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FATIGUE IN SUSTAINED TACTICAL OPERATIONS

By

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| Combat Fatigue | | | | | | |
| Tactical Operations | | | | | | |
| Psychological Aspects of Combat Fatigue | | | | | | |
| Behavioral Aspects of Fatigue | | | | | | |
| Leadership Techniques | | | | | | |
| Military Psychology | | | | | | |
| Military Training | | | | | | |
| Training | | | | | | |
| Human Factors | | | | | | |
| Leadership Aptitude | | | | | | |
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| Stress | | | | | | |
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EXECUTIVE SUMMARY

Concepts for future US tactical operations envision man's capabilities as encompassing rapid acclimation, fatigue reduction, changed wake-sleep cycles, and changes to the circadian cycle under sustained and continuous operational requirements. Our forces must be able to compete with and win against an enemy who may have these capabilities. No evidence can be found of any current coordinated effort to collect, evaluate or recommend measures that can be used in the study subareas. This study focuses on concepts for the reduction of fatigue in its various stages in sustained tactical operations. There are a number of concepts applicable for this subject, yet, fatigue reduction by chemical and electronic methods are assumed not to be politically and socially feasible and hence will not be dealt with in this paper. Therefore, methods for the reduction of fatigue focus specifically on techniques of leadership and on measures to prevent fatigue as well as measures taken to reduce the effects of fatigue, once it is evident. In addition, other subject areas within the scope of fatigue reduction are isolated in terms of areas that need to be identified for further research in order that factual conclusive information can be recommended for use in tactical training.

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CHAPTER I

INTRODUCTION

In looking at the Army of the future, we often consider the capabilities of extraordinary weapons, and sophisticated command and control systems. Concurrent with these developments mainly attributed to the physical sciences we are also concerned with man's capability in operations that use these advanced devices. While advances have been made in machines, man continues for the most part to be the same frail, yet strong, organism as he has been in centuries past. Many concepts today envision that the soldier of the future will cross continents rapidly by various forms of transportation, will be employed abruptly in foreign climates, and that he will operate at top efficiency. This overall assumption that man will hold up and perform well in adverse climatic areas may be a weakness in the systems that we are considering. It is conceivable that an enemy force may perfect techniques to improve ways to cope with fatigue and ways to cope with acclimatization. Then we may have two armies opposing each other, one consisting of acclimated troops and well-rested troops and the other consisting of the opposite. It could be that battles in the future, as well as relying heavily on technology, will also rely heavily on the capabilities of man to cope with such basic subjects as fatigue and acclimatization.

The purpose of this study is to provide the combat commander with techniques that he can employ to cope more effectively with the fatigue of his troops in sustained tactical operations. This subject will be developed within the much broader framework of ACN 18409: Fatigue,

Asynchronosis and Acclimatization in Sustained Tactical Operations (FAASTO). The broader CDC study program envisions that concepts for future US tactical operations will foresee man's capabilities as encompassing rapid acclimation, fatigue reduction, changed wake -sleep cycles and changes to the circadian cycle under sustained and continuous operational requirements. The overall objective of this broader CDC study is that our forces must be able to meet an enemy who has the capability to cope with fatigue and acclimatization problems, and our forces must win in combat. It is interesting to note that no evidence can be found of any current coordinated effort to collect, evaluate or recommend measures that can be used in this overall subject. It is not the intention of the study described in this paper to discuss the entire broad subject as envisioned by the CDC study program. Rather, this study will pertain to and focus on fatigue in sustained tactical operations.

There are a number of approaches that can be used to reduce fatigue in sustained tactical operations. They are as follows:

1. The most obvious solution would be for the troops involved to receive rest and adequate sleep. Other solutions, while tending to provide expeditious shortcuts, should not be intended as substitutes for the basic solution for fatigue, which is adequate rest.

2. Medical preparations such as a short acting sedative, without a "hangover" effect, could enable the soldier to receive adequate sleep when because of stress or other reasons sleep can not be naturally induced. In addition various medical preparations could enable the soldier to stay awake for extended periods of time. This study assumes that drugs of this nature may not be acceptable in future combat operations. The use of

these drugs is considered by this observer to be politically and socially unacceptable. This does not, however, rule out the possibility of research in this area for possible safe solutions for the well-being of these troops. The use of drugs as a solution will, however, not be considered.

3. Physical and electronic methods of inducing sleep or prolonging restful periods are other solutions to this problem. These solutions, including various forms of hypnosis, are considered unacceptable and would probably be misinterpreted as various ways to manipulate subordinates and, from a leadership standpoint, would be unacceptable in our Army of the future.

4. Effective leadership techniques are probably our best solution for the immediate future. It seems that good leadership, by considerate leaders who are concerned with both the welfare of the troops and the accomplishment of the mission, can generate a great deal of effectiveness from subordinates under conditions of sustained fatigue in combat. Also, the good management of time and the good management of rest for the troops prior to an engagement can also provide an acceptable solution. The overall concept of the driving "gungho" commander who may dissipate the troops' energy in the accomplishment of minor goals prior to the main battle is an overall philosophy that needs to be avoided. Rather than the spectacular, we need the wise commander who deploys his forces well within their total human capabilities, and conserves their energy and total resources for the battle that is coming two or three days hence rather than the inspections and constant drills prior to such a battle. This report will focus on several of these leadership techniques.

5. The effective leader can be more effective if he knows about techniques concerning the reduction of fatigue in sustained combat operations. An awareness of what can be accomplished in terms of human capabilities is of paramount importance. This report will focus on many of these techniques.

Questionnaire Used in Research Project

Throughout this research project, the analysis is concerned with differences between groups of military personnel regarding certain self-reported beliefs. The test instrument used in this research project is called the Job Analysis and Interest Measurement (JAIM). The JAIM is a 125-item questionnaire designed to measure certain self-reported beliefs of the individual (other than aptitudes, training, or knowledge) which have an influence on job success or failure.¹ It provides 32 scales that measure self-reported beliefs. These scales pertain to: basic beliefs; activity preferences; personal values; and behavioral styles. The differences in the specific scale averages, if statistically significant (determined by using Fisher's t), will form the basis for further evaluation, explanation, and possible implications and speculation. In several instances, standard scores will be used in addition to t-tests in order to illustrate results on charts and tables.

It should be recognized that there are no right or wrong answers for this type of test. The instrument is based on the overall concept

¹The author is grateful to Professor Regis H. Walther, author of the JAIM, for his personal guidance and assistance in accomplishing much of the work described in this report.

of the need to have a successful match between the professional requirements of an occupation and the qualities of the individual in that occupation. Thus, for example, it can be conceptualized that the occupation of chief librarian and the occupation of locomotive engineer require considerably different types of individuals. Further, that most chief librarians would probably perform poorly as locomotive engineers and that most locomotive engineers would no doubt perform poorly as chief librarians.

