

LEVEL

2

RESEARCH MEMORANDUM

Number 51-10

May 1950

AD A 951229

11 415-01-54-10

DTIC
ELECTED
H

DEVELOPMENT OF A CRITERION INSTRUMENT FOR USE IN VALIDATING THE
INFANTRY CAREER FIELD PROMOTION TESTS

PJ 4150-01

11 May 50
11 415-01

DTIC FILE COPY

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

81 9 18 125

PERSONNEL RESEARCH BRANCH
PR AND P DIV, TAGO

11 415-01

PRS Report 854
PJ 4150-01
PIRRU
EAR/vla/dof
9 May 1950

DEVELOPMENT OF A CRITERION INSTRUMENT FOR USE IN VALIDATING THE
INFANTRY CAREER FIELD PROMOTION TESTS

FINAL REPORT

BACKGROUND

Among the objectives noted in the Program Plan for PR-4150, Improvement in Methods of Performance Evaluation with Particular Reference to the Infantry Soldier^{1/}, were (1) the development of a criterion for the validation (and improvement) of the Infantry MOS Tests, and (2) the study of rating methodology including the most effective and the most efficient ways of collecting criterion data. Because the major aspect of rating methodology, was thought to be a determination of the effect of rater training on criterion ratings, that was made an important part of the study.

METHOD

In the development of the criterion, Ratings for Infantrymen DA AGO PRT 1800 and in the planning of the specific questions to be investigated, three pilot studies were undertaken. The initial study consisted merely of trying out a tentative criterion instrument acting on a group of non-commissioned officers (NCO's) from Fort Meyer. The purpose of this study

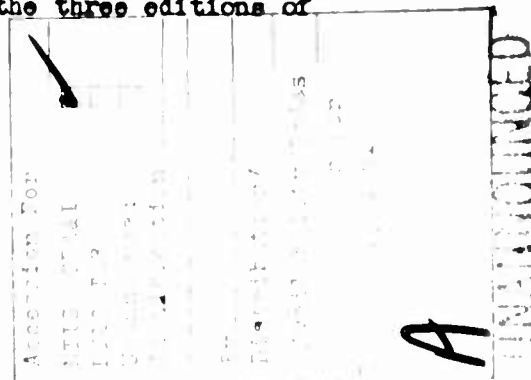
^{1/}PR-4150 established from PJ 4101-73, "Development of Criterion Instruments for use in validating the Infantry Weapons Test" by direction of D/P and A. References: D/T from D/P and A to TAG, file WDPGA 210.31 (8 Aug 46), dated 31 January 1947, Subject: Procedures for Implementing Enlisted Career Guidance Program; D/T to TAG from D/P and A file CSOPA 210.31 (8 Aug 46), dated 14 July 1946, Subject: Development of Proficiency Tests for Certain Career Fields in the Enlisted Career Guidance Program. (Memorandum for unit chiefs PIRRU and OSTRU from Chief, PRS, dated 30 November 1949.)

was to determine (1) whether too much material had been included and (2) whether the questions were realistic. (There had been some doubt as to the ability of the raters to complete the 26 page criterion instrument in the allotted time.) Although the results indicated that time was not a problem and that the raters considered the items to be of a realistic nature it was soon learned that this was a selected group of NCO's, and not the representative group that had been requested. For this reason, the time limits and their opinion that the questions were realistic required further checking.

The second pilot study took place at Fort Devens where the same rating scale was tried out on two groups of approximately 20 each, supposedly unselected enlisted men (EM). It was later determined that these men were the brighter and more cooperative EM at this installation. Three things became clear from this pilot study:

1. The criterion instrument was much too long
2. There were difficulties in comprehending the specific wording of the items
3. The method adopted for conducting training sessions was adequate.

A third pilot study, at Fort Benning, involved approximately 30 EM. The instrument used was a considerable revision of the initial rating scale. Even after the booklet had been reduced from 26 to 15 pages, it was still too long. On the basis of the third pilot study the rating scale was revised for the final time and was designated Ratings for Infantrymen DA AGO PRT 1800. Comparison of the three editions of PRT 1800 is given in Table I.



