects in this study were men who entered the Army with Aptitude Area III scores below 75 and whose scores on the USAFI Test of Educational Achievement showed a current educational level below that of a beginning fifth grader. Certain other groups of men, notably a randomly selected group of "average" trainees, were also used as subjects.

The types of special prebasic training evaluated in this study varied in emphasis from almost wholly academic to wholly military. When the emphasis was strongly academic, all of the time was spent in the classroom, all the

teaching was by civilian instructors, and the majority of the time was spent acquiring academic skills—reading, writing, and arithmetic. When the emphasis was wholly military, all of the time was spent in the field, all of the teaching was by military instructors, and all of the time was spent acquiring military skills. Training was also given in which academic and military skills were emphasized equally.

The relative effectiveness of these varieties of prebasic training was measured by comparisons between two groups of the primary subjects: (1) an experimental group, composed of men who were given special training before they went into basic training, and (2) a control group, made up of men who were sent directly into basic training. These initially equivalent groups were formed by random division of the educationally deficient men sent to Fort Leonard Wood, Mo., between September 1953 and June 1954.

The potential military usefulness of the two groups was estimated at the end of the first eight weeks of basic combat training on the basis of:

(1) Their scores on a performance proficiency ("stakes") test
(2) Their scores on a paper-and-pencil proficiency test
(3) A rough measure of the trouble they had given to the cadre of their training companies
(4) Surveys of certain of their attitudes before and after training.

THE FINDINGS

The findings were essentially the same for all of the variations of special prebasic training considered in the study:

(1) The experimental subjects tended, on the average, to make slightly higher scores than the control subjects on the performance proficiency test.
(2) The experimental subjects tended, on the average, to make slightly higher scores than the control subjects on the paper-and-pencil proficiency test.

    However, the experimental group did not show more than a five per cent improvement over the control group on either test in any phase of the study.

(3) Experimental and control subjects were reported to be about equally troublesome to the cadre of their training companies.
(4) There were no consistent differences between the two groups in the attitudes they expressed at the end of basic training or in any changes shown in their attitudes.

To test whether the effects of special training varied among different groups within the total sample, the experimental and control groups within each race were classified into corresponding subgroups on several bases: by region of origin, measured educational level, claimed educational level, initial attitudes, and final attitudes. Like the differences between the total experimental and control groups, the differences between corresponding subgroups were very small. Subgroups of experimental and control subjects who were alike in race and region of origin, or educational level, and so forth, had about the same final standing on the proficiency tests and on the other measures of potential military usefulness.

Comparisons between the average trainees and the educationally deficient subjects showed that the latter were, on the average:

(1) Only a little less proficient on the performance test
(2) Quite a bit less proficient on the paper-and-pencil test
(3) Considerably more troublesome to the cadre of their training companies
(4) More likely to express favorable attitudes toward the Army and toward education at the end of basic training but less stable in their attitudes over the period of basic training.

CONCLUSION

The potential military usefulness of educationally deficient men appeared to be only slightly increased, on the average, by a short period of special prebasic training. Whether the emphasis in the training was military, academic, or a combination of the two did not seem to affect these results.

IMPLICATIONS

In the event of mobilization the Army would have no choice except to use educationally deficient men, despite their deficiencies. If it would be impracticable to put such men on limited service, the alternative would be to give them special treatment to fit them for general, unlimited service.

Most of the periods of special prebasic training examined in this study extended over a period of three weeks (the present TTU's give from two to four weeks of training). The special training was designed to increase the potential military usefulness of educationally deficient men by either (1) raising their educational level, (2) increasing their military skills, taught through demonstration and practice, or (3) simultaneously raising their educational level and increasing their military knowledge, taught by lecture and conference.

None of these treatments appears to have had an effect of practical significance upon the potential military usefulness of marginally literate men, as measured in this study after eight weeks of basic training.

It is, of course, possible that some effects might become evident later in the Army careers of these men. A similar study recently done in the Air Force (Project 1000), in which both the training and the measures used were much like those employed in the present research, found special training to have no appreciable effects either at the end of basic training, six weeks after basic training, or after eight months of service. In view of these results, it seems unlikely that, in the present study, effects much greater than those observed at the end of eight weeks would appear at a later time.

The special training in the Air Force study, which consisted primarily of additional basic training but included 45 hours each of language arts and arithmetic, lasted for six weeks. It appears unlikely, therefore, that the special training considered in the present study would be much more effective if it were, say, doubled in length. Neither study offers a sound basis for estimating the possible effects of long periods of special training—perhaps 15 or 20 weeks—or of training very different in approach from those actually tested.

It is possible that one or another of the varieties of special training considered in the present study might have some effect apart from those measured in the study. It might, for example:

(1) Increase the general military usefulness of semiliterate men
(2) Enhance their value to the Army in some unspecified way simply by raising their educational level
(3) Provide an efficient method of screening out untrainable or otherwise undesirable men.

In view of the general findings in this research and the Air Force study, the first two possibilities do not appear to be very promising; the potentialities of the third were not investigated in this study.

There seems, therefore, to be little reason for giving special prebasic training of any of the types examined in this study routinely to all men who show educational deficiencies.

Men with educational deficiencies may, however, benefit from some type of special prebasic training. The type of training needed may vary from one group to another: the educationally deprived, the psychoneurotic, the slow learners, and so forth. The educational deficiencies of most of the men in this study, for example, do not appear to have been due primarily to educational deprivation. Nearly 85 per cent of them claimed to have been through at least the fourth grade; as a consequence, almost all of them were able to read and write, though usually not very well. Other conditions—e.g., intellectual incompetence, poor motivation, emotional difficulties, personality problems—must be considered as possible sources of deficiency. Special prebasic training designed to deal with these men on the basis of a more comprehensive diagnosis might prove to be more effective than purely educational or military training in increasing their potential military usefulness.

Ideally, a comprehensive assessment should be made of each educationally deficient man shortly after induction. On the basis of this assessment he could be assigned to a particular type of treatment or training, or discharged as unsalvageable. In order for such a program to be put into operation, the following steps would be necessary:

(1) Identify the intellectual, motivational, and emotional factors most commonly associated with the deficiencies of marginally literate personnel
(2) Develop screening procedures to segregate those who could not profit from special training
(3) Develop specialized methods and techniques for dealing with such of the deficiencies as can be remedied.

PART II
DESCRIPTION OF THE RESEARCH

Chapter 1

INTRODUCTION

THE PROBLEM

This study of Basic Education and military proficiency was begun as a supplement to the large number of studies that have been done over the last several decades on the training of illiterate and semiliterate men for military service. It was soon integrated, however, into a broader program of research on the Basic Education of troops, requested by the Assistant Secretary of the Army for Manpower.

The general problem can be stated simply: The pool of entirely acceptable manpower is not indefinitely large. In the face of exceptionally heavy demands for men, standards of acceptability must be lowered. In planning for total mobilization, for example, it soon becomes evident that men with physical, psychological, or educational deficiencies will have to be accepted along with the more able. In this situation, the following questions arise: How can such men be used most effectively? Is it necessary to put them on limited service or can their level of ability be raised enough to warrant unlimited service?

A SOLUTION—SPECIAL EDUCATIONAL TRAINING

For that group of men who are marginal because of educational deficiencies, the illiterate or semiliterate, the answer has usually involved some sort of supplementary training.[1] Early in their Army careers such men have been given special educational training designed to raise their educational level to an acceptable standard. Once through this special training they have no longer been considered deficient but have been used like other men of low but acceptable educational level.

PREVIOUS EVALUATIONS OF THIS SOLUTION

To justify systems of special training, with the attendant expense in time, money, and manpower, it must be shown that they are doing what they are

[1]For a complete history of the special training programs during World War II, see Samuel Goldberg, *Army Training of Illiterates in World War II*, Bureau of Publications, Teachers College, Columbia University, New York, 1951.

supposed to do—that they actually do increase the utility of semiliterate men. A number of studies have attempted to make such an evaluation of the special training given during World War II,[1] but most of the results have been inconclusive. In some studies, the measures used as criteria of effectiveness were of doubtful value; in others, the design of the study was inadequate to demonstrate the effectiveness of the training.

The typical study has shown, for example, that special educational training salvaged a considerable proportion of the marginal men for regular military duty by raising their measured educational level to an acceptable standard. It is unfortunate that this has so often been the only practicable criterion of effectiveness, for its usefulness is severely limited. First, a technical flaw clouds the results of the various studies using this criterion; because the educational level of trainees was measured both before and after training, using the same test, it is impossible to determine whether the change observed was due to special training or to practice in taking the test. Most important, however, the majority of these studies did not demonstrate that raising the educational level of marginal men had any effect on their military usefulness or produced any real change in their aptitude for training, their morale, or their subsequent behavior.

On the basis of ratings, judgments, or service records available to them, other studies (notably those by Ginzberg and Bray[2] on Army personnel and Hagen and Thorndike[3] on Navy personnel) have demonstrated clearly that the subsequent military careers of men given special literacy training have been reasonably satisfactory, and even in some cases outstanding.

The immediacy and realism—the face validity—of the criteria of effectiveness or military usefulness in these studies are impressive. There are, of course, many limitations inherent in any attempt to evaluate individual performances on the basis of the isolated records and ratings which are available or can be obtained. But it is primarily the impossibility of obtaining appropriate control groups, under these circumstances, which limits these studies in their evaluation of the effectiveness of special literacy training.

Both of the studies cited included a reasonably representative sample of "normal" or average men, but in neither study was it possible to obtain a sample of untrained men comparable to those who had been given special training. Hagen and Thorndike did have a "marginal" sample that "was supposed to represent men of about the same level of intellectual ability as the illiterates,"[4] but these men did not constitute an adequate control group. The authors were forced to conclude: "In view of the differences in literacy level, intellectual ability, education, age, and background, it would seem that comparison of

[1] An extensive review of many such studies can be found in Nicholas Fattu, Edmund Mech, and Lloyd S. Standlee, *A Review of Literacy Training Programs in the Armed Services During World War II*, Bureau of Naval Personnel, Technical Bulletin 53-4, prepared under Contract NO-NR-908(1) by The Institute of Educational Research, Indiana University, Bloomington, Ind., 17 December 1953.

[2] Reported in Eli Ginzberg and Douglas W. Bray, *The Uneducated*, Columbia University Press, New York, 1953.

[3] Elizabeth P. Hagen and Robert L. Thorndike, *A Study of the World War II Navy Careers of Illiterates Sent Through Literacy Training*, Bureau of Naval Personnel, Research Report, prepared under Contract NO-NR-644(00), April, 1953.

[4] *Ibid.*, p. 20.

the Navy careers of the illiterate and the marginal groups does not provide a sound basis for evaluating the effectiveness of the literacy training program."[1]

Since the effects of special training can be isolated and evaluated only by comparing the performances of men who have, and similar men who have not, been given such training, the findings of studies which did not make this comparison are necessarily equivocal. Satisfactory performance by marginal men after special training does not in itself serve as a measure of the training, since these men might have performed satisfactorily without the special instruction.

Other attempts to demonstrate the value of special training have utilized comments or ratings concerning the training, made later by the trainees themselves or by persons who dealt with them. Anecdotes showing the significance of special training to individual trainees have also been adduced as evidence of its value. However suggestive these cases may be, it is obvious that they present little basis for generalization.

THE BASIC EDUCATION PROGRAM PRIOR TO 1953

Educational Standards for Enlisted Status

It is commonly believed that to be an effective member of a unit in a modern army a soldier should be able to read, write, and do simple arithmetic. The exact minimum level of competence needed has not been established; it is assumed to be no higher than the level normally expected of a student just finishing the fourth grade.[2] All Army enlisted men are therefore required to have, at a minimum, the equivalent of a fourth-grade education. Of the men inducted into the service, five to seven per cent cannot meet this minimum requirement. A few have never formally completed the fourth grade; the majority, however, are identified by their low scores on Aptitude Area I (AA-I) of the Army Classification Battery (ACB).[3]

Selection for Basic Educational Training

In the past, the USAFI Test of Educational Achievement No. 2 was given shortly after induction to all men who had not completed the fourth grade or whose AA-I scores were below 70. Those whose scores on the USAFI test did not indicate educational achievement above the fourth-grade level were considered candidates for basic educational training.[4] All such men were

[1] *Ibid.*, p. 21.

[2] Completion of the fourth grade is not an entirely arbitrary criterion. It is the point in the normal curriculum where the emphasis shifts from acquisition of basic educational skills to elaboration of skills already acquired.

[3] This battery of tests yields a set of scores which are used in various combinations. AA-I is the average of scores on Reading Vocabulary, Arithmetical Reasoning, and Pattern Analysis.

[4] In the current Transitional Training Unit program, the USAFI tests are given to all men whose AA-III scores are below 75. Those whose measured educational level is not above the fourth grade attend Basic Education School on duty time for two to four weeks. Trainees may graduate at the end of the second, third, or fourth week; those who fail to graduate during this time are sent into basic training at the end of four weeks.

expected to attend Basic Education School at night during their 16 weeks of basic training until they passed the fourth-grade level on the USAFI-2.

In practice, only a small fraction of these "basic-level" men actually succeeded in reaching this minimum level of educational achievement during basic training. Conflicts in schedules, transportation difficulties, limitations on space, and fatigue usually prevented their attending night school consistently enough to reach the fourth-grade level. At Fort Leonard Wood, for example, during the last three months of 1952, only 30 per cent of the men eligible for special training were ever enrolled in the school and fewer than five per cent ultimately graduated from the fourth grade.

EXPERIMENTAL MODIFICATION OF THE PROGRAM

The ineffectiveness of the special educational training program led, at Fort Leonard Wood, to the establishment in January 1953 of the Basic Education Project. This project, an experimental modification of the basic educational training program, was planned by Troop Information and Education (TI&E) and administered by the local command at Fort Leonard Wood.