An analysis of the results in this study will provide information relative to both the individual and the nature of his organization. The norms of the test instrument are intended only as a point of departure and are based on a wide variety of occupational groups. Listed below are the 32 JAIM scales in terms of their four major categories:

1. Basic Beliefs.
 - a. Extent of Optimism.
 - b. Degree of Self-Confidence.
 - c. Belief in Moral Absolutes.
 - d. Belief in Slow Change.
2. Activity Preferences.
 - a. Prefers Problem Analysis.
 - b. Prefers Social Interaction.
 - c. Prefers Mechanical Activities.
 - d. Prefers Supervisory Activities.
 - e. Prefers Activity Frequent Change.
3. Personal Values.
 - a. Values Status Attainment.

- b. Values Social Service.
 - c. Values Approval From Others.
 - d. Values Intellectual Achievement.
 - e. Values Role Conformity.
4. Behavioral Styles.
- a. Degree of Perseverance.
 - b. Extent of Orderliness.
 - c. Prefers to Plan Ahead.
 - d. Influences by Persuasive Leadership.
 - e. Influences by Being Self-Assertive.
 - f. Move Toward Aggressor.
 - g. Move Away From Aggressor.
 - h. Move Against Aggressor.
 - i. Prefers Routine.
 - j. Identifies With Authority.
 - k. Prefers Independence.
 - l. Prefers Directive Leadership Style.
 - m. Prefers Participative Leadership Style.
 - n. Prefers Delegative Leadership Style.
 - o. Motivates by Knowledge of Results.
 - p. Believes in External Controls.
 - q. Prefers Being Systematic Methodical.
 - r. Prefers Group Participation.

A brief description of each of the JAIM scales is presented below. Additional information pertaining to this questionnaire is presented in Appendix A.

1. Basic Beliefs.

a. Extent of Optimism - measures the degree to which the individual assumes that intentions of other people are benevolent and that satisfactions can be expected in the normal course of events.

b. Degree of Self-Confidence - measures the degree to which the individual believes that he can influence his future.

c. Belief in Moral Absolutes - measures the degree to which the individual believes in moral absolutes.

d. Belief in Slow Change - measures the degree to which the individual believes that change should proceed slowly.

2. Activity Preferences.

a. Prefers Problem Analysis - measures the degree to which the individual likes to analyze situations and to develop ingenious solutions to problems.

b. Prefers Social Interaction - measures the degree to which the individual likes work involving interactions with other people.

c. Prefers Mechanical Activities - measures the degree to which the individual likes mechanical activities.

d. Prefers Supervisory Activities - measures the degree to which the individual likes to plan and supervise the work of others.

e. Prefers Activity Frequent Change - measures the degree to which the individual likes to actively engage in work providing excitement and a great deal of variety.

3. Personal Values.

a. Values Status Attainment - measures the degree to which the individual values himself by his achievement of status symbols established by the culture.

b. Values Social Service - measures the degree to which the individual values himself by contributing to social improvement.

c. Values Approval From Others - measures the degree to which the individual values himself by obtaining the approval of others.

d. Values Intellectual Achievement - measures the degree to which the individual values himself by his intellectual attainments.

e. Values Role Conformity - measures the degree to which the individual values himself according to how successfully he can conform to the role requirements of society.

4. Behavioral Styles.

a. Degree of Perseverance - measures the degree to which the individual continues at something even when he is not particularly interested in it.

b. Extent of Orderliness - measures the degree to which the individual has internal standards which are followed.

c. Prefers to Plan Ahead - measures the degree to which the individual is a self-starter and directs his own activity toward achievement of a goal.

d. Influences by Persuasive Leadership - measures the degree to which the individual exerts leadership in interpersonal relationships.

e. Influences by Being Self-Assertive - measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others.

f. Move Toward Aggressor - measures the degree to which the individual tries to act diplomatically when someone acts toward him in a belligerent or aggressive manner.

g. Move Away From Aggressor - measures the degree to which the individual withdraws when someone acts toward him in a belligerent or aggressive manner.

h. Move Against Aggressor - measures the degree to which the individual counterattacks when someone acts toward him in a belligerent or aggressive manner.

i. Prefers Routine - measures the degree to which the individual likes to have definite procedures available which he can follow.

j. Identifies With Authority - measures the degree to which the individual identifies with his superior and tries to please him.

k. Prefers Independence - measures the degree to which the individual desires to act on his own.

l. Prefers Directive Leadership Style - measures the degree to which the individual believes that an executive gets best results by making decisions himself.

m. Prefers Participative Leadership Style - measures the degree to which the individual believes that executives get the best results by having their work groups participate in decisionmaking.

n. Prefers Delegative Leadership Style - measures the degree to which the individual believes that executives get the best results by delegating decisionmaking authority as much as possible to individual workers.

o. Motivates by Knowledge of Results - measures the degree to which the individual believes that people are motivated best by knowledge of results (intrinsic motivation).

p. Believes in External Controls - measures the degree to which the individual believes that most people require external controls.

q. Prefers Being Systematic Methodical - measures the degree to which the individual uses systematic methodical methods for processing information and for reaching his decisions.

r. Prefers Group Participation - measures the degree to which the individual identifies with a highly valued group.

Organization of Report

The next chapter will focus on a review of prior studies that are particularly relevant to this paper. These studies will include both training and combat situations. Then Chapter 3 will concentrate on the effects of combat on the beliefs of infantrymen. Contrary to popular opinion, it seems that the sensitivity of infantrymen in combat to the needs of their friends is considerably higher than the norm of the test. It is interesting to note that the norm of the test is based on the norms of over 50 occupational groups tested in the United States. Contrary to another popular opinion, evidence does not emerge from this research project that the Vietnam veteran finds it difficult to form close relationships with others.²

²In a special article to the New York Times on May 3, 1972, "Delayed Trauma in Veterans Cited," Boyce Rensberger reports that: "Perhaps the most commonly reported symptoms of what has been called the 'post-Vietnam syndrome' are a sense of shame and guilt for having participated in a war that the veteran now questions and the deeply felt anger and distrust of the government that the veterans believe duped and manipulated them.

In some cases, the doctors reported, the alienation and distrust engendered in the veterans extends to all those who have not served in Vietnam and who, the veteran believes, cannot understand his present feeling. Consequently, many veterans find it difficult to form close relationships with others," p. C-19.

Chapter 4 will emphasize the application of effective leadership for coping with fatigue. After the elaboration of several practical leadership techniques, the discussion will focus on the behavioral dimensions of fatigue and how these dimensions relate to the development of satisfaction and the reduction of dissatisfaction. Chapter 4 will conclude by extending the impact of several behavioral dimensions to include such long range decisions as deciding to make the Army a career. It seems that the extent of an individual's response to orders has a bearing on: his competence, his ability to hold up in high stress and fatigue situations, and even in his determination whether or not he will decide to make the Army a career.

In Chapter 5, an analysis will be made of differences in self-reported beliefs between various groups of individuals associated with the Army. Measures taken to reduce the impact of fatigue must consider these major differences.