Throughout the pilot studies the specific questions of rating methodology that were to be investigated had been undergoing continuous revision. In general the accomplishments of this series of pilot studies may be summarized as follows:

1. There was to be a more rounded and complete study of a variety of methods of obtaining ratings and adjusting them.

a. Decreased emphasis was placed on:

- (1) improvement in ratings by adjusting them in terms of other ratings made by the same rater
- (2) general vs. specific ratings
- (3) the rater's frame of reference

b. Increased emphasis was placed on:

- (1) studying the kinds of raters (peers, subordinates and superiors) and their characteristics in relation to the value of the ratings given
- (2) use of predictor instruments as a means of evaluating the influence of various ways of affecting ratings.

2. The ultimate criterion instrument (PRT 1800) was made markedly more realistic:

a. The method of influencing ratings by the conduct of the rating session itself, was improved. Material from the orientation talk on the normal distribution of traits was included in the final edition of PRT 1800 in an attempt to obtain a greater dispersion of ratings.

b. Rating variables were:

- (1) decreased in number

(2) changed to conform with aspects of the infantryman's behavior on the job which were more meaningful to enlisted men of the various grades.

c. The definitions of the points along the rating scale were improved.

At the time of the first pilot study, it was intended that the only predictor used would be the Infantry Career Field Promotion tests. Other predictors were added to the project because: (1) a different promotion test might be used for each enlisted grade and for each military occupational specialty (MOS) thus complicating the analysis, and (2) use of several predictors would facilitate the sound evaluation of rating methods. A measure of the "intelligence" of each rater and ratee was to be obtained and related most specifically to the criterion rating "How easily does he learn?" (see Table I). Biographical Information Blank DA AGO PRT 2009 was to be related most specifically to the criterion rating "How good a leader is he?" (see Table I).

TABLE I
COMPARISON OF INITIAL, INTERMEDIATE AND FINAL EDITION OF RATINGS
FOR INFANTRYMEN DA AGO PRT 1800

Initial Edition	Intermediate Edition	Final Edition
<p>A. <u>Introduction of Training Material</u></p> <p>1. Normal Distribution</p> <p>a. Introduced in orientation talks.</p> <p>b. Rough illustrations presented on blackboard.</p> <p>2. Rating and Ranking Scales</p> <p>(It was hoped that the enforced spreading involved in ranking would result in increased dispersion on the rating scales.)</p> <p>This form did not contain ranking scales.</p>	<p>(Same as Initial Edition)</p>	<p>a. Figures representing normal curve presented as part of PRT 1800.</p> <p>b. Meaning of rating points illustrated by means of batting averages of well known major league ball players.</p>
	<p>a. Rating and ranking scales for each trait.</p> <p>b. Rankings were performed first and then ratings.</p>	<p>a. Only five scales on which both rankings and ratings were made. (Over-all rating used twice.)</p> <p>b. Rankings performed first except on first use of over-all scale.</p>
<p>B. <u>General Over-all Rating Scales</u></p> <p>1. How well does he do his Infantry job?*</p> <p>2. How well could he do the work of the next higher group?*</p> <p>3. What is the top grade in the Infantry this man will ever be able to handle?*</p>	<p>1. How well does he do his Infantry job?*</p> <p>2. What is the top grade in the Infantry this man will ever be able to handle?*</p>	<p>1. How well does he do his Infantry job?*</p>

*These scales have frame of reference points (see E). They are repeated at end of PRT 1800 to obtain a measure of the effect of the several scales and procedures used in the criterion sessions. The only other scale repeated is "How will the group as a whole rate on how well he does his infantry job? What will his average rating by the group be?" (see D).