The experimental project was intended to (1) increase the effectiveness of the educational program by sending men to Basic Education School on duty time before they entered basic training, and (2) evaluate the effects of the special training in terms of the military usefulness of the men involved.

In June 1953, at the request of TI&E, HumRRO entered the project to assist in evaluating the effects of the special training. The work done before HumRRO entered the project is described here as Phase I of the study; Phase II is the experimental evaluation conducted with the assistance of HumRRO.

In July 1953 the Basic Education Project was extended at the request of the Assistant Secretary of the Army. HumRRO, the Personnel Research Branch (PRB) of The Adjutant General's Office, TI&E, and the local command at Wood collaborated in the phases of the study carried out under this extension.

[1]It must be borne in mind that very few of these men are completely illiterate; most of them have already been exposed to education in the early grades. Under these circumstances, the effects which could be expected from a brief educational program are limited.

Chapter 2

RESEARCH DESIGN AND PROCEDURES

PURPOSE OF THE PRESENT STUDY

Beginning as an evaluation of the modified form of the Basic Education Program introduced at Fort Leonard Wood, the present study developed into a more general evaluation of basic education for marginally literate men.

The basic purpose of the study was to find out whether special training given to educationally marginal men was effective in increasing their military usefulness. None of the earlier studies had fulfilled this purpose, since none provided a clear evaluation of the effects of special training on the performance of the subjects, in terms of an unambiguous comparison between the performances of men who had had and similar men who had not had the special instruction.

In all phases of the present study the research design called for inclusion of men (the control groups) who did not receive special training but were in every other respect just like the men who did receive special training (the experimental groups). In all but the earliest phase, assignment of men to experimental or control groups was made strictly at random[1], after stratification by race and grade level, as shown on the USAFI Tests of Educational Achievement. Random methods were also used in the later phases to assign the members of both groups to their training companies.[2]

It should be noted that after the first phase no attempt was made to identify the subjects of the experiment to the training cadre or otherwise single them out. At no time during basic training or in final testing were they distinguished from the other trainees or made the object of special consideration or attention until this became necessary in order to gather certain data.

THE MAJOR VARIABLES

The variables of primary interest considered in this study were:

(1) The criteria and procedures for selecting subjects
(2) The special training curriculum
(3) The criteria for evaluating the effectiveness of the training

[1]In the absence of an *explicitly random process* at some point during the selectinn of a sample, no statistical model can be specified to justify generalizations based upon the characteristics of the sample, and no vnlid general conclusions can be drnwn from the data.

[2]In the case of the control subjects this was done immediately after selection; in the case of the experimental subjects it was done after their period of special training.

The different values assumed by these variables in the six phases of the study are described briefly below and summarized in Figure 1. A more complete description of the changes made in these basic variables for each phase is presented in Appendix A.

Criteria and Procedures for Selection of Subjects

Among the most important independent variables were the criteria and procedures used in selecting experimental subjects to be given special training and comparable control subjects to be sent directly into basic training.

The initial criterion of selection was, in Phases I and II, a score of 70 or less on Aptitude Area I of the Army Classification Battery. In the later phases of the study, a score of 75 or less on Aptitude Area III of the ACB was the primary criterion. Although AA-I, the average of scores on the Reading Vocabulary, Arithmetical Reasoning, and Pattern Analysis subtests of the ACB, is commonly used as an index of intelligence, AA-III, the average of the first two of these scores, was considered to be a better measure of academic aptitude and hence more suitable in this situation.

The second criterion of selection, applied among those men selected on the basis of their aptitude area scores, was grade level achieved on the USAFI Tests of Educational Achievement. For most of the study this level was set at less than fourth-grade completion. For Phase III, however, all men with AA-III scores below 75 were included as subjects except those few whose scores on the USAFI-3 showed an educational level equivalent to completion of the seventh grade. By this criterion, the whole range of cases that could possibly be candidates for special educational training was thereby included in the sample.

In addition to these subjects, groups of average trainees were selected at random from the various training companies. No "basic-level" men were included in these groups.

The numbers of subjects initially selected and assigned in each phase are discussed in a subsequent section on the size of the sample included in the study.

Special Training

The content of the special training curriculum was the independent variable of primary interest in this study. The variations introduced into the curriculum, described briefly here and in Figure 1, are given in more detail in the phase descriptions in Appendix A. A typical program of instruction is shown in Table 1. The various curricula followed were devised by the Troop Information and Education Division of the Office of the Chief of Information and Education.

The primary variation in the special training curricula concerned the amount of emphasis given to military knowledge and skills as contrasted with academic skills. In Phases I and II the emphasis was strongly academic: the training consisted almost wholly of classroom teaching by civilian instructors of the basic academic skills—reading, writing, and arithmetic—with only the minimum necessary military training outside the classroom.

SUMMARY OF PROCEDURES

Phase	Dates	Criteria for Selection of Subjects	Control Group	Special Training Curriculum	Special Training Time	Criteria of Effectiveness
I	Jan-Jun 53	AA-I $\leq$ 70 USAFI-2 $\leq$ 4th Grade	14% of total number of subjects; selected in Jan & Feb to match remainder	Entirely academic	2-12 days	Local test of prof Ratings Records
II	Jun-Jul 53	Same as I	49% of total; selected at random	Same as I	Same as I	Local test of prof Check list Ratings Attitude surveys
III	Sep 53-Jan 54	AA-III $\leq$ 75 USAFI-3 $\leq$ 7th Grade	48% of total; selected at random	Half academic, half military	3 weeks	IPT BMPT Check list Attitude surveys
IV	Feb-Mar 54	AA-III $\leq$ 75 USAFI-2 $\leq$ 4th Grade	42% of total; selected at random	Academic and military with academic emphasis	Same as III	Same as III
V	Mar-May 54	Same as IV	20% of total; selected at random	(1) Same as IV (2) Purely military	Same as III	Same as III
VI	May-Jun 54	Same as IV	6% of total; selected at random	Same as IV	2-4 weeks	Same as III

NOTE: Training time varied because subjects could "graduate" by passing the fourth-grade level at any time during Phases I and II, and at any time of second week in Phase VI.

Figure 1

Table 1

PROGRAM OF INSTRUCTION FOR PHASE III[a]

Subject	Hours of Training		
	First Week	Second Week	Third Week
Academic Instruction	25	25	25
Military Subjecta Taught by Civilian Instructors:			
Military Justice	1	1	1
Character Guidance	1	1	1
Interior Guard	2	0	2
Adaptation and Group Living	1	1	1
Achievement and Traditions of the Army	1	0	1
Map Reading	1	3	1
Range Estimation	0	1	0
First Aid	1	3	1
Subtotal	8	10	8
Other Military Subjects			
Dismounted Drill	2½	3½	2½
Personal Hygiene	1	1	1
M-1 Rifle	2	2	2
Command Conference	1	1	1
Rifle Marksmanship	3	0	3
Supply Procedures and Economy	1	1	1
Military Courtesy	3	1	3
Inspection	0	2	0
Physical Training	3	3	3
Subtotal	16½	14½	16½
Total Hours	49½	49½	49½

[a]This is approximately the program followed in the current Transitional Training Units.

In Phase III fully half the time was spent on purely military subject matter, and the program of instruction placed considerable emphasis on those military subjects which must be taught by military instructors (see Table 1). In the academic periods, every effort was made to instruct the men at the grade level appropriate for them, as measured by their USAFI scores.

The Phase IV program, as compared with that of Phase III, placed less emphasis on military subject matter; the curriculum for Phase IV included 25 hours of academic instruction and 19 hours of military instruction. In the military instruction, learning through reading, writing, and explanation was emphasized and learning through practical exercise and demonstration de-emphasized; that is, less time was devoted to the teaching of military skills by demonstration and practice than to the teaching of military knowledge by lecture and conference.

Phase V was designed to evaluate two rather different types of prebasic training. One group of basic-level men was given instruction which emphasized academic methods and skills; this curriculum was identical with that used in Phase IV. A second group of such men was given an equal period of prebasic combat training in which military field methods and skills were emphasized. This special training, which stressed those areas usually found to be troublesome to marginal men, consisted almost entirely of demonstration by the instructor and performance by the trainee. Repeated practice of difficult items was considered more important than limited exposure to many subjects.

The curriculum for Phase VI was the same as that used in Phase IV and the academic program in Phase V.

The duration of the training was not treated as a primary variable, although it did vary somewhat during the study. In Phases I and II experimental subjects could "graduate" from the school at any time by passing the fourth-grade level, but had to leave at the end of two and one-half weeks. In Phases III, IV, and V, all experimental subjects had three weeks of special training. In Phase VI the procedure used in the present Transitional Training Units (TTU's) was followed; all experimental subjects had at least two but no more than four weeks of special training and might "graduate" any time after the second week.

Criteria of Effectiveness

Ideally, in a study of this sort, the effectiveness of special training should be evaluated against a criterion of general military usefulness. However, the enormous administrative and technical obstacles to the construction and utilization of such an all-inclusive criterion—apart from the fact that one of its basic components, combat performance, is rarely available for quantification—make it unlikely that a rigorous experimental study based on this criterion would ever become feasible. For the present study a more restricted criterion was adopted, that of potential military usefulness.

For the purposes of the present study, it was assumed that a man who, at the end of eight weeks in basic combat training,[1]

(1) had a good grasp of the skills and military information taught there,
(2) had relatively high morale, and
(3) had given his superiors little trouble,

was of greater potential military usefulness than a man who

(1) had a poor grasp of basic training materials,
(2) had relatively low morale, and
(3) had given his superiors a good deal of trouble.

Several measures which could be expected to distinguish between men of high and men of low potential military usefulness—measures of proficiency,

[1] In the program of research of which this study is a part, the task of gathering and analyzing data on rated performance after six months of service was assigned to PRB. The results will be presented in a forthcoming report from PRB.

attitudes, and troublesomeness—were therefore devised. Not all measures were used in all phases of the study (see Figure 1).

These measures included:

(1) The local performance proficiency ("stakes") test used at Fort Leonard Wood
(2) A standardized performance proficiency test (the IPT) devised at the Personnel Research Branch of The Adjutant General's Office
(3) A standardized written proficiency test (the BMPT) also devised at PRB
(4) Two attitude questionnaires devised at HumRRO
(5) A check list of ways in which men are commonly reported to be troublesome in their training companies during basic training
(6) Various ratings by company commanders and cadre, and records of disciplinary action

These measures are described in detail in subsequent chapters of this report.

Although the criterion of potential military usefulness may appear rather limited, it is clearly the only one practicable in this situation. The criterion measures used could no doubt be improved, but they are reasonably reliable and appear to cover most of the types of behavior relevant to the problem. The present study therefore seems to be more nearly definitive than any previous study of the problem. Certainly its scope could be increased significantly only by an enormous increase in its complexity.

CHARACTERISTICS OF SUBJECTS

Race as a Variable

In the analysis of the data from the earlier phases, it soon became apparent that the results from the white subjects and from the Negro subjects differed enough to require separate analyses. In the later phases, therefore, subjects were classified first on the basis of race—as Negro or non-Negro—before they were assigned to experimental or control groups.[1]

Very early in Phase III, a change was made in the system of assigning men to Basic Training Centers. Whereas previously some men had come to Fort Leonard Wood for training from all parts of the country, trainees now came only from the upper middlewestern tier of states—Ohio, Michigan, Wisconsin, etc. This change virtually eliminated Negroes from the normal input to Wood. In order to give some representation in the study to the southeastern states, the source of a large proportion of the men (both white and Negro) of low educational level, many such men were sent from Fort Jackson, S.C., to Wood. As a consequence, there were fairly large groups of Negro experimental and control subjects available for the study but only 16 Negro average trainees.

[1]The Indians and Orientals among the subjects were arbitrarily classified with the larger white group. The number of such cases was, in any event, too small to make their classification a matter of practical importance.

Educational Level

Measured Level: The primary subjects in all phases of this study were the "basic-level" men—men whose basic educational skills were inadequate for completion of the fourth grade, according to the USAFI-2. The number and proportion of subjects found at each grade level are shown in Table 2, classified by race. For Phase III, the additional subjects at higher grade levels are included in the tabulations in Appendix B.

Table 2

SUBJECTS AT EACH LEVEL OF EDUCATIONAL ACHIEVEMENT AS MEASURED BY THE USAFI-2

Phase	Grade Level	White		Negro	
		Number	Per Cent	Number	Per Cent
I[a]	2	112	7%		
	3	281	19%		
	4	1,108	74%		
II	2	11	10	6	4
	3	21	20	23	18
	4	74	70	101	78
III[b]	1	2	2	1	1
	2	6	4	5	3
	3	18	13	27	18
	4	112	81	116	78
IV	2	10	6	2	2
	3	26	14	22	17
	4	144	80	104	81
V	1	2	1	1	-
	2	11	5	6	2
	3	19	9	43	16
	4	191	85	225	82
VI	2	7	8	3	4
	3	8	9	10	12
	4	70	83	67	84

[a]Subjects were not classified by race.

[b]These figures include only the primary subjects—those whose USAFI test scores indicated less than fourth-grade completion. For a breakdown of all subjects whose measured educational level showed less than completion of the seventh grade, see Appendix Table B-6.

Claimed Level: In the first attitude questionnaire, administered in Phases II-VI, the question was asked: "What grade were you in when you finally stopped going to school?" Table 3 lists the number and proportion of subjects in each phase who claimed to have had no more than a fourth-grade education. The answers given to this question by the total group of subjects in Phase III were compared with the answers recorded on their Form 20's for "Highest Grade Completed." The comparison showed essential agreement for 89 per cent of the cases; in 74 per cent the agreement was exact, and in 15 per cent

the last grade attended was one higher than the highest grade completed. The measured educational level of the experimental and control subjects in Phase III was, on the average, nearly five grades below the educational level they claimed on the AS-I or on Form 20.