Chapter 6, the last chapter, will present a summary and recommendations for further research.

CHAPTER 2

PRIOR STUDIES

This chapter will focus on several prior studies relevant to stress and fatigue during training for combat operations. These studies are representative of many others. The references at the end of this chapter include several other studies not summarized in this brief summary of relevant literature.

A major topic within the scope of this subject pertains to the physiological and psychological problems that are encountered when troops are moved long distances into combat.

Robert Bernstein¹ considers that the following four major categories of problems should be viewed when moving troops rapidly over long distances into combat:

1. Disease.
2. The environment.
3. Fatigue.
4. Psychological aspects.

In an analysis of the category pertaining to fatigue he indicated the following:

Loss of sleep is often an unavoidable practice in the field. Fatigue due to this circumstance can only be alleviated by sleep or, at least, rest. Battle-wise commanders are cognizant of the virtues of the 'cat nap' or 'forty winks' when the opportunity presents itself. This form of 'instant' rest may be quite effective as an invigorator.²

¹Robert Bernstein, "Getting to the Fight--a Review of Physical and Emotional Problems Encountered in Moving Troops into Combat," Student Thesis, US Army War College, Carlisle Barracks, Pa., 6 March 1964.

²Ibid., p. 32.

With respect to the use of "forced" sleeping and to the use of a short-acting sedative, Bernstein had this to offer:

The dutiful leader will do all in his power to ensure that his men obtain sufficient rest when it is possible to do so. This may entail the scheduling of rest time, perhaps even during the day. Although such a procedure is apt to draw scoffs and complaints from the men, there is no substitute for rest; and ultimately, fatigue could decide the victor. Such 'rest periods' would take place just prior to and during an operation. Some research consideration should be given to the idea of administering a period of 'forced' sleeping for the men prior to departure to a field of combat. This could apply only if the troops were in a protected location and not expected to fight for a number of hours. A short-acting sedative, without 'hangover' effects, might be used. While physiologically it is impossible to store rest or sleep, at the very least, the men should not be hindered by a rest deficit at the outset.³

Information contained within the other categories indicated by Bernstein will be considered as this study progresses.

Stanley C. Knapp in a study pertaining to the problems of adaption to long range large scale aerial troop deployment indicated the following:

The aberrant rest, eat and exercise cycle was the most significant individual finding that had potential for affecting the totality of the mission as it was performed. Staging-adaptation delays with the primary intent of sleep acquisition is imperative. These are best programed either as close to the destination as possible or immediately after the maximum time shift occurs. A 16-18 hour delay is optimum. Ample space in the aircraft for movement, and programed physical activity during refueling stops is necessary.

³Ibid., p. 33.

Medical planning, coordination, and indoctrination were found to be the best preventive measures. A complete understanding of the physical, operational and logistical situation and interplay of the medical support with each situation is an absolute necessity.

Ambient noise abatement, environmental climate control, comfort facilities and low density airline type seating are the primary requirements of the deployment phase as observed. Provisions for sleeping on board en route will alleviate many problems seen.

It is necessary to carefully assess the position, role, and regard for the ultimate weapon; the individual soldier. He is not a machine, piece of cargo, or casual global traveler. Modern technology and philosophy must be designed to support him.

Historically, soldiers have proven to be flexible, well-motivated, and capable of great personal and group ingenuity and adaptation in the face of stress. This creates a fighting force willing to go anywhere, anytime, by any means, and remain efficient and effective.

There are certain human factors and parameters of physiologic adjustment that are relatively fixed or slow to accommodate. Among them are requirements for sleep, food, fluids, exercise, warmth, shelter, sensory stimulation, recreation, solitude, physical and psychological support. Man has proven biologic or circadian rhythms that are essentially unalterable over a long period of stress, let alone abrupt exposure. Man does not immediately adapt to sudden environmental changes, i.e., sea level to high mountainous, arctic to equatorial, tropical to arid, or pastoral to aquatic.

Man's response to these changes or deprivations, until he accommodates, covers a wide physiologic and psychological spectrum. Many of the responses from obscure biochemical alterations to physical and mental degradation are understood. A good many are predictable and quantifiable. All have the same titratable end point - reduced effectiveness and efficiency.

The individual soldier recognizes these changes as undefinable fatigue, malaise, and loss of physical and mental ability and endurance. The troop commander finds decisions difficult, comprehension elusive, and his troops less than anticipated as to fighting force. The medical officer is met with a plethora of minor physical injuries, somatic

complaints, specific subjective symptoms, and objective findings, to which the etiologies remain all too obscure - unless there is an understanding of the stresses to which the patient has been subjected.

Interpolation from these exercises is important in anticipating and countering the significant human stress factors imposed by modern technology and strategic concepts. The limitations of man must be realistically realized by the planners. Medicine must have the concern, knowledge, forethought and industry to meet and bridge the interface in a continuing effort to CONSERVE THE FIGHTING STRENGTH.⁴

The main emphasis of this study will be on the psychological factors involved when coping with fatigue. Both Bernstein and Knapp place a major emphasis on the need for leaders and planners to consider both the physiological and psychological aspects of employing fatigued troops. The following summary of studies in the remainder of this chapter pertains to changes in self-reported beliefs connected with intensive training under conditions of stress and fatigue. It is particularly relevant to find that training can change self-reported beliefs. Also, that individuals with certain self-reported beliefs are more likely to successfully complete one form of vigorous training. Officer Candidate School training is the form of intensive training that will be described. It exerts a strong influence on the individuals involved in that it tends to change certain of their self-reported beliefs in terms of: basic beliefs, activity preferences, personal values, and behavioral styles. These changes can be predicted and are

⁴Stanley C. Knapp, "Problems of Adaption to Long Range Large Scale Aerial Troop Deployment," US Army Aeromedical Research Laboratory, Fort Rucker, Alabama 36360, p. 6, 1972.

beneficial to both the individual concerned and to the US Army. Years later, those beliefs that are no longer appropriate will tend to change again so that they will be compatible with the individual's new total environment. There is an application of the psychological findings of the following studies on methods that can be used to cope more effectively with the stress and fatigue pertaining to combat operations.

Engineer Officer Candidate School Training Conducted During 1966.

It appeared as no surprise to this former Officer Candidate School student that individuals change some of their self-reported beliefs while attending Officer Candidate School. In developing a master's thesis in 1966, it seemed worthwhile to measure how people change certain of their self-reported beliefs. A questionnaire⁵ was administered to 561 entering students and 319 graduating students. The results indicated that entering students, compared with graduating students, placed a higher value in the approval from others. Graduating students, as compared with entering students, tended to be more self-assertive, were more likely to be persuasive leaders, and were more prone to like supervisory activities.