TABLE I (cont'd)

Initial Edition	Intermediate Edition	Final Edition												
<p>C. <u>Specific Ratings</u></p>														
<p>1. How well does he care for his equipment such as field pack, weapons, clothing, bunk and locker?</p>	<p>1. How well does he know how to handle his M-1 rifle? Crew-served weapon?</p>	<p>1. How good a leader is he?*</p>												
<p>2. How easily can he find his objective in strange country with only a map and compass to guide him?</p>	<p>2. With the rating on how well the enlisted man can handle his crew-served weapon, the rater checked to indicate which kind of performance had been observed:</p>	<p>2. How easily does he learn?*</p>												
<p>3. How well can he handle his rifle?*</p>	<table border="0"> <tr> <td>Rifle</td> <td>Machine Gun</td> <td>Mortar</td> </tr> <tr> <td>BAR</td> <td>Light</td> <td>60mm</td> </tr> <tr> <td>57mm</td> <td></td> <td></td> </tr> <tr> <td>75mm</td> <td>Heavy</td> <td>81mm</td> </tr> </table>	Rifle	Machine Gun	Mortar	BAR	Light	60mm	57mm			75mm	Heavy	81mm	<p>3. How good a teacher or instructor is he?</p>
Rifle	Machine Gun	Mortar												
BAR	Light	60mm												
57mm														
75mm	Heavy	81mm												
<p>4. How well does he cover and conceal his movements in the field?</p>	<p>3. How good a teacher or instructor is he?</p>	<p>4. How well does he know how to handle his M-1 rifle?</p>												
<p>5. How well can he operate a machine gun?*</p>	<p>4. How well could he travel through enemy country in the day time with a map and compass to guide him from a known starting point?</p>	<p>5. How well does he care for his equipment, clean his weapons, keep his field pack, clothing, bunk, and locker in order?</p>												
<p>6. How well disciplined and courteous a soldier is he?</p>	<p>5. How well does he care for his equipment, keeping a military appearance and following rules of military courtesy?</p>													
<p>7. How well does he do his job as a member of a mortar crew?*</p>	<p>6. How well could he lead others?</p>													
<p>8. How smartly and efficiently does he carry out orders at dismounted drill?</p>														

*The problem of getting ratings on ability to handle weapons proved to be very difficult. The differences between light and heavy weapons groups were a great complicating factor.

**These scales were introduced for the purpose of relating them to specific predictors with the Army General Classification Test AGCT or Aptitude Area I (see Army Classification 1 Battery DA AGO PRT 734), and "2" with Biographical Information Blank (BIB) DA AGO PRT 2009.

TABLE I (cont'd)

Initial Edition	Intermediate Edition	Final Edition
<p>D. <u>Adjusting Ratings by Other Ratings</u> Ratings designed to serve as control variables in measuring the value of the ratings given, or to serve as a measure of the statistical suppressor type.</p> <ol style="list-style-type: none"> 1. I am not qualified to rate (a rating indicating that the rater did not feel at all qualified to rate a given person). 2. How will the group as a whole rate on how well he does his infantry job? What will his average rating by the group be? 3. How certain are you that the ratings are about right? 4. How well do you like him and want him for a friend? 5. How good a judge of others is he? 6. How interested in his work is he? 7. How much supervision does he need? 8. How good a team worker is he? 	<ol style="list-style-type: none"> 1. I am not qualified to rate. 2. How willing is he to work? 3. How certain are you that your ratings are about right? 	<ol style="list-style-type: none"> 1. Not qualified to rate. 2. How certain are you that the ratings you have just made are about right? 3. How willing is he to work?
<p>E. <u>Frame of Reference Points</u></p> <ol style="list-style-type: none"> 1. The least capable man in the Infantry. 2. The usual "Joe" who does his job as well as most men. 	<p>(Same as initial edition)</p>	<ol style="list-style-type: none"> 1. The least capable man in the Infantry doing the same job I am. 2. The usual "Joe" doing the same job as well as most men.