Table 3

SUBJECTS WHO CLAIMED
NO MORE THAN A FOURTH-GRADE EDUCATION

Phase	White		Negro	
	Number	Per Cent	Number	Per Cent
II	19	18	8	6
III[a]	16	12	12	8
IV	31	17	7	5
V	32	14	24	8
VI	20	22	4	5
Total	118	16	55	7

[a]Of the *total* sample in Phase III (including those men whose measured educational level showed less than seventh-grade completion), 29 white (3%) and 12 Negro (3%) subjects claimed no more than a fourth-grade education.

It is clear, from Table 3, that the great majority of the subjects in all phases of this study had at least been exposed to education at the fifth-grade level or higher. Thus, sheer educational deprivation alone cannot account for their educational deficiencies.

Other Background Characteristics

Complete tabulations of various background characteristics of the subjects are included in Appendix B. The differences between corresponding groups are uniformly small.

SIZE OF SAMPLE

Initial Number of Subjects

Despite the care taken to stratify the samples, the corresponding experimental and control groups were not usually the same size (see Tables 4 and 5). During the first three weeks of Phase III, for example, potential control subjects were lost because they had to be sent into basic training while their experimental counterparts were still in school. Similar situations in the other phases produced other discrepancies in the samples. However, since the assignment was at all times made at random, these discrepancies are not indicative of bias.

Table 4

NUMBER OF SUBJECTS INITIALLY SELECTED FOR EACH PHASE

Phase	Experimental Subjects	Control Subjects	Average Trainees[a]
I	1,501	236	
II	120	116	
III	683	621	656
IV	179	129	193
V–Academic	193	102	250
V–Military	219		
VI	160	11[b]	

[a]No average trainees were selected for Phases I, II, and VI.
[b]The needs of the school precluded the selection of more control subjects.

Table 5

NUMBER OF WHITE AND NEGRO SUBJECTS INITIALLY SELECTED FOR EACH PHASE

Phase[a]	Experimental Subjects		Control Subjects		Average Trainees[b]	
	White	Negro	White	Negro	White	Negro
II	47	73	59	57		
III	456	227	416	205	640	16
IV	104	75	76	53	193	0
V–Academic	94	99	40	62	250	0
V–Military	101	118				
VI	87	73	3	8		

[a]In Phase I, subjects were not classified by race.
[b]No average trainees were selected for Phases I, II, and VI.

Attrition

Almost any study which attempts to follow subjects over a period of time loses some of them. A much heavier loss can be expected when, as in this study, the subjects form a small part of a large body of men over which the experimenters have no administrative control.

Losses occurred at many points. During Phase III, for example, of the 1,574 men given the initial battery of tests, 269 (17%) could not be used as subjects for such varied reasons as incorrect initial classification, prior military service, or inability to speak English. During their time in school, a number of subjects were lost through discharge (for such reasons as mental deficiency or undesirability) or through other causes such as illness or emergency leave. Such cases were routinely dropped from the study.

During the eight weeks of basic training, losses from all groups occurred for these and other reasons. The most frequent cause was transfer to some other training company. Information on such transfers was difficult to obtain and more difficult to verify; as the numbers of training companies and subjects involved grew larger and larger, it became impossible to trace cases lost in this way.

Final Number of Cases

Ten weeks after the last experimental subject of Phase II had gone into basic training, complete test data were available on 215 (91%) of the original group of 236 subjects. In Phase III, however, complete sets of criterion scores were obtained for only 1,497 (76%) of the 1,960 men who acted as subjects; incomplete sets of criterion scores were available for 451 more. Of the men missing at one or both of the final proficiency tests, some had been discharged, some were in the hospital, and a few had gone AWOL or were in the stockade; a number were not tested because they had other duties (KP, CQ, appointments) at the time; others were on leave for the Christmas or New Year holidays. More often than not, however, no trace could be found of the men absent from the final tabulations; repeated independent searching of the rosters used in the administration of the IPT, for example, failed to recover more than a few additional cases. Because several months had elapsed since the men were tested, it was no longer feasible to try to account for them by such methods as searching through morning reports.

Attrition also took place in the other phases of the study, but on a smaller scale. Appendix C contains tables showing for each phase the number of cases finally available on each of the criterion measures.

Effects of Attrition

Although the attrition observed was rather heavy, analysis indicated that it was unlikely to have produced serious bias in the final comparisons. The background characteristics (such as initial test scores) of the men for whom complete criterion data were available were, with one exception, indistinguishable from the background characteristics of the total initial group. Since, in addition, the final criterion scores of the cases for whom complete data were obtained were about the same as the final criterion scores of all available cases, it is evident that only moderate bias is likely to have occurred. The exception mentioned above was in Phase III, where it was found that men of the lowest educational levels were more likely than the others to miss one of the final tests. Since the losses were about the same in both experimental and control groups, they are not likely to have biased the comparisons. Analyses of the final criterion scores based on a wide variety of subgroupings of the subjects (reported in Chapter 7) also indicate that little if any bias resulted from this attrition.

Chapter 3

PERFORMANCE PROFICIENCY TESTS

INTRODUCTION

The measure of potential military usefulness that is probably of most interest in this study is the performance ("stakes") test given in the eighth week of basic training. This test has high "face validity," since it is composed of actual samples of the kind of work a man is taught in basic training. Also important is the fact that results from a performance test are likely to be relatively uncomplicated by verbal factors.

In this study two such proficiency tests were used. A test devised by the local command at Fort Leonard Wood was the primary proficiency measure in Phases I and II. For subsequent phases a standardized test constructed at PRB was used.

THE FIRST PROFICIENCY TEST

Phase I

The proficiency test developed at Fort Leonard Wood was a fairly comprehensive performance test, composed of 20 subtests designed to cover most of the various skills taught in basic training. Some of the subtests (see Table 6) were, in practice, rather verbal for a performance test. On the whole, however, the test was probably suitable for its primary purposes, from the point of view of the training command, which were (1) to evaluate the training from week to week and (2) to supply additional corrective training where it was needed.

As a measuring instrument, however, the test did not meet the needs of this study. To provide highly reliable measurements, a test must be administered and scored in a consistent and rigorously standardized manner; strict standardization is not always desirable in a test used as a training device. For this reason, the same test usually cannot measure reliably and train at the same time. In Phase I, because men were corrected when they made errors on the test, there was a tendency for information about the right answers to spread back to companies tested later in the week, which biased the scores in those companies.

Near the end of Phase I, it was discovered that attrition in the control group had been so heavy that it was almost impossible to make adequate

Table 6

THE LOCAL PROFICIENCY TEST*

Subtest	Score Points
1. Light Machine Gun	10
2. Carbine	6
3. M-1 Rifle–Mechanical	10
4. Rocket Launcher	6
5. Dismounted Drill	4
6. Hand Grenades	8
7. Interior Guard	7
8. Technique of Rifle Fire	8
9. Cover and Movement	6
10. Military Intelligence	6
11. Rifle Grenade	10
12. Bayonet	8
13. Range Estimation	6
14. Compass Problem	8
15. Map Reading	10
16. M-1 Rifle–PRI	10
17. Combat Formations	6
18. First Aid	6
19. Arm and Hand Signals	8
20. Signal Communications	8
Total	150

*Devised by the local command at Fort Leonard Wood.

comparisons on any of the criteria. In addition, it was found that men already tested and known to be proficient were being substituted at the testing area for less able men. It was consequently impossible to determine whether the score attributed to a man represented his performance or that of some one else.

For these reasons, the proficiency test data of Phase I were judged to be entirely invalid and were discarded.

Phase II

Changes in Procedure

It was not considered feasible to make any changes in the original proficiency test for this phase of the study. Standardization of so complex a test is no small task. The changes that could be made in a few weeks could not be expected to greatly improve the test's reliability as a measuring instrument and might possibly reduce its value as a training device. Steps were taken, however, to make certain that no further bias was introduced by substitution of other men for the subjects in the study.

More intensive use was made of the test records than had been planned for Phase I. Instead of being restricted to total scores, the analysis included the 20 subtest scores as well. It was expected that some of the subtests (e.g., Map Reading) might be more affected by basic educational training than others (e.g., Light Machine Gun).

Results

(1) Experimental - Control Differences

The maximum possible total score on this proficiency test was 150. The average score of the 5,789 basic trainees who took the test during August and September 1953 was 123.1. The average scores of both the experimental and the control subjects in this study, who formed a small part of the total group, fell well below that figure. They are shown in Table 7.

Table 7

MEAN SCORES ON LOCAL PROFICIENCY TEST, PHASE II

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental	108	108.3	13.1	3.0%
Control	107	105.1	13.6	
Difference		3.2		
t_{diff}		1.75		
p		>.08		

In this and the subsequent tables, the difference between the means of the experimental and the control group has been expressed as a percentage of the control group mean. This quantifies, approximately, the improvement attributable to the special training given the experimental subjects. For comparison, the difference between the mean of the average trainees and the mean of the control group has also been expressed as a percentage of the latter.

The mean score of the experimental group was 3.2 points higher than that of the control group. Statistical analysis indicates that in 92 out of 100 such tests the operation of chance factors alone would have produced a smaller difference. This difference may well represent the effect of special training, however small it may be.

(2) Racial Analyses

When the subjects were divided into white and Negro,[1] and the experimental and control subjects compared within these racial groupings, a more striking picture emerged (Table 8). Scores for the two Negro groups were virtually the same; the mean score of the white experimental group, however, was 6.9 points higher than that of the white control group. The difference between the two white groups, although not large, is statistically stable. This difference may represent, at least in part, the effects of basic educational training rather than of chance factors.

[1]The experimental and control groups did not contain equal proportions of Negro and white subjects. Because of certain consistent differences in the attitudes expressed by Negroes and whites, it was decided to analyze the data separately for the two racial groups.

Table 8

MEAN SCORES OF WHITE AND NEGRO GROUPS ON LOCAL PROFICIENCY TEST, PHASE II

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
White Experimental	45	110.7	13.7	6.7%
White Control	55	103.8	12.2	
Difference		6.9		
t_{diff}		2.60		
p		<.02		
Negro Experimental	63	106.6	12.5	0.0%
Negro Control	52	106.5	15.0	
Difference		0.1		
t_{diff}		0.04		
p		>.10		

Further questions might be asked: In what ways were the groups more—or less—proficient? The proficiency test is composed of 20 quite different subtests; were the white experimental subjects a little better than the white control subjects on all of these measures or were they a lot better on some and no better on others? Were the two Negro groups about the same on all the subtests or were differences between them on some subtests canceled out by differences in the other direction on other subtests?

Analysis of the scores indicated that the white experimental group was clearly better than the white control group on only one subtest, "Combat Formations," and somewhat better on two others, "Interior Guard" and "Light Machine Gun." On the remaining 17 subtests, the differences between the two white groups followed no discernible pattern; they were variable in direction, small, and unstable.

For the two Negro groups only one of the subtests showed a difference that approached statistical stability; the experimental group was worse than the control group on "M-1 Rifle—PRI" (sight adjustment, etc.). On nine other subtests, the experimental group was somewhat the worse, on one subtest the two groups were exactly the same, and on the nine remaining subtests, the experimental group obtained higher average scores. All of these differences were small and statistically unstable.

These findings are somewhat ambiguous; where there were differences they were neither consistent nor easily explained. Differences in favor of the experimental groups might have been expected in "Map Reading," for example; the differences actually observed, however, varied considerably in size and direction and do not appear to be related in any way to the special training. Caution in interpreting the results therefore seems to be in order.

From these results it appeared that special prebasic training for marginally literate men might affect the later performance of white inductees but not of Negro inductees. This was not corroborated by the later findings.

THE SECOND PROFICIENCY TEST

Because the local proficiency test at Wood was judged unsatisfactory as a measuring instrument for this study, two new tests constructed and standardized at PRB[1] were substituted for it, beginning with Phase III. The first was a performance test, the Individual Proficiency Test (IPT). The second, an adaptation of the Basic Military Proficiency Test (BMPT), was a written test, and will be described in Chapter 4.

The IPT is composed of 13 subtests (see Table 9), each designed to tap some specific skill or ability developed during the first eight weeks of basic training. In the construction of the subtests particular care had been taken to eliminate purely verbal components of military proficiency that could be more efficiently measured by a paper-and-pencil test.[2]

Table 9

THE INDIVIDUAL PROFICIENCY TEST (IPT)[a]

Subtest	Score Points
1. Hand Grenades	9
2. Bayonet	9
3. CBR Warfare	7
4. Map Reading, Compass, and Range Estimation	6
5. First Aid	10
6. M-1 Rifle—Assembly and Disassembly	10
7. M-1 Rifle—Sight Consistency	5
8. 30 Caliber Machine Gun—Assembly and Disassembly	6
9. 30 Caliber Machine Gun—Sight Setting and Laying	5
10. Signal Communications	6
11. Rocket Launcher	10
12. Mines and Booby Traps	10
13. General Combat Skills	8
Total	101

[a]Developed by PRB.

Results From Phase III

Analysis of Total Scores

The sample for Phase III was enlarged to include all men coming to Wood with AA-III scores below 75, except those whose USAFI test scores

[1]A performance proficiency test being developed at HumRRO for this portion of basic training was not yet available at the time Phase III was begun (September 1953).

[2]A detailed description of this test will appear in the forthcoming final report from PRB on Army Project #29563000, Task 161.

indicated educational achievement equivalent to completion of the seventh grade. The mean scores obtained on the IPT by the total experimental and control groups, the primary subjects, and the average trainees are shown in Table 10.

The mean raw scores of the total experimental and control groups were 41.0 and 39.9, respectively, as against a total possible score of 101. Although this difference between groups is statistically stable, it is obviously too small to be of much practical significance.