⁵This researcher is grateful to Professor Regis H. Walther, author of the Job Analysis and Interest Measurement (JAIM) used throughout this study, for his personal assistance in accomplishing much of the work described in this report. The JAIM is a 125-item self-report questionnaire used to measure certain beliefs of an individual (other than aptitudes, training, or knowledge), which have an influence on job success or failure. This questionnaire has been used in studying more than 50 occupational groups including engineers, lawyers, foreign service officers, ambassadors, judges, social workers, policemen, physicists, and secretaries. Professor Walther found that this instrument can distinguish among occupational groups and between superior and weak performances within an occupational group. The JAIM is distributed for research purposes by the Office of Special Tests of the Educational Testing Service, Princeton, New Jersey. This test is described in Chapter 1 and in Appendix A.

Infantry Officer Candidate School Training Conducted During 1968.

The above study pertained to Engineer Officer Candidate School located at Fort Belvoir, Virginia, and it was assumed that this Officer Candidate School was representative of others in operation at that time. During September 1968, the results of the study at Engineer Officer Candidate School were cross-validated by a replication at Infantry Officer Candidate School located at Fort Benning, Georgia. The questionnaire used earlier was administered to 170 entering students and 101 graduating students. It was predicted that the significant differences found at Engineer Officer Candidate School between entering and graduating students would also be found at Infantry Officer Candidate School. There was a remarkably similar difference between groups of entering and graduating students at both Engineer Officer Candidate School and Infantry Officer Candidate School. In addition, graduating students from both schools had similar standard scores on previously selected scales. It was concluded from these results that the two schools had a very similar effect on their students.

Further Research 1967-70

While the self-reported beliefs of entering and graduating students were significantly different, it was argued that the effect of training could not be measured because the same individuals were not tested as both entering and graduating students. In the normal course of events, most of the individuals who failed to graduate actually resigned from the program rather than wait to be selected for relief by the school authorities.

There was a possibility that this self-selection departure process would further prevent an accurate analysis between entering and graduating students. If individuals with certain beliefs were selected to fail, it could be possible that instead of training men to become officers, the school was selecting men to become officers. A more likely possibility to account for the difference between groups of entering and graduating students was a combination of training and selection. In contrast to the earlier studies, further research developed in preparation of a doctoral dissertation⁶ attempted to answer several previously unanswered questions.

Effect and Stability of Training: Engineer Officer Candidate School
1967-70.

In 1967, 347 men were tested as both entering and graduating students. Scores on 14 out of 15 selected scales obtained at the time of graduation differed significantly from scores obtained at the time of their entrance to training.

Entrance to Officer Candidate School is voluntary and upon graduation each student is commissioned as a second lieutenant. Early in the training program it becomes evident to the student that he must conform to behavioral standards as well as academic standards. Most entering candidates find themselves in an environment requiring a different role from that to which they are accustomed. To survive and graduate, the student is encouraged to

⁶The author is grateful for the financial support pertaining to the doctoral dissertation jointly furnished by the US Army, The George Washington University, and the US Steel Corporation.

adapt to the school's environment and to assume new roles consistent with the reward and punishment standards of the school and of his peers. During the six-month training program many of these new roles probably become part of the individual's personality and self-conception.

It is conceptualized that successful students, after becoming aware of the specific standards required by the school and their peers, will adjust their roles to accommodate these standards. As the course progresses, it is considered, also, that the beliefs of these individuals will adjust and become compatible with the individual's newly acquired roles. If being successful is measured in terms of conforming to the established standards of the program, it appears that the individuals who do not assume the correct roles will depart from school prior to graduation.

The majority of persons who fail to graduate voluntarily depart from the school after it appears to them that the difficult program is not worth the effort, or that further effort on their part in working towards graduation, is fruitless. Some individuals who do not meet the prescribed standards are "turned back" to more junior classes and many of them eventually graduate. It is believed that almost all entering students, if they desire to apply themselves, can graduate; however, approximately a third of the entering students normally fail to graduate. It appears that these individuals as a group do not adapt or are not particularly interested in adapting to the required new roles.

It can be concluded that this group of men changed their self-reported beliefs during the time they participated in Officer Candidate School training. It appears from the results that the beliefs of these students were

molded into a form required for them to perform their duties successfully as junior officers. The shaping process emphasizes an insistence on immediate task performance with results obtained through persuading, directing, or supervising other people. There is a considerable value placed in being self-assertive and in perseverance. The graduating student is action-oriented with a greater concern for the mission than for the welfare of his subordinates. However, this does not imply that he is not concerned with their welfare. It does imply that concern for subordinates is second only to the accomplishment of the mission. The graduating student has a set of beliefs that are probably the best suited to accomplish the short range goals of his profession, such as leading a platoon or commanding a company in combat. Subsequent duties, following about eight years of company grade assignments, will probably require another set of beliefs. Prior to that time, these men will receive additional training and become more experienced.

In considering the stability of the graduating student's self-reported beliefs, it was conceptualized that those self-reported beliefs that changed the most during training would probably be the least stable. When retested approximately three years after graduation from Officer Candidate School, significant changes in the reverse direction from that occurring during training were predicted for 12 scales. The results were that four scales were significant in the predicted direction, three in the opposite direction, and no significant difference was found for the remaining five scales. Thus the findings indicated that the stability of training was more complex than initially considered, probably a function of positive or negative reinforcement during the post-Officer Candidate School period.

Results Pertaining to 210 Individuals
Tested on Three Occasions

As reported up to this point in this chapter, a total of 347 individuals were examined as both entering and graduating students. In addition, 757 individuals were examined both as graduating students and again several years after departing from Officer Candidate School. Persons reexamined approximately three years after graduation were mailed a copy of the identical questionnaire used during Officer Candidate School. Effects could be measured because the same individuals were examined either before and after training, or after training and three years later.

It seemed worthwhile to analyze the results of only those individuals who had been examined on three occasions. A review of the respondents indicated that 210 individuals were tested on three occasions: (a) as entering students; (b) as graduating students, and (c) again approximately three years after graduation. The original research predictions formulated prior to an analysis of the data connected with this chapter will be examined in this analysis. No attempt will be made to predict and confirm results inasmuch as the original predictions in this chapter were not stated in terms of these 210 individuals.

Results Pertaining to the Effect of Training

Compared with when they were entering students, the same 210 individuals examined again as graduating students significantly changed 14 out of 15 self-reported beliefs. (See Table 1.) Specific results of training correlated in terms of observations and results from the test instrument are as follows:

1. Repeated emphasis during training on being self-confident was reflected by a substantial increase in the self-confidence of graduating students. This increase in self-confidence is also attributed to their successful completion of this difficult course.

2. Supervisory activities as an occupational preference increased in importance during training for these individuals as they prepared for their future role as platoon leaders.

3. Their strong preference at the beginning of training for work that provides a lot of excitement and a great deal of variety increased considerably during training.

4. In their process of arriving at a decision during training, mission accomplishment received considerable priority over pleasing others. During training, their value of the approval of others decreased from an initially low value to a significantly lower value. This lack of concern for the approval of others, while appropriate for the training situation, might not be appropriate in later assignments.