TABLE I (cont'd)

Initial Edition	Intermediate Edition	Final Edition
<p>E. <u>Frame of Reference Points (Cont'd)</u></p> <p>3. My boss or supervisor.</p> <p>4. Group ratings (i.e., average of the group being rated).</p> <p>5. Self ratings.</p>		<p>3. My boss or supervisor.</p> <p>4. Rating for this group (as a whole).</p> <p>5. Self rating (this item appears the second time the over-all rating is made, see A2 above).</p>
<p>F. <u>Questions Bearing on the Possibility of the Rater Observing the Ratee.</u></p> <p>1. How many months have you been in the same outfit together?</p> <p>2. How many hours during the week are you with him in work or training?</p> <p>3. My relationship to him is:</p> <p>a. He is my boss</p> <p>b. I am his boss</p> <p>c. In the same squad</p> <p>d. In the same platoon</p> <p>e. In the same company</p>	<p>1. How many months have you been in the same outfit together?</p> <p>2. How many hours a week are you able to observe his work?</p> <p>3. The rater indicated:</p> <p>a. He is my boss</p> <p>b. I am his boss</p> <p>c. Neither</p> <p>4. The rater indicated:</p> <p>a. We are in the same squad</p> <p>b. We are in the same section</p> <p>c. We are in the same platoon</p> <p>d. We are in the same company</p>	<p>1. How many hours each week do you see him work?</p> <p>2. The rater indicated:</p> <p>a. We are in the same squad</p> <p>b. We are in the same section</p> <p>c. We are in the same platoon</p> <p>d. We are in the same company</p> <p>3. The rater checked: My duty assignment is:</p> <p>a. Company commander</p> <p>b. Platoon leader</p> <p>c. Company 1st sergeant</p> <p>d. Platoon sergeant</p> <p>e. Section leader</p> <p>f. Squad leader</p> <p>g. Assistant squad leader</p> <p>h. Light weapons infantryman</p> <p>i. Heavy weapons infantryman</p> <p>j. Other _____</p>

TABLE I (cont'd)

Initial Edition	Intermediate Edition	Final Edition
G. Characteristics of Raters		
1. Purpose		
<ul style="list-style-type: none"> a. To serve as interspersed material which would facilitate the forgetting of initial ratings. b. To obtain self-ratings on traits which are presumed to have some relationship to ratings, e.g., to observe people carefully. 		
2. Objective Information		
<ul style="list-style-type: none"> a. Age in years b. Grade c. Months in army d. Months in unit e. School grade completed 	2. (Same as initial edition)	2. (Same as initial edition)
3. Self Rating		
<ul style="list-style-type: none"> a. Make up my mind about people easily b. Know what it takes to be a good weapons man c. Observe people closely d. Am a leader e. Am cooperative f. Have high standards for other men g. Plan to make the Army a career h. Have strong likes and dislikes about people i. Am loyal to my Unit j. Tolerant of the faults of others k. Think this job is worth doing l. Change my mind about people m. Can spot a good man 	<ul style="list-style-type: none"> 3. Minor alterations occurred for two of the items. "Promotion tests pick good men," became in the second version "believe that promotion tests pick best men" and "training has helped me in making ratings" became "believe that training and instruction have made my ratings accurate." 	<ul style="list-style-type: none"> 3. Self Rating <ul style="list-style-type: none"> a. Make up my mind about people easily b. Know what it takes to be a good weapons man c. Have high standards for other men d. Plan to make the Army my career e. Have strong likes and dislikes about people f. Am loyal to my Unit g. Tolerant of the faults of others h. Change my mind about people i. Can spot a good man j. Find it easy to say the right thing k. Willing to volunteer for a dangerous mission l. Believe that promotion tests pick best men

TABLE I (Cont'd)

Initial Edition	Intermediate Edition	Final Edition
<p>G. <u>Characteristics of Raters (cont'd)</u></p> <ul style="list-style-type: none"> n. Find it easy to say the right thing o. Am dependable p. Fair in judging people q. Willing to volunteer for a dangerous mission r. Promotion tests pick good men s. Enjoy helping in this study t. Training has helped me in making ratings 		<ul style="list-style-type: none"> m. Never get angry n. Enjoy helping in this study o. Believe that training and instruction have made my ratings accurate

Design of Final Edition of PRT 1800

Information will be presented by page number and indicate the ratings or other data obtained and their purpose.