Table 10

MEAN IPT SCORES, PHASE III

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
All Subjects[a]				
Experimental	563	41.0	6.6	2.8%
Control	519	39.9	6.3	
Difference		1.1		
t_{diff}		2.81		
p		<.01		
Average Trainees	544	43.0	6.5	7.8%
Primary Subjects[b]				
Experimental	108	40.0	6.6	2.0%
Control	114	39.2	6.5	
Difference		0.8		
t_{diff}		.96		
p		>.10		

[a]The total subject group for Phase III included all men with AA-III scores below 75 except those whose USAFI test scores indicated an educational level equivalent to completion of the seventh grade.

[b]The primary subjects were those with less than fourth-grade completion on the USAFI test.

Results from the IPT revealed that average trainees, tested for purposes of comparison, were only slightly more proficient than the low-aptitude men in the experimental and control groups. The difference between them is about three per cent of the total possible score, seven per cent of the total range of scores. It thus appears that men of low intellectual level can learn motor skills for relatively simple performances, such as those required for this test, nearly as well as average trainees. The implication that scores on the IPT are not closely related to educational or intellectual level is further supported by the performance of the primary subjects. The differences between the mean scores of these subjects—whose initial USAFI-2 scores showed less than completion of the fourth grade—and those of the entire sample of experimental and control subjects were too small to be of practical significance.

The various groups were further classified by race. Within both races, the differences between the experimentals and the controls were statistically stable, but the superiority of the experimental groups was so slight as

to be of questionable practical significance. The difference between races observed in Phase II did not appear in the proficiency data from any other phase; therefore only the comparisons of the total groups will be discussed here.

Analysis of Subtest Scores

Examination of mean scores on the separate subtests showed no striking differences between experimental and control groups.[1] On 10 of the subtests the experimental group was, on the average, somewhat more proficient; on the other three, the control group was more proficient. On none of the subtests was the difference large enough to warrant further investigation.

Results From Phase IV

The results from Phase IV, shown in Table 11, were very like those of the previous phase: The difference between the experimental and control groups was statistically reliable without being large enough to be of clear practical significance.

Table 11

MEAN IPT SCORES, PHASE IV

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental	151	45.9	6.5	5.0%
Control	105	43.7	6.5	
Difference		2.2		
t_{diff}		2.61		
p		<.01		
Average Trainees	168	50.2	5.8	14.9%

The general level of the scores, particularly those of the average trainees, was higher in this phase than Phase III. This change may represent the effects of better training, better weather for training, or somewhat more relaxed testing procedures. The fact that the greatest improvement is shown by the average trainees (7.2 points), the second greatest by the experimentals (4.9 points), and the least by the controls (3.8 points) suggests some kind of improvement in the training conditions.

Results From Phase V

In Phase V, two different types of special prebasic training were evaluated: a purely military training program and an academic training program. The

[1] The subtests of the IPT vary in length and difficulty. To eliminate the possibility that the varying weights of the subtests might contribute unduly to the differences—or lack of differences—between the groups, the scores of the subtests were equated by converting them to the stanine form (Mean, 5; Standard Deviation, 2) before summing them to a total score. The correlation of .93 between the raw scores and the equalized scores shows not only that the two can be used almost interchangeably but that differences among the subtests were not unduly affecting the differences between the groups.

purely military training period might be expected to have more effect upon proficiency as measured by the IPT than would the training with an academic emphasis. As shown in Table 12, this was not the case. Military prebasic was, if anything, less effective than academic prebasic, though neither type was very effective. None of the differences between experimental and control groups in this phase proved to be statistically stable.

Table 12

MEAN IPT SCORES, PHASE V

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental				
Academic	147	41.9	9.8	2.9%
Military	171	41.4	10.2	1.7%
Control	75	40.7	9.5	
Difference Academic vs. Control		1.2		
t_{diff}		.84		
p		>.10		
Difference Military vs. Control		0.7		
t_{diff}		.47		
p		>.10		
Average Trainees	210	45.5	9.8	11.8%

It will be noted that the scores returned to the lower general level characteristic of Phase III. This may have been due to changes in the training or the testing, but was more probably due to weather conditions. Just as the testing was begun for the first companies containing men from this phase, the weather became extremely hot. Training had to be suspended a number of times during the weeks when the men in this phase were going through basic training and being tested. The general level of the IPT scores, considering all trainees at Wood, dropped sharply over the period of testing for this phase, from a high of 55.2 (for the week of 14 June 1954) to a low of 45.6 (for the week of 26 July 1954). Since these figures represent the mean scores of an entire battalion of 700 to 1,000 men, it is evident that the change is indeed large. Conditions of this sort, of course, should affect experimental and control subjects about equally.

Results From Phase VI

The data from Phase VI, presented in Table 13, are of limited interest because of the small size of the control groups and the fact that no data were obtained on average trainees. The small difference found in this phase is not statistically stable.

Table 13

MEAN IPT SCORES, PHASE VI

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental	135	39.8	7.4	2.6%
Control	9	38.8	6.4	
Difference		1.0		
t_{diff}		.39		
p		>.10		

CONCLUSIONS

Since the racial differences observed in the proficiency test data of Phase II did not recur in the later phases it can safely be concluded that they were the result of chance factors In all other respects, the findings from all the phases are substantially in agreement:

(1) On performance tests of proficiency, average trainees appeared to be somewhat more proficient than trainees of low intellectual and educational level.

(2) Special prebasic training for marginally literate men, whether academic in emphasis, strongly military in emphasis, or half academic and half military, consistently increased their proficiency on performance tests.

(3) This effect, while consistent and statistically stable, was small and of limited practical significance.

Chapter 4

THE WRITTEN PROFICIENCY TEST

INTRODUCTION

Almost any program of training is likely to involve the modification of two rather different types of response: motor responses (in the form of skills such as were tested by the IPT), and verbal responses (in the form of vocabulary and usage) or knowledge. In military training, the emphasis is likely to be greater on the acquisition of skills than on the acquisition of knowledge. It is more important, for example, for a man to know how to operate a rifle than to know the correct names of the parts, although the latter is not, of course, considered a negligible accomplishment. In proficiency testing too, much more emphasis is usually placed upon evaluating the skills, rather than the knowledge, acquired in basic training.

Military knowledge is, however, an important component of proficiency; much that a man has to learn in basic training is essentially verbal. An adequate estimate of military proficiency cannot be made without considering military knowledge. Much of the prebasic training considered in the present study was directed toward the improvement of verbal abilities; although such training might have no effect upon the acquisition of military skills, it might well facilitate the acquisition of military knowledge. A paper-and-pencil proficiency test was therefore included in the later phases as a measure of military knowledge, complementary to the military skills measured by the IPT.

THE BASIC MILITARY PROFICIENCY TEST

The original Basic Military Proficiency Test (BMPT), a paper-and-pencil proficiency test previously available at PRB, was too long to be fitted into the training schedule. It was therefore split into two forms, A and B, of 95 items each. At Wood, one or the other of these forms was administered routinely to every man in the eighth week of training, shortly before he took the performance test.

In the original BMPT there were separate subsections concerned with army organization and customs, care of self in combat, combat training, special skills, weapons, intelligence and security, and care of self and personal equipment. As they appeared in the abbreviated forms of the BMPT, these subsections were too short to warrant separate consideration.

The shortened forms of the BMPT were constructed by selecting, from the original test, pairs of items that had been found to be similar in content and difficulty; one item was then assigned to Form A and the other to Form B. The two forms also had four items in common. The correlation between the two forms ($r = .85$) indicated that they were substantially equivalent in their capacity to order men on the basis of their military knowledge. For group comparisons, therefore, all scores could be used as though they came from the same test.[1]

RESULTS

Phase III

The mean scores obtained on the BMPT by the various groups in Phase III are shown in Table 14. For the comparison between experimental and control groups, the results on the BMPT are very like those on the IPT. The differences are statistically stable, but again they are so slight as to be of questionable practical significance.

As might be expected on a verbal test like the BMPT, the average trainees made much higher scores than did the experimental and control groups; scores for these latter groups, which in this phase included men through seventh grade, again were higher than those for the primary subjects of fourth-grade level.

Table 14

MEAN SCORES ON BASIC MILITARY PROFICIENCY TEST (BMPT), PHASE III

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
All Subjects				
Experimental	548	46.0	7.4	3.4%
Control	509	44.5	7.8	
Difference		1.5		
t_{diff}		3.33		
p		<.001		
Average Trainees	541	59.2	7.1	33.0%
Primary Subjects				
Experimental	105	40.5	6.6	4.9%
Control	112	38.6	6.3	
Difference		1.9		
t_{diff}		1.94		
p		<.06		

[1]There were slight differences in the means and standard deviations of the two forms. To avoid even the small chance of bias because of these differences, the scores on both tests were standardized to a mean of 50 and a standard deviation of 10 before they were combined into a single distribution.

Phase IV

The mean scores obtained on the BMPT in Phase IV are shown in Table 15. The difference between the experimental and control groups, which was statistically stable, was not in the expected direction. The mean AA-III score of the control group in this phase was slightly higher than that of the experimental group; this difference in initial aptitude may account for the reversal.

Table 15

MEAN BMPT SCORES, PHASE IV

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental	148	40.3	6.6	-4.0%
Control	104	42.0	7.0	
Difference		-1.7		
t_{diff}		1.92		
p		<.06		
Average Trainees	165	59.9	7.1	42.6%

Phase V

The findings on the BMPT for this phase are shown in Table 16. None of the differences between the two experimental subgroups or between experimental and control groups in this phase is statistically stable.

Table 16

MEAN BMPT SCORES, PHASE V

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental				
Academic	168	39.7	6.8	2.1%
Military	193	39.6	7.3	1.8%
Control	86	38.9	7.3	
Difference				
Academic vs. Control		0.8		
t_{diff}		.82		
p		>.10		
Difference				
Military vs. Control		0.7		
t_{diff}		.66		
p		>.10		
Average Trainees	240	61.0	6.9	56.8%

Phase VI

Table 17 shows the results from the BMPT in this phase. Again, the difference between the groups was not statistically stable.

Table 17

MEAN BMPT SCORES, PHASE VI

Group	Number of Subjects	Mean Score	Standard Deviation	Increment Over Control Group
Experimental	142	42.6	7.9	0.9%
Control	11	42.2	6.2	
Difference		0.4		
t_{diff}		.16		
p		>.10		

CONCLUSIONS

It appears from these data that special prebasic training for men of initially low educational and intellectual level has at best only a slight effect upon their ability to acquire military knowledge.

Although the results from the BMPT are quite like the results from the IPT, they are not simply a reflection of the latter. The correlations between the two tests are uniformly low (less than .30); the two measures, while not entirely independent, are for the most part measuring different characteristics.

Chapter 5

TROUBLESOMENESS

INTRODUCTION

In Phase I of this study the effects of special prebasic training were to be evaluated on the basis of ratings by company commander and cadre, records of disciplinary action, and other administrative records as well as test scores. For Phase II an attempt was made to improve the form of the ratings, but they were finally discarded as unprofitable for the purposes of the present research.

Administrative records are seldom satisfactory as a source of data for evaluating individual performances. Not only are such records difficult to collect and analyze, but they tend to vary in accuracy and meaning from one unit to another. For the purposes of this study a check list was devised, enumerating specific ways in which men are commonly reported to be troublesome. This method of collecting information appeared simpler than searching company records, and likely to yield a more sensitive measure of troublemaking capacity and lack of adjustment to Army life.

Nine items were included in the check list prepared and sent out in Phase II. For the subsequent phases the check list was increased to 10 items and the instructions were modified slightly.

THE CHECK LIST

The final form of the check list was sent to the commanders and the cadre of the various training companies with the following instructions: "You have probably found that most of the men in your training company don't give you any particular trouble. There are always some men, however, who are problems for one reason or another, or for several reasons. The men listed below are from your company. Show . . . whether any of these men has given you trouble for any of these reasons."

Items in the list were:

(1) Going AWOL
(2) Sick call
(3) Late to formations
(4) Sleeping in class
(5) Sloppy uniform
(6) Military courtesy
(7) Drinking
(8) Troublemaking among other men
(9) Care of equipment
(10) Learning slowly[1]

[1]Not on the list in Phase II.

COLLECTION AND TREATMENT OF DATA

It was not possible to follow up each check list in each company to make certain that it was filled out and returned, and the returns were consequently somewhat irregular. However, at least one check list was returned from most of the companies, and usually several were returned.

Even when several clearly independent check lists were returned from a company, the data were usually incomplete. The basic training companies were composed of some 250 men in four platoons, each under a platoon sergeant. Under these circumstances, a platoon sergeant could not be expected to know very much about the troublemaking capacities of men in other platoons unless they were quite spectacular. Different check lists from the same company usually had to be considered as complementing one another in covering the men in the company rather than corroborating one another.

Because of the irregularity of the data, no attempt was made to cumulate the data on an individual in the conventional fashion. A man was considered troublesome in a particular way if one cadreman noted this item on a check list; subsequent mention of the same item by another cadreman was disregarded.

RESULTS

Individual Items From Check List

In the initial analysis of the check-list data the individual items of troublesomeness were considered separately. In none of the phases were there any large differences on these items between experimental and control groups. Small differences appeared in the data from single phases, but they showed no consistent tendency to recur in other phases, with one minor exception: In every phase the experimental subjects were noted as being late to formations less often than were the control subjects, although usually by a slim margin.

The proportions of average trainees and subjects noted as troublesome on each item are shown in Table 18, all phases combined. On all items in every phase, the average trainees were noted as troublesome less often than were the experimental and control subjects, although for two items, going AWOL and drinking, the number of cases was too small to permit a clear comparison. It should also be noted, although not shown in the table, that the primary subjects were consistently checked as troublesome more often than the subjects who were above the fourth-grade but below seventh-grade completion.