TABLE 1

DIFFERENCE IN SEVERAL BELIEFS OF A GROUP OF 210
MEN BETWEEN TIME OF ENTRANCE AND GRADUATION

| Scales | t-test Results ^a | Standard Scores ^b | |
|--|--------------------------------|---------------------------------|-----------------------|
| | | Time of Entrance | Time of Graduation |
| Degree of Self-Confidence | +6.00*** | -7 | 35 |
| Prefers Supervisory Activities | +5.84*** | 16 | 51 |
| Prefers Activity Frequent Change | +2.02* | 56 | 77 |
| Values Approval From Others | -9.16*** | -32 | -80 |
| Degree of Perseverance | +3.81*** | 12 | 39 |
| Influences by Persuasive Leadership | +6.38*** | 25 | 65 |
| Influences by Being Self-Assertive | +5.11*** | 89 | 120 |
| Move Toward Aggressor | -3.40*** | -37 | -56 |
| Move Against Aggressor | +4.78*** | 36 | 73 |
| Prefers Independence | +2.08* | -8 | 3 |
| Prefers Directive Leadership Style | +3.49*** | 112 | 147 |
| Prefers Participative Leadership Style | -4.33*** | -56 | -91 |
| Prefers Delegative Leadership Style | +1.91 | -44 | -38 |
| Motivates by Knowledge of Results | +3.15** | -23 | 0 |
| Believes in External Controls | +6.35*** | 103 | 148 |

^aPlus (+) indicates higher average score for 210 individuals as graduating students. Minus (-) indicates lower average score for 210 individuals as graduating students.

* $p < .05$
 ** $p < .01$
 *** $p < .001$

^bAverage of norm group has been equated to zero and the standard deviation to 100.

5. There was substantial attrition of students, both voluntary and involuntary, during this rigorous training program. Perseverance, therefore, is definitely an asset to the individual who desires to graduate. It is interesting to note that the importance given to perseverance increased from a high value at the time of starting the program to a significantly higher value at the time of graduation.

6. Empirical observations support the test results in that these individuals significantly increased the importance they placed on persuasive leadership. During training, these individuals demonstrated that they have no difficulty in expressing their opinions before a large group. In addition, a prerequisite for graduation is effective performance in various leadership positions during training.

7. As entering students, these men tended to do well under conditions of competition and stress. During the training program, their self-assertiveness significantly increased. The competitive nature of the course is probably reflected in this increase. While an individual who is highly self-assertive may do well as a junior officer, his potential for further success may depend on his ability to limit his self-assertiveness.

8. Entering students placed a low value in behaving diplomatically when someone acts toward them in a belligerent or aggressive manner. This low value became substantially lower during training.

9. When given the choice of appeasing, or counterattacking a belligerent individual, these men prefer to counterattack. Their high value for this preference significantly increased during training.

10. While there was a significant increase in independence during training, it is noted that these individuals scored relatively low as entering students. This can be attributed partially to the constraints placed on entering students.

11. At the start of training, students tended to place a low value on a leadership style that would delegate decisionmaking authority to individual subordinates. At the end of training, there was little change in this view.

12. Both before and after training, these men placed considerable importance on directive leadership. It should also be noted that their impression of the importance of directive leadership increased significantly during training. While this degree of directive leadership may be effective at the small unit level, it appears that it probably will not be effective for higher level assignments.

13. During training, participative leadership was not considered as an effective leadership style for platoon leaders in combat. It follows then that the low value held by individuals when they entered the program would change to a considerably lower value during training.

14. When they entered training, students tended to disagree with the view that people are motivated best by the knowledge of their results. Instead, they strongly considered that a leader obtains the best results through rewards and punishments. At the conclusion of training, these students placed a significantly higher value in the view that individuals are best motivated by the knowledge of their results.

15. Their strong preference for a leader who tells them specifically what to do increased substantially during training. This preference emphasized a strong regard for discipline and a view that most people require external controls.

Results Pertaining to the Stability of Training

It was conceptualized earlier that beliefs acquired during an individual's Officer Candidate School experience will tend to revert to the individual's initial beliefs when he returns to the work situation after his departure from training. Earlier in this chapter, this prediction was not confirmed. Results pertaining to the stability of training for 210 individuals are presented in Table 2.

The reverse learning effect of the scale "Prefers Directive Leadership Style" as it decreases in value years later to a position lower than when measured prior to training is worthy of consideration. The resulting boomerang effect pertaining to the scale "Prefers Directive Leadership Style" is as follows:

| Graduating Students ^a | Men 3 Years After Graduation ^a | Men 3 Years After Graduation ^a |
|----------------------------------|---|---|
| vs. | vs. | vs. |
| <u>Entering Students</u> | <u>Graduating Students</u> | <u>Entering Students</u> |
| 3.49 | -5.91 | -2.98 |

^aA positive t-value indicates this group higher and a negative t-value indicates this group lower.

TABLE 2

DIFFERENCE IN SEVERAL BELIEFS OF A GROUP OF 210
MEN BETWEEN TIME OF GRADUATION AND
RETESTING APPROXIMATELY THREE YEARS LATER

| Scales | t-test Results ^a | Standard Scores ^b | |
|--|--------------------------------|---------------------------------|-----------------------------|
| | | Time of Graduation | 3 Years After Graduation |
| Degree of Self-Confidence | +2.13 | 35 | 42 |
| Prefers Supervisory Activities | +3.41 | 51 | 75 |
| Values Approval From Others | + .40 | -80 | -80 |
| Influences by Persuasive Leadership | -1.58 | 65 | 51 |
| Influences by Being Self-Assertive | -2.13* | 120 | 107 |
| Move Toward Aggressor | +0.14 | -56 | -61 |
| Move Against Aggressor | -1.09 | 73 | 66 |
| Prefers Directive Leadership Style | -5.91*** | 147 | 88 |
| Prefers Participative Leadership Style | +2.93** | -91 | -62 |
| Motivates by Knowledge of Results | -0.13 | 0 | -7 |
| Believes in External Controls | -6.72*** | 148 | 103 |
| Prefers Group Participation | -1.79 | -17 | -25 |

^aPlus (+) indicates higher average score for group of 210 individuals approximately three years after graduation. Minus (-) indicates lower average score for group of 210 individuals approximately three years after graduation.

* $p < .05$
 ** $p < .01$
 *** $p < .001$

^bAverage of norm group has been equated to zero and the standard deviation ~~is~~ 100.

It can be speculated that the negative reinforcing influences experienced by these 210 young officers during the period 1967-70 were so strong that their feelings toward directive leadership not only reverted back to their original score, but decreased to a point considerably lower than they held prior to Officer Candidate School training.

Results pertaining to the four scales that formed the basis of the four predictions years earlier are illustrated in Charts 1-4. These results are indicated in terms of the identical group of 210 men tested on three occasions. Hopefully, these results will "put to rest" the subject of change during training and the stability of this change.