Page 1. The cover page provides space in which the rater may indicate his feeling that he is "Not qualified to rate" any particular ratee. The purpose of this question is to determine whether willingness to rate can be used as a control variable. Some earlier PRS studies had indicated the existence of a correlation between magnitude of the ratings given and the number of raters who choose to rate the individual.

Page 2. Through the use of batting averages of 19 well known major league baseball players, the concept of a normal distribution is illustrated. This page serves as training in the procedure to be utilized in making the ratings on the scales which follow.

Page 3. The rating on "How well does he do his Infantry job?" serves as the standard with which can be compared a similar rating obtained at the end of the session. Effects of the interspersed material can be measured by comparing the two ratings in various respects.

Page 4. Four frame of reference questions were included to determine whether the training given during a rating session would influence frame of reference ratings made later in the same session. These questions could not precede the initial ratings since the initial ratings were supposed to represent a typically uninfluenced rating. Raters were required to rank each ratee on "How well does he do his Infantry job?" following the answering of the frame of reference questions. The rank order was obtained after the first rating so that it would not influence the first rating. This information was to be used for comparison of

early and later rankings obtained in the same session, and to study the influence of ranking on rating and vice versa.

Page 5. "How certain are you that the ratings you have made are about right?" made possible a comparison of certainty ratings (final rating, page 15, is on this same question) and for study of the validity of ratings for various degrees of certainty.

Page 6. Question I. "How many hours each week do you see him work?" was included to determine whether adequacy of ratings varies with the amount of observation possible. Question II, in which the rater indicates whether he is in the same squad, section, platoon, or company, as the man he is rating, was included as another measure of opportunity for observation. Question III. "My duty assignment is" was included for the same purpose. It also made possible the analysis of ratings given by superiors, subordinates, and peers.

Page 7. On this page the rater enters his birthdate, grade, months in Army, months in unit, and school grade completed, and makes 15 self ratings. The objective information requested permits an analysis of the worth of ratings for differing degrees of these characteristics. The self ratings were included to study the relationship of a man's evaluation of himself, on traits presumably related to the goodness of ratings, and the worth of these ratings. As noted before, this page also serves as interspersed material to enhance forgetting of the initial ratings.

Page 8. "How good a leader is he?" was included to serve both as a rating on a relatively specific trait and to serve as the predictor when the BIB, PRT 2009, is utilized as the criterion. Rankings and

ratings are obtained for this trait. This is the first scale where ranking precedes rating. The variability of the ratings obtained on this scale will be of special interest.

Page 9. "How willing is he to work?" This rating was included as an additional specific trait. It was also thought that it might serve as a statistical suppressor.

Page 10. The rating on "How easily does he learn?" was included to serve as the predictor when the Army General Classification Test score was used as the criterion. It also serves as an additional specific trait.

Page 11. "How good a teacher or instructor is he?" is included only as a realistic specific rating.

Page 12. "How well does he know how to handle his M-1 rifle?" serves only as a very specific rating. It may possibly be useful in analyzing some of the questions of the MOS test.

Page 13. "How well does he care for his equipment, clean his weapons, keep his field pack, clothing, bunk, and locker in order?" serves the same purpose as the preceding one. Men are both ranked and rated on this trait, making it possible to study relationships of traits when ranked and when rated.

Page 14. This page repeats the question of page 3, "How well does he do his infantry job?" The men are first ranked and then rated. The ratings when compared with those on page 3, give some indication of what has been accomplished by the rating training given during the session. On this page also is included the four frame of reference points for comparison with those on page 4. A fifth frame of reference point "self rating" is included here for study.

Page 15. The final page contains the question, "How certain are you that your ratings are about right?" This question is included to see whether certainty of ratings has increased or decreased as a result of the experience in making ratings acquired since page 5 when a rating was given on the same variable. Ranking precedes rating on this page.

PERSONNEL

Program Coordinator: Dr. E. A. Rundquist .

Project Directors: Mr. J. H. Burke, Dr. E. A. Rundquist

Statistical Advisor: Mr. B. J. Winer

Report Prepared by: Dr. E. A. Rundquist Program Coordinator