For the sake of simplicity, analysis of the individual items was not carried further. Instead, the data from the check lists were further condensed, with all the individual items considered as complementary. Subjects were classified simply as either "Troublesome," if they had been checked at least once for any reason, or "Not Troublesome."

Troublesomeness in General

For each phase, the proportion of subjects in each group who were classified as "Troublesome" in any way is shown in Table 19. None of the differences between experimental and control groups is statistically stable, nor is there a consistent trend from phase to phase.

Table 18

PROPORTION OF MEN NOTED AS TROUBLESOME ON EACH ITEM, ALL PHASES COMBINED

(Per cent)

Item	Experimental Group	Control Group	Average Trainees
Going AWOL	3	5	2
Sick call	19	19	12
Late to formations	23	27	16
Sleeping in class	30	30	21
Sloppy uniform	31	32	18
Military courtesy	29	29	19
Drinking	1	2	–
Troublemaking among other men	8	9	3
Care of equipment	27	29	18
Learning slowly[a]	39	39	18

[a]Not on the check list for Phase II.

This over-all analysis also showed the average trainees to be consistently less troublesome than the experimental and control subjects. The proportion of the average trainees classed as "Troublesome" increased through Phases III, IV, and V. This trend may have reflected changes in the men coming to the post or may represent an increasingly critical attitude on the part of the company commanders and training cadre.

Table 19

PROPORTION OF MEN CLASSIFIED AS TROUBLESOME IN ANY WAY

(Per cent)

Phase	Experimental Group	Control Group	Average Trainees[a]
II	67	75	
III	67	64	44
IV	67	66	57
V–Academic	74	80	60
V–Military	69		
VI	80	73	

[a]No average trainees were selected for Phases II and VI.

LIMITATIONS UPON THE FINDINGS

Attrition in the Companies

The check lists sent out to the companies were made up from the original assignment rosters. Every effort was made to keep track of transfers and other changes, but the large numbers of subjects and companies involved made it impossible to keep the lists entirely current. Consequently, some men were

listed who had been transferred to other companies during the eight weeks or had never been in the company. Because they were unknown, they received no checks and thus, under the procedure used here, were classified as "Not Troublesome."

To determine whether such errors of classification might have biased the findings, an analysis was made of data from Phase III based on those men who were known to have remained in the same company throughout training. Since the results of this analysis were substantially the same, evidently no bias was introduced into the data as the result of attrition in the companies.

General Validity of the Criterion

The original data from the check lists were somewhat irregular and the methods used to summarize them somewhat unconventional. The conclusion based upon them may be open to question as to whether, because of these shortcomings, the criterion of general troublesomeness is actually a valid measure of anything.

However, there are reasons for believing that the criterion, as derived in this study, is a valid measure of troublesomeness. First, both the individual items and the over-all measure consistently indicated that the average trainees were less troublesome than the men in the experimental and control groups; furthermore, the higher-level subjects—those whose measured educational level was above the fourth grade but below seventh-grade completion—were shown as less troublesome than the primary subjects. In addition, a relatively small proportion of men were noted as troublesome for more than one or two reasons, and the correlations among the various items were small—in short, judgments did not appear to be greatly influenced by the "halo" effect.

Although the check-list criterion may not be a good measure of general troublesomeness, it does appear to have sufficient value to justify the conclusions based upon it in this study.

CONCLUSIONS

The results obtained on the check list suggest that the experimental and the control subjects were about equally troublesome to their company commanders and training cadre. None of the types of special prebasic training considered in this study appeared to have much effect upon the kinds of behavior included in the check list.

Again, although the findings on the check list are similar to the findings on the other criterion measures, they are not simply reflections of the latter. The correlations between the index of troublesomeness and scores on the IPT and BMPT are small enough to justify the assumption of independence for this criterion also.

Chapter 6

THE ATTITUDE SURVEYS

INTRODUCTION

Many basic-level men have apparently shown large and dramatic improvement in their attitudes and their general morale as a result of special educational training. The literature on the subject is replete with examples; the teachers and administrators interviewed in Phase I of the present study made many comments to this effect. The opinion has become widespread that special educational training improves the morale of basic-level men in general; this is, in fact, sometimes taken to be one of its most important consequences. Such improvements in morale are believed to spring from many sources: the men are better able to read and write letters and maintain contact with their homes, their attitudes toward themselves improve as a result of their increased skill, and they feel they have a "head start" when they go into basic training.

The primary purpose of the attitude questionnaires included in this study was to determine whether special training did have an effect upon attitudes and morale.

CONSTRUCTION AND ADMINISTRATION OF ATTITUDE SURVEYS

In Phase I a questionnaire had been administered to some of the men in the study during basic training. The questionnaire was, however, very short—four items—and was directed wholly toward a subjective evaluation of the effects of basic education. The findings were therefore not applicable to the purpose here.

Attitude Survey I

At the beginning of Phase II, a number of basic-level men were interviewed at length. They were questioned about their educational histories, their reasons for quitting school, their feelings about going back to school, their general feelings about education, their work histories, their plans for the future, the role of the Army in their plans, their feelings about being in the Army. The content of these exploratory interviews varied from one to the next as new leads were followed up and old areas were dropped as unprofitable.

On the basis of this series of interviews the first attitude questionnaire, the AS-I, was constructed. In addition to background characteristics such as

age, state of origin, and educational history, the questionnaire covered areas which the interviews had shown to be important to these men, or in which there had been considerable variation in attitude and opinion. The following were typical of the questions in these areas:

(1) Attitudes Toward Education
Did you used to like going to school?
At the time you stopped going to school, were you glad or sorry to stop?

(2) Personal Morale
How would you say your health is right now?
How happy would you say you are these days?
How much of the time would you say you feel homesick?

(3) Attitudes Toward the Army
What kind of soldier do you think you will make (very good, good, poor, very poor)?
How much do you care whether or not you become a good soldier?
How much does it bother you to obey orders when you don't see a good reason for them?

(4) Optimism
Do you think that you stand a good chance of getting the kind of Army job that you would like?
What rank in the Army do you think you will have two years from now?

For the subsequent phases a few additional questions were constructed and included in the questionnaire.

The AS-I was administered to the experimental and control subjects in all phases as soon as they were assigned to the study, which ordinarily was shortly after they arrived at Wood. When each group of incoming subjects was assembled to take the regular battery of educational tests, copies of the AS-I were distributed, instructions were given, and the questionnaire was then read to the men, item by item. Any questions asked by the men as they filled out the questionnaires were answered at that time.

The average trainees included in the study were given the AS-I during their first week of basic training.

Attitude Survey II

Most of the questions in the AS-I (except background items) were included in the second attitude questionnaire, the AS-II. There were, in addition, questions concerned with three areas not touched on in the first questionnaire:

(1) Adjustment to Basic Training
In the classes during Basic Training have you felt that your instructors were doing their best to make things clear to you?
How much trouble do you have reading and understanding the orders posted on your company bulletin board?
When you have to get ready for an inspection on a formation or something like that, do you have any trouble getting ready on time?

(2) Social Integration Into Platoon

Are most of the friends you have made in the Army in your platoon or in some other platoon?

How do you feel about the men in your platoon?

(3) Reactions to Basic Education

Do you think going to the Basic Education School has made it easier for you to learn things in Basic Training?

These two questionnaires cover fairly completely the various areas of attitude and feeling which have been considered to be relevant to the morale of basic-level men who are given special prebasic training.

In Phase II, the AS-II was given to all subjects during their sixth week of basic training, the only available time in the training schedule. During the subsequent phases, the AS-II was given to all subjects in their eighth week of training, at the time they took the BMPT. It had been found in Phase II that reading the questionnaire aloud was not necessary; the subjects had become sufficiently "test-wise" in six weeks not to require it. In the subsequent phases, therefore, this procedure was omitted.

ANALYSIS OF DATA AND FINDINGS

The AS-I

In the analysis of data from Phase II it soon became apparent that white groups and Negro groups tended to give characteristically different answers to many of the questions. For instance, 28 per cent of the white subjects thought they would probably go to some kind of school after they got out of the Army; 79 per cent of the Negro subjects were of this opinion. Similar results were obtained in the later phases: the proportion of Negro subjects who expected to go to school later was consistently two to three times as large as the proportion of white subjects with this expectation. On other items the results were similar: Consistently more Negro subjects than white subjects gave "favorable" answers to the questions. These consistent differences made it necessary, in all phases, to analyze the questionnaire data separately for the two races.

In Phase III, a set of four attitude indices was derived from the AS-I data:[1] Attitude Toward the Army, Attitude Toward Education, Personal Morale, and Optimism. These indices were derived by assigning a scoring weight to each response to each item, then summating each subject's scores on sets of related items. These rough indices made it possible to separate those subjects who gave mostly favorable answers to a given set of questions from those who gave mostly unfavorable answers, although they lacked the finer, intermediate gradations of true scales.

Although these indices were too coarse to discriminate well among individuals, they did reveal certain interesting but small group differences. When compared to average trainees, basic-level men (both white and Negro) tended to be more favorably disposed toward the Army. As a group, the Negro

[1]Groups of related items were first examined carefully for the presence of unidimensional scales, but none emerged from the analysis. In the absence of true scales, these indices were used.

basic-level men seemed more optimistic than the average trainees; the personal morale of the white basic-level men appeared to be somewhat low and their attitudes toward education markedly unfavorable.

The AS-II

The primary purpose of the attitude questionnaires was served by the AS-II, which measured the final attitudes of the subjects after eight weeks of basic training.

On none of the separate items of the AS-II were there large differences between the experimental and control groups in any of the phases. There were not even any small differences which were consistent from phase to phase. The experimental and the control groups gave about the same answers even to those items most obviously related to educational training. Both groups of subjects, for example, claimed to have received and written about the same number of letters; both groups claimed to have about the same amount of difficulty reading and writing them.

Two new indices—Social Integration and Adjustment to Army Life—were computed from the AS-II, as well as those which had been computed from the AS-I. From the new indices the basic-level men, both white and Negro, appeared to be somewhat less well integrated socially in their platoons than were the average trainees, but equally well adjusted to Army life. The other indices presented about the same picture as they had on the AS-I. There were no differences on any of the indices in the final standings of corresponding experimental and control groups.

Since the various indices appeared to be no more discriminating than the individual items, they were not used in any of the subsequent phases.

Changes in Attitude

Special prebasic training may be effective in changing the attitudes of the men sent to school. This effect would not necessarily appear clearly in responses to the second questionnaire alone; the subjects' answers on the AS-I must also be considered. To test whether such a change had occurred, each subject's responses on the AS-II were classified as more favorable, less favorable, or the same as his responses to the same items on the AS-I.

In each phase the experimental and control groups were compared on the basis of this classification of responses on the AS-II. No systematic differences were found. Neither experimental nor control subjects showed a consistent tendency to express more (or less) favorable attitudes after eight weeks of basic training. There was a slight tendency for the control subjects to be more stable in their attitudes: they were somewhat more likely than the experimental subjects to give the same response on both questionnaires. But this difference was neither highly consistent nor very large.

CONCLUSION

One conclusion can be drawn from these findings: The types of special prebasic training considered in this study have little if any effect upon the attitudes and morale of the men trained.

Chapter 7

SPECIAL GROUPS

INTRODUCTION

Although the special prebasic training considered in this study appears to have had relatively little effect upon the potential military usefulness of the marginally literate men taken as a whole, it is entirely possible that certain subgroups among these men may have profited from such training. The data from Phase II suggested that race (or possibly region of origin) might be important in determining whether the training had any later effects. It seems probable that men whose low educational level is clearly the result of educational deprivation might benefit from the opportunity to learn. The anecdotal and testimonial evidence for the effectiveness of special training suggests that initial attitudes toward education or toward the Army might also be influential in this situation.

Accordingly a number of different analyses were made of the data from Phase III, the only phase in which the number of subjects would permit an extensive analysis of subgroups. Corroborative analyses were carried out on the data from later phases, however, when this appeared necessary.

CLASSIFICATION OF SUBJECTS

Subjects were classified into special groups on the basis of background information from the Form 20 and the first attitude questionnaire, scores on the USAFI tests, and the attitude indices developed from the attitude questionnaires. After the subjects had been classified into subgroups (on the basis of initial educational level, for example), the final criterion scores of the experimental and control subjects within each subgroup were then compared.

The groupings used included:

(1) Measured Educational Level—Based on the score on the first USAFI test. Classifications were:

Less than fourth-grade completion
Fourth-grade completion
Fifth-grade completion
More than fifth-grade completion

(2) Region of Origin—Based on answers to the AS-I question: In what state have you lived most of your life? Classifications were:

North
South

Foreign
Other

(3) Claimed Educational Level—Based on answers to the AS-I question: What grade were you in when you finally stopped going to school? Classifications were:

Fourth grade or less
Fifth grade or more

(4) Claimed Years of Schooling—Based on the AS-I question: About how many years did you go to school altogether? Classifications were:

Four years or less
Five years or more

(5) Attitudes—Based on the four attitude indices of the AS-I and the six of the AS-II. Classifications on each index were:

Mostly favorable attitudes
Mixed attitudes
Mostly unfavorable attitudes

All of these analyses were done separately on the white and the Negro groups of subjects.

FINDINGS

The effects of special training, as measured by this method of analysis, proved to be the same as those discovered in the over-all analysis.

Experimental and control groups of the same race who (1) were at the same measured educational level, (2) were from the same general region, (3) claimed the same educational level, (4) claimed the same number of years of schooling, or (5) expressed the same general attitudes, showed about the same mean scores on the two proficiency tests and about the same frequency of troublesomeness on the checklist. The differences in potential military usefulness between comparable special subgroups of experimental and control subjects were no larger than the differences between the total experimental and control groups.