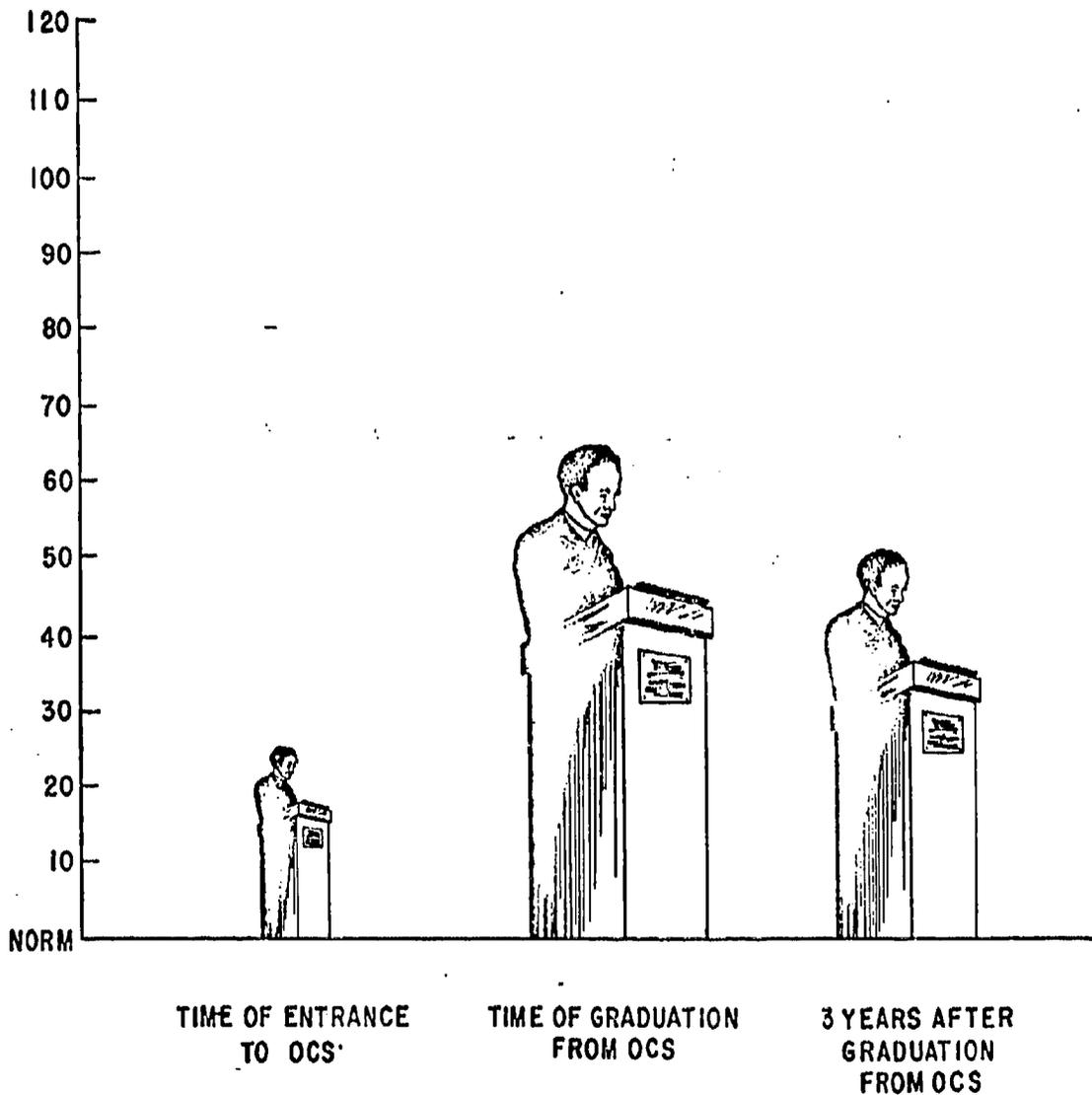
Other Relevant Findings.

An analysis of the data indicated that scores obtained by using the test instrument at the time of entry into the training program effectively discriminates the following:

1. Between those who will tend to eventually graduate and those who will tend to voluntarily depart prior to graduation.
2. Between those who will tend to remain in the Army years later and those who will tend to depart from the Army years later.
3. Between those who will tend to both graduate and remain in the Army years later and those who will tend to both not graduate and depart from the Army years later.
4. Between individuals at the time of entrance to Officer Candidate School and the same individuals approximately three years after departure.

CHART I

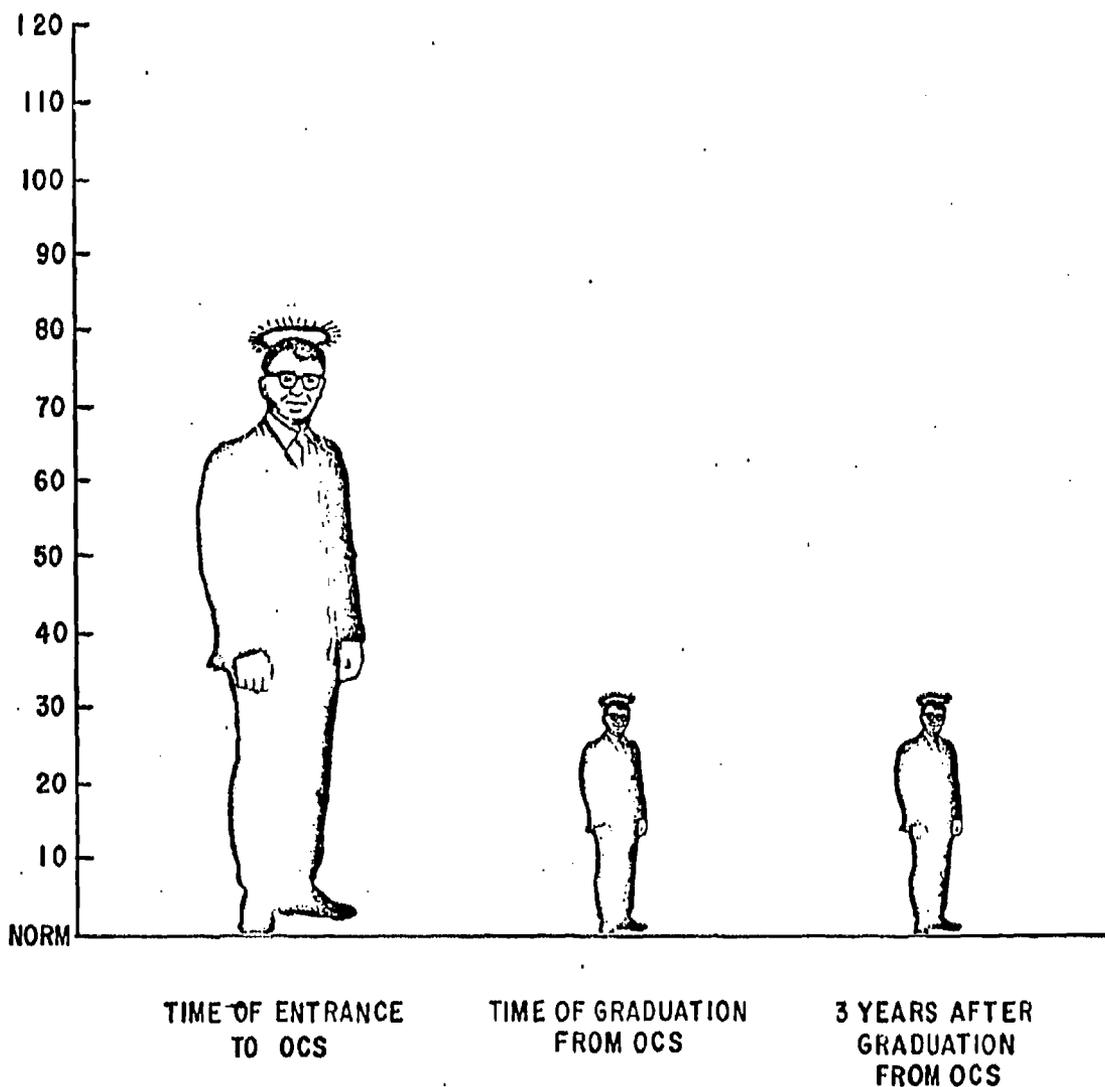
COMPARISON OF THE IDENTICAL GROUP OF 210 MEN ON THREE OCCASIONS PERTAINING TO THE EXTENT TO WHICH THEY EXERT LEADERSHIP IN INTERPERSONAL SITUATIONS*



*Size of figure pertains to standard scores for the JAIM scale "Influences by Persuasive Leadership." This scale measures the degree to which the individual exerts leadership in interpersonal situations. Persons scoring high report that they have no difficulty giving a speech or reciting before a large group; that they often take the leadership in groups; and that they like best in a job the opportunity to get results through persuasion or negotiation.

CHART 2

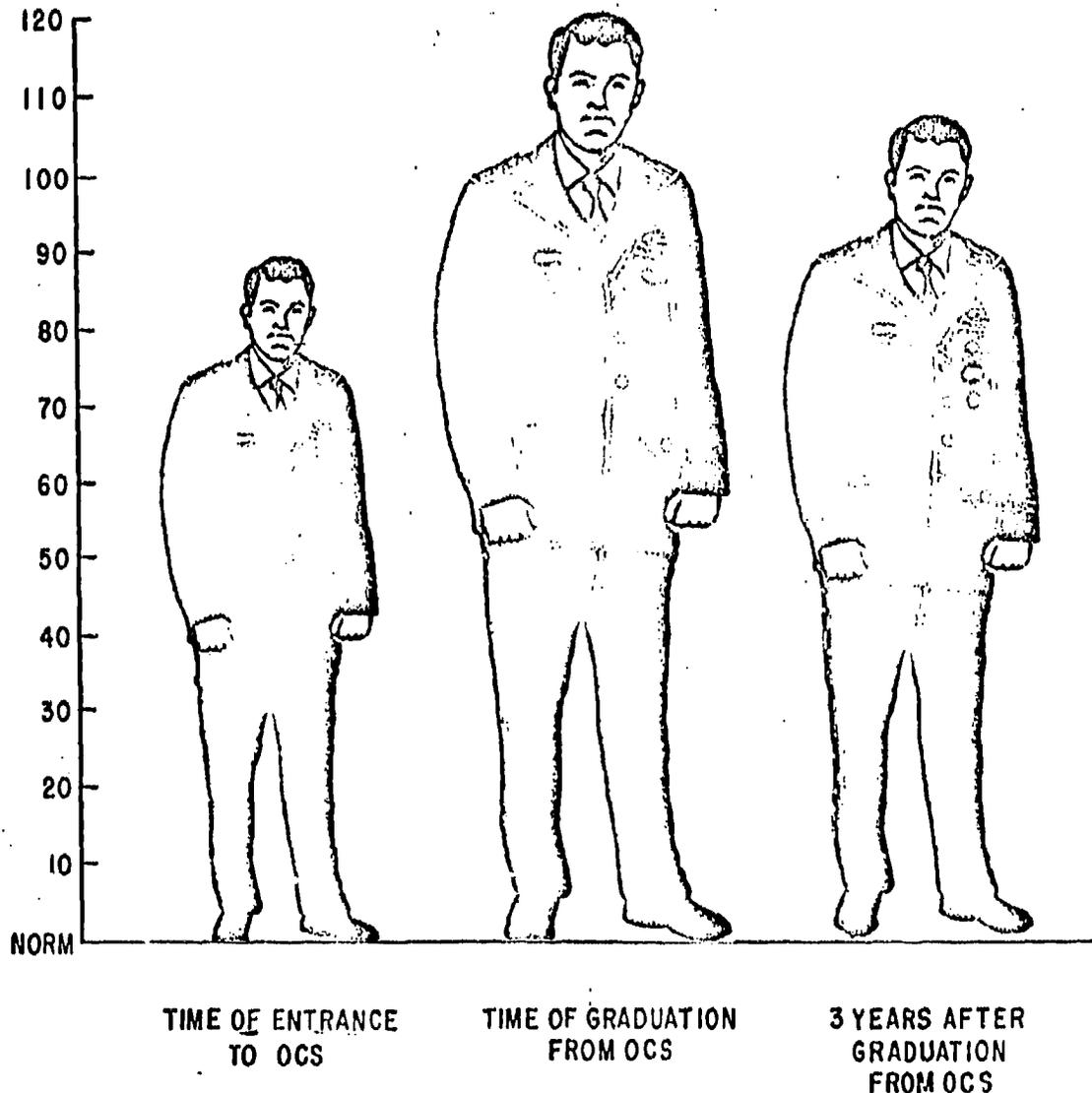
COMPARISON OF THE IDENTICAL GROUP OF 210 MEN ON THREE OCCASIONS PERTAINING TO THE EXTENT TO WHICH THEY VALUE THE APPROVAL OF OTHERS*



* Size of figure pertains to standard scores for the JAIM scale "Values Approval From Others." This scale measures the degree to which the individual values himself by obtaining the approval of others. Persons scoring high consider it most important to have congenial peers; to be well liked; and like to please others through their work; and like to be considered gracious, attractive and pleasant.