CONCLUSION

Special prebasic training of the types considered in this study had about the same small effect upon the potential military usefulness of marginally literate men of the same race regardless of their region of origin, measured educational level, claimed educational level, or their initial attitudes toward the Army, education, themselves, or their future.

Chapter 8

IMPLICATIONS

THE PRESENT STUDY

The measures used in this study—of performance proficiency, written proficiency, troublesomeness, and attitudes and morale—taken together can be considered to give an over-all indication of potential military usefulness. In the preceding chapters it has been shown that a brief period of special prebasic training for marginally literate men, training of the types considered in this study,

(1) Raised their level of performance proficiency slightly;
(2) Raised their level of written proficiency slightly;
(3) Had no apparent effect upon their troublesomeness;
(4) Had no apparent effect upon their attitudes and morale.

These findings appear to be general for the entire selection of men in the study. Within the racial groups, regardless of region of origin, initial measured educational level, claimed educational level, or initial attitudes, the special training appeared to have about the same effects. There quite possibly may be special groups of men whose potential military usefulness would be greatly enhanced by special prebasic training. They could not be identified, however, on the basis of the measures used in this study.

A SIMILAR STUDY

These findings are corroborated by the evidence available from another study. The results of an Air Force study (Project 1200), in which a similar approach was taken to the problem presented by marginally literate men, were strikingly like those of the present study.[1] Despite certain differences in the initial selection of subjects, the experimental treatments, and the final measures of performance, the over-all similarity of the two studies and the similarity of their findings can only serve to re-enforce their common conclusions.

The subjects in the Air Force study were airmen who obtained an aptitude index of 3 or lower on each of the eight job clusters (corresponding to the

[1]Salvatore Mastropaolo *et al*, *A Study of the Relative Effects of Six-Week and Twelve-Week Experimental Basic Training Programs on a Sample of Limited Aptitude Airmen: Part I, Basic Training Analyses*, and *Part II, Six-Week Follow-Up Analyses* (Technical Report AFPTRC-TR-54-36), *Part III, Eight-Month Follow-Up Comparisons* (Technical Report AFPTRC-TR-54-37), Air Force Personnel and Training Research Center, Lackland Air Force Base, San Antonio, Tex.

aptitude areas in the Army test battery) of the battery of classification tests used by the Air Force. Since this cut-off point is roughly equivalent to an aptitude area score of 85 or less, it is evident that the Air Force sample and the Army sample of the present study were similar in general level of aptitude, though the rather complex interrelationships of the eight areas make it difficult to specify the actual amount of overlap. It is fairly certain, however, that in their lower reaches the two samples contained many very similar people.

The experimental treatments used in the Air Force study, although not directly comparable with those used in the present research, were quite like them in many respects. In the Air Force study the effects of a six-week basic training course were compared with those of a 12-week course which also included 45 hours each of language arts and mathematics. Half of the sample was sent through one course, half through the other. Various criterion measures were taken at the end of the course, after six weeks, and after eight months of service.

The wide variety of criterion measures used in the Air Force study included academic achievement tests, attitude surveys, intelligence measures, individual interviews, several adjustment scales, written proficiency measures, and job ratings. There was no formal test corresponding to the performance proficiency test (IPT) of the present Army study, although there were three measures of later job performance. Again, the exact amount of overlap can only be estimated, but the criterion measures of the two studies appeared to cover the same general areas.

The similarity in the findings of the two studies was even more striking than the similarity in their procedures. With minor exceptions the two Air Force training programs produced the same results—immediately, after six weeks, and after eight months. The two groups of subjects trained by different methods were substantially equivalent on all measured characteristics; the one difference observed in favor of the 12-week group, based on a test of military fundamentals, was of roughly the same order of magnitude as the differences observed in the present Army study.

THE PRESENT STUDY IN THE LIGHT OF THE AIR FORCE STUDY

Duration of Training

Certain of the limitations of the present research appear less restrictive in the light of the Air Force study. The period of prebasic training considered in the major phases of the present study, for example, was three weeks; the fact that six weeks of additional training had almost no effect upon the achievements of airmen of limited aptitude suggests strongly that the period of prebasic training for semiliterate soldiers would have to be greatly extended to make it much more effective than the programs evaluated in the present study.

Geographical Origin of Sample

The Air Force sample was somewhat more varied in geographical origin than the sample used in this study. The similarity of the findings suggests

that generalizations based on the present study need not be narrowly restricted by the geographical limitations of the sample. Unrestricted generalization of the findings to such groups as Mexicans from Texas or California or Indians from the Southwest is, of course, not possible.

Later Effects

In the Air Force study it was also possible to obtain a variety of measures on most of the subjects after eight months of service. The findings were, in short, that the groups with six and with 12 weeks of training were substantially equivalent after eight months of service.

GENERAL FINDINGS

From these two studies, then, it appears that neither the potential military usefulness nor the subsequent military performance of men of low intellectual and educational level is likely to be greatly affected by three weeks of educational training or by six weeks of additional military training. A finding so contrary to general expectation needs some explanation.

FACTORS CONSIDERED IN EVALUATING THE FINDINGS

The Measures Used

Although the measures used in the present study were not above criticism in every respect (and this can no doubt be presumed of the various measures in the Air Force study as well), the uniform concurrence of the results, along with the corroboration offered by the entirely independent Air Force study, indicates that inadequacies in the measures themselves cannot account for the findings.

The Subjects

It is unlikely that men of the intellectual level considered in this study are simply unable to profit from any training. The wide range of measured educational levels found in Phase III among men with AA-III scores below 75 shows that many of them had profited in the past from conventional educational training. The data from the second USAFI test, although contaminated by practice effects, show an average rise of about one grade level. This improvement suggests that such men do learn something in basic education, that they are able to reap some educational profit from this type of special training.[1]

The composition of the sample does not appear to be a critical factor. The total group of subjects in the present study clearly does not constitute a random sample from any specifiable population. In the absence of evidence that they are grossly atypical of their reference populations, the various

[1]Preliminary findings of HumRRO's current Task KNOWHOLD show that they also learn during basic training.

subgroups homogeneous in, for example, race and geographical origin may be considered reasonably representative samples of those populations. Since the effects of the training were uniformly the same over all such subgroups, it seems unlikely that the atypical composition of the total sample affected the results of the study.

The Training

The last two alternatives are that the types of special training considered here were either far too brief to have an appreciable effect or inappropriate in method for the amount of time allotted to them. Since it appears unlikely that the allotment of time would be greatly increased for this purpose, only the second of these alternatives need be considered.

Special training for marginally literate men, in this and the majority of other studies, has taken the form of a period of simple compensation for obvious deficiencies: literacy training to compensate for their educational deficiencies, apparently on the assumption that these were the result of deprivation at an early age; military coaching to compensate for their slowness in learning; or some combination of the two.

The majority of the primary subjects in this study had not literally been deprived of educational opportunity; nearly 85 per cent of them claimed to have had better than a fourth-grade education. Even those who had been deprived, in this sense, did not seem to profit much from the special training. The experimental and control subjects who claimed less than a fourth-grade education were substantially equivalent in later achievement.

Many of the primary subjects in this study are, no doubt, slow learners. On the AS-I, 12 per cent of them said they had "a lot" of trouble learning new things while only three per cent of the average trainees said this about themselves. On the check lists, 39 per cent of the primary subjects were noted as troublesome for "Learning Slowly"; 18 per cent of the average trainees were checked for this. Compensation in the form of a somewhat longer time to learn—from about 30 per cent longer in the military training of Phase V of this study to nearly 100 per cent longer in the Air Force study—was, however, no more effective than literacy training.

In short, the types of special training evaluated in this study (and in the Air Force study) may have been ineffective because of their approach to the problem of educational deficiency. Both relative deprivation and slow learning are no doubt involved in the early stages of many cases of educational deficiency. It is quite probable that simple compensation introduced during those early stages would be effective in reducing educational deficiency. It is also quite evident, however, that simple compensation introduced after some 15 years of growth and development (or lack of growth and development) has very little effect. The deficiency has, in the meantime, become complex.

ANOTHER APPROACH

Both studies have demonstrated that special training conceived in terms of the original causes of educational deficiency has little effect. But it is reasonable to suppose that such training might be more effective if it took

into account the factors which at the present time are responsible for the deficiency. The men in this study may have been educationally deficient primarily because, at an early age, they had little chance to learn or because they learned slowly; however, they may have remained deficient for a much wider variety of reasons—including social, emotional, and motivational factors.

The type of special training evaluated in this study was not designed to deal with deficiencies which are largely the result of such psychological factors. Men whose deficiencies have been maintained by emotional block or because, by virtue of personal or environmental factors, they placed a low value on academic achievement, could not be expected to profit readily from special training of the conventional classroom form studied here.

It is therefore suggested that a more clinical type of approach be taken to the problem of educational deficiency. In such a program, the particular deficiencies of each inductee would be assessed to determine (1) their nature and source, (2) their present status, (3) whether they are remediable in a reasonable period of time, and (4) the type of remedial training required.

The nature of this assessment and the techniques to be used could no doubt be based in part upon present clinical and educational knowledge. Much has already been done, as in the field of remedial reading, in the way of research and development in this area. A great deal of additional research would be necessary, however, before a program of assessment as comprehensive as this could be put into operation. Whether the research would be worth while would depend upon a great many considerations: the number of men involved, the cost of assessment and special training, the amount of improvement brought about by remedial training, and so forth.

These considerations cannot be evaluated here and now. In the event of total mobilization, however, the Armed Services will of necessity have to utilize men with educational deficiencies. It will be necessary to decide before that time whether such men are to be given special treatment, special training, or both. The nature of the treatment and of the training will also need to be decided. Conventional types of educational training or coaching seem to be ineffective; the effects of less conventional types of training upon men of this sort are not well known. The evidence presented here for the ineffectiveness of conventional training methods suggests that possible new techniques be carefully explored.

APPENDICES

Appendix A

THE SIX PHASES

The following are detailed descriptions of the procedures used for selecting subjects and assigning them to groups, the various special training curricula, and the criteria of effectiveness utilized in the six phases of this study.

PHASE I

In January 1953, a special experimental project, the Basic Education Project, was initiated at Fort Leonard Wood. This initial phase of the study was planned by Troop Information and Education (TI&E) and administered by the local command at Fort Leonard Wood.

The purpose of the original project was twofold: (1) to increase the effectiveness of the educational program by sending men to Basic Education School on duty time before they entered basic training; and (2) to estimate the effects of the special training in terms of the potential military usefulness of the men.

Selection of Subjects

Initial Selection

In this first phase, all the men who came to Wood for basic training whose AA-I scores were below 70 and whose scores on the USAFI-2 showed less than fourth-grade completion were included in the study.

Selection of Control Subjects

The effects of basic educational training were to be estimated on the basis of a control group composed of 20 per cent of the men who entered the project during its first two months (January and February 1953) plus a few cases added later. This group, selected to have the same average racial, educational, and physical characteristics as the main experimental group, was sent directly into basic training without going through the school.

The Special Training

Curriculum and Schedule

During this first phase of the study the special training curriculum was essentially academic. Men enrolled in the school were assigned to grades (1, 2, 3, high 3 and 4) on the basis of their USAFI scores. The following extract from a report made by the school on Phase I of the study indicates clearly the nature of the training for this phase:

. . . . .

E. Instruction:

1. Subjects taught included reading, arithmetic, language, spelling, and writing where needed.

2. Instruction was individualized based on each EM's needs as evidenced by test results and classroom work. Tests used were . . . diagnostic . . . and . . . short

achievement tests . . . which served as a basis of promotion from grade to grade but not from 4th grade. . . .

3. In order to do much individuallzed work, so each man couid progress at the fastest rate possible, considerable use was made of workbook type of materials, mimeographed drill sheets in arithmetic and language arts, and reading materiais where the EM had to select and write down answers concerning the materials he had read.

4. Group discussions were heid on problems affecting EM in their adjustment to military life and personal counseling was given on individual probiems.

5. A definite effort was made to incorporate military terminoiogy into the instruction program. As an example: "General Orders" were studied not only giving most men abllity to read them but to fully know the meaning of each order.

F. Promotion and Placement:

1. Indivlduai promotions as from Grade 1 to 2 or 2 to 3 were made daiiy. . . .

2. Demotions were made promptiy as performance abllity indicated that test scores were unreliable.

3. Final tests on USAFI-2 were given as Instructors recommended EM on daily report. This could be given anywhere from two days after EM entered ciass up to the end of 96 hours of Instruction. At least 80% of EM recommended for testing were expected to pass. The test or instructors were too ienient in making recommendations if this per cent of passing was not reached.

G. Medical and Psychiatric Referrais:

Instructors reported . . . EM who seemed unabie to make satisfactory schooi progress due to:

(1) Low mentai abiiity
(2) Physicai unfitness as poor eyesight, poor hearing, etc.
(3) Emotionai instability.

. . . Individuais so iisted were referred to the Hospitai for check-ups. Reports of action taken were reported . . . and proper records were made. The removai of unfit EM from the Services before veteran rights were attained and before too much time was wasted in attempting to give miiitary training is one of the valuable results of giving basic education prior to beginning basic military training.

Nongraduates

Those who did not reach the fourth-grade level in 96 hours of classroom instruction were classified as nongraduates. Although they were sent on into basic training along with the graduates, they were required to attend school in the evening during basic training until they had reached the fourth-grade level.

Military Training

In addition to academic training the men received concurrently a maximum of 25 hours of military training. This training was required to make an orderly detachment of them as they marched back and forth to school, etc. Of their total training time in and out of school, about 80 per cent was spent on academic subject matter, 20 per cent on these most basic military skills.

Criteria of Effectiveness

The criteria on which men in the experimental and control groups were to be compared in this phase were the local proficiency ("stakes") tests given during the eighth week of basic training and ratings by their company commanders and cadre and records of disciplinary action obtained during the 16th week of specialized training.

Near the end of this phase it was discovered that attrition in the control group had been so heavy that it was almost impossible to make adequate comparisons on any of the criteria. Furthermore, irregularities in the administration of the proficiency test had made the scores invalid. There were consequently no findings from this phase.

PHASE II

At the request of TI&E,[1] HumRRO participated in the evaluation part of the Basic Education Project from June 1953 to the end of the project.

Phase II was essentially a continuation of Phase I, although in the interest of an improved experimental design certain changes were made in methods and procedures.

Selection of Subjects

Initial Selection

No change was made in the initial criteria of selection: Aptitude Area I score below 70 and less than fourth-grade completion on the USAFI-2.

Selection of Control Subjects

The process of selecting control subjects for Phase I was felt to be defective, since it is doubtful whether any valid conclusions could have been drawn on the basis of their scores. Because the control group was not selected (1) from the entire group of available subjects, and (2) at random,[2] it was not truly representative of the population under study. It could not, therefore, serve as a basis for valid comparisons.

Accordingly, for Phase II the following changes were made:

(1) New control subjects were selected from the input to the school during every week. The control group was also increased to include, ultimately, 50 per cent of the men who entered the project during this final period.

(2) Control subjects were selected at random from the input to the project rather than purposively to match the experimental group. Because this selection had to be phased into the project over a period of weeks, stratification according to such factors as race and educational level was not feasible.

No other changes were made in the selection process.

Special Training

No changes were made in the special training for Phase II, except to suspend the requirement that nongraduates attend night school during basic training. It was felt that bias was introduced into the ratings made of these men by their company commanders and cadre, as a result of the administrative complications introduced by this special requirement.

[1]Memorandum to Director, Human Resources Research Office, from Col. Charles W. Hill, Chief, Relations and Research Branch, Office of the Assistant Chief of Staff, G-1, Subject: "Evaluation of the Basic Education Project at Fort Leonard Wood, Missouri," dated 29 May 1953, G-1 350 Fort Leonard Wood (25 May 53).

[2]In the absence of an explicitly random process at some point during the selection of a sample, no statistical model can be specified to justify generalizations based upon the characteristics of the sample. Random selection from a population stratified by race, grade level, and physical profile would have achieved the same matching without restricting the possible conclusions from the experiment.

Criteria of Effectiveness

Several changes were made in the criteria of effectiveness used in this phase:

(1) Steps were taken to eliminate the irregularities in the administration of the proficiency test which had invalidated subjects' scores in Phase I. In addition, individual scores on the separate subtests were also recorded for analysis.

(2) The system of ratings was revised and the form of the rating scales improved.

(3) A check list of nine ways in which men of this level are commonly reported to be troublesome was substituted for the reports of disciplinary action. This list was given to company commanders and cadre along with the rating scales.

(4) Two attitude questionnaires were devised: the AS-I, to be administered with the initial grade placement test (the USAFI-2); and the AS-II, to be administered late in the course of basic training. These replaced a four-item questionnaire which had been given to some of the subjects in Phase I.

PHASE III

HumRRO, the Personnel Research Branch of The Adjutant General's Office (PRB), TI&E, and the local command at Wood collaborated in this and the subsequent phases of the study. It was with this phase that the study became part of a more comprehensive study of the basic education of troops requested by The Assistant Secretary of the Army.[1] Almost all of the procedures were changed for this phase and most of the changes were continued into the following phases.

Selection of Subjects

Aptitude Area

For this and the subsequent phases of the study, the initial basis of selection was shifted from a score of 70 or less on AA-I to a score of 75 or less on AA-III. The latter Aptitude Area score, the average of the Reading Vocabulary and the Arithmetical Reasoning subtests of the ACB and a better measure of academic aptitude than AA-I, was deemed more relevant in the present situation.

Grade Level

Men with AA-III scores below 75 were first given a battery of tests which included the USAFI Tests of Educational Achievement Nos. 2 and 3, for grades 3-7 and 6-8, respectively. For this phase alone, the second basis of selection—the score on the USAFI test—was shifted. All men with AA-III scores below 75 were included as subjects except those few whose scores on the USAFI-3 showed an educational level equivalent to completion of the seventh grade. The whole range of cases that could possibly be candidates for special educational training was thereby included in the sample.

Elimination of Special Cases

Certain special groups—men who did not speak English, men with prior military service, men above the seventh-grade level in education, etc.—were eliminated from the groups of subjects after the initial testing.

[1]Memorandum for Chief of Staff, U.S. Army, from Assistant Secretary of the Army, James P. Mitchell, Subject: "Basic Education of Troops," dated 21 July 1953.

Selection of Control Subjects

The men remaining after the special cases had been eliminated were classified or stratified into subgroups according to race and grade level, the latter as shown on the USAFI tests. The members of the subgroups were then assigned at random, half to the experimental groups, half to the control group. As in the previous phases, men in the control group went directly into basic training while those in the experimental group went into the Basic Education School.

Selection of Average Trainees

An additional group of subjects, average trainees, was included in this and subsequent phases of the investigation. The scores obtained by these men, who were selected at random from the rosters of the various training companies during the first week of basic training, were to serve as a baseline for evaluating the scores of the experimental and control subjects. It was possible to select groups of average trainees from only about half of the training companies in this phase. Since initial assignment to a training company is essentially random, the average trainees are probably fairly representative of the inductees at Fort Leonard Wood during this period who did not fall into the "basic level" category, men whose AA-III scores were above 75.

Special Training

Curriculum

Although the content of the special training in Phases I and II had a strong military flavor, its primary purpose was academic; learning military terms was incidental to learning to read. In Phase III fully half of the time in the classroom was spent on purely military subject matter, and the program of instruction (see Table 1 in Chapter 2) placed considerable emphasis upon those military subjects which must be taught by military instructors.

Schedule

As in the earlier phases, men might enter the school at any time, but in this and the subsequent phases they stayed in the school 12 to 15 days, until the third Friday after their enrollment. Since all the men in the school followed the same daily schedule for military subjects, every man went through one complete two-week cycle of military subjects and then repeated a portion of it. In the academic periods, every effort was made to instruct the men at the grade level appropriate for them according to their USAFI scores.

Nongraduates

No special treatment was given basic-level men who failed to reach the fourth-grade level during special training; they were simply sent on into basic training.

Other Training

Necessarily, of course, as in Phases I and II, a certain amount of routine military training occurred outside of the classroom. It is possible that, from the standpoint of military effectiveness, such training may be ultimately more effective in modifying behavior, particularly of basic-level men, than any amount of classroom instruction.

Criteria of Effectiveness

A number of changes were made in the criteria of effectiveness for Phase III and the subsequent phases.

(1) Two new standardized proficiency tests, developed at PRB, were introduced, being substituted for the original "stakes" test of Phases I and II and given routinely to all men at Wood in their eighth week of basic training. The new tests were:

(a) The Individual Proficiency Test—a performance proficiency ("stakes") test composed of 13 subtests, rigorously standardized as to administration and scoring. There were no primarily verbal items in this test.

(b) The Basic Military Proficiency Test—a shortened form of a long paper-and-pencil proficiency test developed at PRB.

(2) The rating scales of Phase II were dropped as unprofitable.

(3) The check list of Phase II was increased to 10 items.

(4) Somewhat revised versions of the two attitude questionnaires were used. The AS-I was administered with the first battery of tests given just after induction. The AS-II was administered in the eighth week of basic training along with the BMPT.

PHASE IV

This was essentially an interphase, of no unique purpose or interest except as a preliminary to the subsequent phases. During this phase several changes were made in the procedures.

Selection of Subjects

The criterion of selection of AA-III below 75 was retained, and the USAFI test criterion was again set at less than completion of the fourth grade.

Special Training

During Phase IV, two somewhat different programs of prebasic training were followed. From 1 February 1954 to 1 March 1954 the post and the school were running on a 49-hour week. On 1 March 1954, they went to a 44-hour week.

First Program: A program of instruction for a 49 1/2-hour week, containing 30 hours of academic instruction (including citizenship) and 19 1/2 hours of military instruction, had already been prepared. For the military instruction in this phase, learning through reading, writing, and explanation was to be emphasized and learning through practical exercise and demonstration de-emphasized. Because this program was in effect for only one month during which relatively few subjects were in the school, it is not described in detail here.

Second Program: When the school changed to a 44-hour week, a new program of instruction was prepared and put in effect for the rest of Phase IV and for Phases V and VI. As shown in Table A-1, the change from 49 1/2 to 44 hours was made at the expense of academic instruction, which dropped from 30 hours to 25 hours, while military instruction was changed from 19 1/2 hours to 19 hours. In comparison with the curriculum for Phase III, this second program placed less emphasis upon purely military subject matter; relatively little time was devoted to military skills taught by demonstration and practice, as opposed to military knowledge taught by lecture and conference.

No change was made in the schedule of the school, in the treatment of nongraduates, or in the other training for this phase.

Table A-1

PROGRAM OF INSTRUCTION FOR PHASE IV, ACADEMIC PREBASIC TRAINING IN PHASE V, AND PHASE VI

Subject	Hours of Training		
	First Week	Second Week	Third Week
Academic Instruction (Including Citizenship)	25	25	25
Military Subjects Taught by Civilian Instructors:			
Military Justice	2	0	2
Character Guidance	1	1	1
Guard Duty	1	1	1
Adaptation and Group Living	2	1	2
Achievements and Traditions of the Army	1	0	1
Map Reading	1	3	1
First Aid	0	2	0
Military Vocabulary	1	0	1
Subtotal	9	8	9
Other Military Subjects:			
Dismounted Drill	3	3	3
Personal Hygiene	1	1	1
Supply Procedures and Economy	1	1	1
Military Courtesy	2	1	2
Inspection	0	2	0
Physical Training	3	3	3
Subtotal	10	11	10
Total Hours	44	44	44

Criteria of Effectiveness

No changes were made in the criteria of effectiveness.

PHASE V

Phase V differed from all the other phases. Its purpose was to evaluate two rather different types of prebasic training, one in which the emphasis was placed upon academic methods and skills, the other in which the emphasis was placed upon military field methods—demonstration and performance—and skills.

Selection of Subjects

No changes were made in the criteria of selection. The subjects in this phase, after stratification by race and grade level, were divided at random into two experimental groups and one control group. One of the experimental groups was sent to the school, the other to a special military prebasic training course.

Special Training

Academic Prebasic Training

The program of academic training in Phase V was identical with that of the latter part of Phase IV (see Table A-1).

Military Prebasic Training

For this phase of the study, the local command at Fort Leonard Wood was requested to establish a provisional training company and to prescribe a training schedule whereby basic-level men could be given two and one-half to three weeks of prebasic combat training.[1] The following conditions were noted as necessary:

(a) "It is mandatory . . . that these trainees be kept separate from the rest of the Basic Education Project Trainees, and from basic trainees, after selection and during the time they are in the company, and that any inference or implication that they are an 'awkward squad' be avoided.

(b) "Subjects should be those which are found to be troublesome to this type of trainee during basic training.

(c) "Instruction should consist of demonstration by instructor and performance by trainee. Conference and lecture, and subjects amenable to this type of presentation, should be held to an absolute minimum. . . .

(d) "To obtain the results desired, several repetitions of a few important items are considered better than a single exposure to a wide range of subjects."

The program of instruction devised for this purpose is shown in Table A-2.

The course was arranged so that a man could enter at any time and continue through the cycle for 12 to 15 days, or until his third Friday in the course. He was then sent into a regular training company for basic training. The training time was cut from 44 to 32 hours in the third prebasic week to allow time for processing.

Table A-2

PROGRAM OF INSTRUCTION FOR MILITARY PREBASIC TRAINING IN PHASE V

Subject	Hours of Training		
	First Week	Second Week	Third Week
Orientation	1	0	0
Military Justice	1	1	0
Guard Duty	3	2	0
Adaptation and Group Living	1	0	0
Achievements and Traditions of the Army	1	0	0
Map Reading	3	3	2
First Aid	1	4	2
Range Estimation	1	1	0
Military Courtesy	4	4	1
Personal Hygiene	1	1	0

(Continued)

[1]For the complete text of the request see letter, AGAO-CC 353 (28 Jan 54) G-1, 1 February 1954, Subject: "Prebasic Combat Training."

Table A-2 *(Continued)*

PROGRAM OF INSTRUCTION FOR MILITARY PREBASIC TRAINING IN PHASE V

Subject	Hours of Training		
	First Week	Second Week	Third Week
Supply Economy	1	2	1
M-1 Rifle and Preliminary Rifle Instruction	2	0	11
Dismounted Drill	7	7	4
Bayonets	2	2	0
Grenades	2	1	1
Squad Tactics	0	4	0
Marches	2	2	2
Inspection	4	2	3
Physical Training	6	6	4
Commanding Officer's Time	1	2	1
Total	44	44	32

Criteria of Effectiveness

No changes were made in the criteria of effectiveness in this phase.

PHASE VI

This phase was, like Phase IV, an interphase of relatively limited interest except as a supplement to previous phases.

Selection of Subjects

Subjects were selected for this phase exactly as for the previous phases. Only a very few control subjects and no average trainees were included.

Special Training

The academic program of instruction used in Phases IV and V was maintained. In accordance with regulations governing the Transitional Training Units, men were allowed to graduate from the school at the end of two or three weeks of training if they passed the fourth grade in that time; otherwise they were retained for four weeks.

Criteria of Effectiveness

No changes were made in this phase in the criteria of effectiveness.

Appendix B

BACKGROUND DATA

Table B-1

MEAN AGE OF SUBJECTS IN EACH GROUP

Phase	WHITE			NEGRO		
	Experimental Group	Control Group	Average Trainees*	Experimental Group	Control Group	Average Trainees*
II	20.5	20.5		20.6	20.9	
III	20.3	20.1	20.3	20.7	20.7	20.3
IV	20.4	20.7	20.2	20.1	20.3	0.0
V–Academic	20.8			20.4		
V–Military	20.6	20.7	20.5	20.3	20.5	0.0
VI	21.3	21.0		20.3	20.9	

*No average trainees were selected for Phases II and VI.

Table B-2

AA-I SCORE LEVELS OF SUBJECTS*

Phase	Aptitude Area I Scores	WHITE				NEGRO			
		Experimental Group		Control Group		Experimental Group		Control Group	
		N	%	N	%	N	%	N	%
II	50-54	2	4	0	–	1	1	0	–
	55-59	13	28	16	27	27	37	25	44
	60-64	16	34	25	42	38	52	24	42
	65-69	11	23	11	19	5	7	8	14
	70-75	0	–	1	2	0	–	0	–
III	50-54	9	2	8	2	2	1	0	–
	55-59	40	9	40	10	39	17	39	19
	60-64	77	17	74	17	49	22	65	32
	65-69	106	23	115	27	68	29	66	32
	70-74	99	21	75	18	45	20	22	11
	75-79	67	15	52	13	13	6	10	5
	80-84	39	9	36	9	11	5	3	1
	85-89	18	4	15	4	0	–	0	–
	90-95	1	–	1	–	0	–	0	–
IV	55-59	14	13	13	17	29	39	17	32
	60-64	41	39	28	37	24	32	13	25
	65-69	34	33	24	32	20	27	21	39
	70-75	3	3	4	5	1	1	2	4

(Continued)

Table B-2 *(Continued)*

AFQT SCORE LEVELS OF SUBJECTS*

Phase	Aptitude Area I Scores	WHITE				NEGRO			
		Experimental Group		Control Group		Experimental Group		Control Group	
		N	%	N	%	N	%	N	%
V–Academic	50-54	3	3			0	–		
	55-59	14	15			25	25		
	60-64	34	36			38	38		
	65-69	29	31	0	–	31	31	0	–
	70-75	7	7	7	18	3	3	10	16
V–Military	50-54	0	–	11	28	0	–	25	40
	55-59	15	14	12	30	28	24	22	35
	60-64	37	30	4	10	47	40	2	3
	65-69	33	28			38	32		
	70-75	5	9			4	3		
VI	55-59	12	14	0	–	16	22	4	50
	60-64	26	30	3	100	37	51	2	25
	65-69	24	28	0	–	17	23	2	25
	70-75	8	9	0	–	3	4	0	–

*Cases for whom no data were obtained have been omitted.

Table B-3

PHYSICAL PROFILES OF SUBJECTS IN ORIGINAL GROUPS

Phase	Profile	WHITE				NEGRO			
		Experimental Group		Control Group		Experimental Group		Control Group	
		N	%	N	%	N	%	N	%
II	A	26	55	41	69	64	88	40	70
	B	9	19	4	7	4	5	13	23
	C	12	26	14	24	5	7	4	7
III	A	322	71	324	78	165	73	166	81
	B	84	18	61	15	45	20	34	17
	C	50	11	31	7	17	7	5	2
IV	A	88	85	65	86	73	97	49	92
	B	7	7	3	4	2	3	2	4
	C	5	5	5	7	0	–	2	4
V–Academic	A	81	87			87	88		
	B	7	7			6	6		
	C	6	6	30	75	6	6	55	89
V–Military	A	84	83	4	10	112	94	5	8
	B	9	9	6	15	3	3	2	3
	C	8	8			3	3		
VI	A	73	84	3	100	65	89	6	75
	B	6	7	0	–	5	7	2	25
	C	8	9	0	–	3	4	0	–

Table B-4

RA OR US CLASSIFICATION OF SUBJECTS[a]

Phase	Classification	WHITE						NEGRO					
		Experimental Group		Control Group		Average Trainees[b]		Experimental Group		Control Group		Average Trainees[b]	
		N	%	N	%	N	%	N	%	N	%	N	%
II	RA	4	9	4	7			6	8	8	15		
	US	40	85	47	80			62	85	45	85		
III	RA	124	27	132	32	152	24	46	20	42	20	3	19
	US	332	73	284	68	448	76	182	80	163	80	13	81
IV	RA	23	22	15	20	55	28	19	25	16	30	0	–
	US	81	78	61	80	138	72	56	74	37	70	0	–
V–Academic	RA	24	26					21	21				
	US	70	74					78	79				
V–Military	RA	16	16	2	5	29	12	26	22	5	8	0	–
	US	85	84	38	95	221	88	92	78	57	92	0	–
VI	RA	20	23	1	33			16	22	8	100		
	US	67	77	2	67			57	78	0	–		

[a]"Others" classified as US.
[b]No average trainees were selected in Phases II and VI.

Table B-5

CLAIMED EDUCATIONAL LEVEL OF SUBJECTS

Phase	Highest Grade Attended	WHITE						NEGRO					
		Experimental Group		Control Group		Average Trainees[a]		Experimental Group		Control Group		Average Trainees[a]	
		N	%	N	%	N	%	N	%	N	%	N	%
II	0- 4	7	15	12	20			3	4	5	8		
	5- 8	33	70	37	63			29	40	34	60		
	9-12	7	15	10	17			40	55	18	32		
	No answer	0	–	0	–			1	1	0	–		
III	0- 4	14	3	15	4	2	–	4	2	8	4	0	–
	5- 8	245	54	220	52	48	8	61	27	72	35	0	–
	9-12	185	41	166	40	367	57	154	67	120	59	13	81
	13+	2	–	4	1	209	33	7	3	3	1	3	19
	No answer	9	2	11	3	14	2	2	1	2	1	0	–
IV	0- 4	22	21	9	12	1	1	6	8	1	2	0	–
	5- 8	68	65	60	79	17	9	39	52	28	53	0	–
	9-12	12	12	6	8	129	67	30	40	23	43	0	–
	13+	0	–	0	–	43	22	0	–	1	2	0	–
	No answer	2	2	1	1	3	1	0	–	0	–	0	–
V–Academic	0- 4	18	19					10	10				
	5- 8	65	69					42	42				
	9-12	10	11					46	47				
	13+	0	–	1	1	0	–	0	–	5	8	0	–
	No answer	1	1	5	12	25	10	1	1	27	44	0	–
V–Military	0- 4	9	9	29	73	163	66			30	48	0	–
	5- 8	81	80	6	15	61	24	9	8	0	–	0	–
	9-12	11	11	0	–	1	–	60	50	0	–	0	–
	13+	0	–					47	40				
	No answer	0	–					2	2				
VI	0- 4	20	23	0	–			0	–				
	5- 8	59	68	3	100			4	5	0	–		
	9-12	7	8	0	–			35	49	2	25		
	13+	0	–	0	–			33	45	6	75		
	No answer	1	1	0	–			0	–	0	–		
								1	1	0	–		

[a]No average trainees were selected in Phases II and VI.

Table E-6

INITIAL MEASURED (USAFI) EDUCATIONAL LEVEL OF SUBJECTS

Phase	Grade Level	WHITE				NEGRO			
		Experimental Group		Control Group		Experimental Group		Control Group	
		N	%	N	%	N	%	N	%
					(N)		(%)		
I[a]	2				112		7		
	3				281		19		
	4				1108		74		
II	2	2	4	9	15	4	5	2	4
	3	10	21	11	19	10	14	13	23
	4	35	75	39	66	59	81	42	73
III	1	1	–	1	–	1	–	0	–
	2	5	1	1	–	2	1	3	1
	3	9	2	9	2	15	7	12	6
	4	52	11	60	14	56	25	60	29
	5	177	39	153	38	95	42	80	40
	6	167	37	152	37	54	24	46	22
	7	28	6	27	6	3	1	2	1
	8	17	4	13	3	1	–	2	1
IV	2	4	4	6	8	2	3	0	–
	3	14	14	12	16	13	17	9	17
	4	86	82	58	76	60	80	44	83
V–Academic	1	2	2			1	1		
	2	7	7			2	2		
	3	6	6	0	–	18	18	0	–
	4	79	84	2	5	78	79	1	1
V–Military	2	2	2	4	10	3	3	9	14
	3	9	9	30	75	16	14	50	81
	4	82	81			97	82		
VI	2	7	8	0	–	3	4	0	–
	3	7	8	1	33	9	12	1	12
	4	68	78	2	67	60	82	7	88

[a]Subjects were not classified by race.

Table B-7

REGION OF ORIGIN OF SUBJECTS IN EACH PHASE

Phase	Region	WHITE						NEGRO					
		Experimental Group		Control Group		Average Trainees[a]		Experimental Group		Control Group		Average Trainees[a]	
		N	%	N	%	N	%	N	%	N	%	N	%
II	North	20	43	23	39			9	12	10	18		
	South	25	53	33	56			63	87	47	82		
	West	1	2	2	3			1	1	0	–		
III	North	273	60	240	57	539	83	61	27	55	27	8	50
	South	133	29	112	27	87	14	156	69	140	68	8	50
	Foreign	41	9	49	12	10	2	0	–	0	–	0	–
	Other	9	2	16	4	4	1	10	4	10	5	0	–
IV	North	15	14	19	25	188	97	5	7	2	4	0	–
	South	84	81	55	72	2	1	67	89	50	94	0	–
	Foreign	1	1	2	3	3	2	0	–	0	–	0	–
	Other	4	4	0	–	0	–	3	4	1	2	0	–
V–Academic	North	23	24					11	11				
	South	70	75					88	88				
	Foreign	1	1	8	20	241	96	0	–	5	8	0	–
	Other	0	–	31	77	8	4	0	–	56	90	0	–
V–Military	North	17	17	1	3	0	–	11	9	0	–	0	–
	South	83	82	0	–	1	–	104	88	1	2	0	–
	Foreign	0	–					0	–				
	Other	1	1					3	3				
VI	North	21	24	0	–			6	8	1	14		
	South	63	73	3	100			67	92	7	86		
	Foreign	2	2	0	–			0	–	0	–		
	Other	1	1	0	–			0	–	0	–		

[a]No average trainees were selected for Phases II and VI.

Appendix C

ATTRITION DATA

Table C-1

NUMBER OF SUBJECTS ORIGINALLY IN EACH GROUP

Phase	WHITE			NEGRO		
	Experimental Group	Control Group	Average Trainees[a]	Experimental Group	Control Group	Average Trainees[a]
I[b]	1501	236				
II	47	59		73	57	
III	456	416	640	227	205	16
IV	104	76	193	75	53	0
V–Academic	94			99		
V–Military	101	40	250	118	62	0
VI	87	3		73	8	

[a]No average trainees were selected for Phases I, II, and VI.
[b]Subjects were not classified according to race in Phase I.

Table C-2

SUBJECTS FROM ORIGINAL GROUPS AVAILABLE FOR THE SECOND ATTITUDE QUESTIONNAIRE

Phase	WHITE						NEGRO					
	Experimental Group		Control Group		Average Trainees[a]		Experimental Group		Control Group		Average Trainees[a]	
	N	%	N	%	N	%	N	%	N	%	N	%
II	45	96	57	97			66	90	54	95		
III	404	89	358	86	573	90	198	87	176	86	13	81
IV	86	83	62	82	169	88	66	88	34	64	0	–
V–Academic	77	82					90	91				
V–Military	86	85	35	88	232	93	112	95	56	90	0	–
VI	74	85	2	67			68	93	8	100		

[a]No average trainees were selected for Phasea II and VI.

Table C-3

SUBJECTS FROM ORIGINAL GROUPS AVAILABLE FOR FINAL PERFORMANCE PROFICIENCY TEST

Phase	WHITE						NEGRO					
	Experimental Group		Control Group		Average Trainees[a]		Experimental Group		Control Group		Average Trainees[a]	
	N	%	N	%	N	%	N	%	N	%	N	%
II	45	96	55	93			63	86	52	91		
III	374	82	353	85	530	83	189	83	166	81	14	88
IV	84	81	64	84	168	87	67	89	41	77	0	–
V–Academic	71	76					76	77				
V–Military	79	78	30	75	210	84	92	78	45	73	0	–
VI	71	82	3	100			64	88	6	75		

[a]No average trainees were selected for Phases II and VI.

Table C-4

SUBJECTS FROM ORIGINAL GROUPS AVAILABLE FOR WRITTEN PROFICIENCY TEST (BMPT)

Phase	WHITE						NEGRO					
	Experimental Group		Control Group		Average Trainees[a]		Experimental Group		Control Group		Average Trainees[a]	
	N	%	N	%	N	%	N	%	N	%	N	%
III	367	80	344	83	527	82	181	80	165	80	14	88
IV	81	78	64	84	165	85	67	89	40	75	0	–
V–Academic	78	83					90	91				
V–Military	85	84	33	83	240	96	108	92	53	85	0	–
VI	74	85	3	100			68	93	8	100		

[a]No average trainees were selected for Phase VI.

Table C-5

SUBJECTS FROM ORIGINAL GROUPS CLASSIFIED AS TROUBLESOME

Phase	WHITE						NEGRO					
	Experimental Group		Control Group		Average Trainees*		Experimental Group		Control Group		Average Trainees*	
	N	%	N	%	N	%	N	%	N	%	N	%
II	44	94	51	86			68	93	53	93		
III	427	94	393	94	611	95	218	96	191	93	15	94
IV	100	96	74	97	192	99	69	92	53	100	0	–
V–Academic	94	100					99	100				
V–Military	101	100	40	100	250	100	118	100	62	100	0	–
VI	87	100	3	100			73	100	8	100		

*No average trainees were selected for Phases II and VI.

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