CHART 3

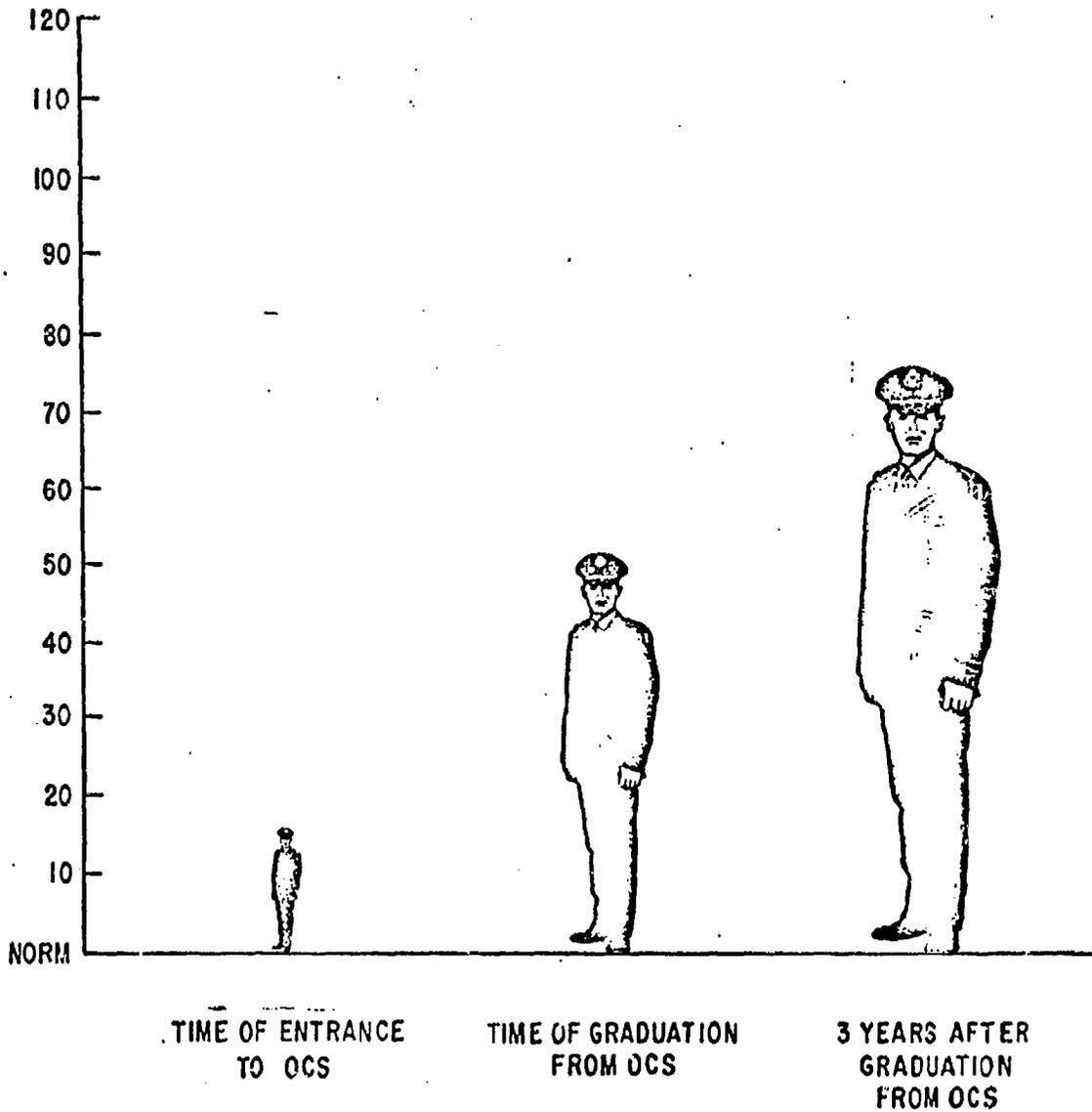
COMPARISON OF THE IDENTICAL GROUP OF 210 MEN ON THREE OCCASIONS PERTAINING TO THE EXTENT TO WHICH THEY INFLUENCE OTHERS BY BEING SELF-ASSERTIVE*



* Size of figure pertains to standard scores for the JAIM scale "Influences by Being Self-Assertive." This scale measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others. Persons scoring high say that it is important to avoid being diverted from doing what is right in order to please someone; that they do better under competition or stress; and that they are proficient in athletic games.

CHART 4

COMPARISON OF THE IDENTICAL GROUP OF 210 MEN ON THREE OCCASIONS PERTAINING TO THE EXTENT THEY PREFER SUPERVISORY ACTIVITIES *



* Size of figure pertains to standard scores for JAIM scale "Prefers Supervisory Activities." This scale measures the degree to which the individual likes to plan and supervise the work of other people. Persons scoring high on this scale find that they get along best when they know what they want and work for it; they are generally striving to reach some goal they have established for themselves and like to supervise others in the carrying out of difficult assignments.

Reevaluation of the Officer Candidate School
Training Process During 1970

In 1970, 42 men were tested as both entering and graduating students. Scores on several of the JAIM scales obtained at the time of graduation differed significantly from scores obtained at the time of their entrance to training. These findings substantiate earlier studies that indicated that Officer Candidate School tends to change the self-reported beliefs of the individuals in terms of basic beliefs, activity preferences, personal values, and behavioral styles. These changes can be predicted. Changes in self-reported beliefs during Officer Candidate School training in 1970 were similar to those changes during Officer Candidate School training conducted during 1966, 1967, and 1968. It should be noted, however, that the changes were of a lesser intensity during 1970 because entering students at that time, compared to entering students during 1967, had more of the "desired" characteristics to begin with. It should also be noted that graduating students during 1970 had less of the "desired" characteristics than those sampled in 1967. Perhaps changes in American society may have altered the "desired" characteristics of graduates as perceived by both the school authorities and the individuals concerned.

Implications of Findings for Coping With Fatigue.

1. Individuals with certain self-reported beliefs will tend to be more successful in coping with stress and its related fatigue. Therefore, one method to improve the quality of a fighting force is to use a selection process to find individuals who have these beliefs.

2. Individuals undergoing intensive training can change certain of their self-reported beliefs. Therefore, training that will change certain self-reported beliefs is another method for improving the capability of a fighting force to cope with stress and its related fatigue.

3. A greater understanding by planners and commanders of the physiological and the psychological problems connected with employing fatigued troops should lead to more effective plans and decisions.

Research Question.

What are the effects of combat on the self-reported beliefs of soldiers? More generally, how does the overall stress of combat and its related fatigue impact on the psychological dimensions of the individual? The next chapter will attempt to answer this question.

REFERENCES

1. Argyris, Chris. Executive Leadership: An Appraisal of a Manager in Action. New York: Harper and Row Publishers, Inc., 1953.
2. _____. Integrating the Individual and the Organization. New York: John Wiley and Sons, Inc., 1964.
3. _____. Organization and Motivation. Homewood, Illinois: Richard D. Irwin, Inc., and The Dorsey Press, 1965.
4. Bennis, Warren G. "Revisionist Theory of Leadership." Harvard Business Review, January-February 1961.
5. Bienvenu, Bernard J. New Priorities in Training. American Management Association, 1969.
6. Cross, Edward M. "The Behavioral Styles, Work Performances and Values of an Occupational Group: Computer Programmers." Unpublished Doctoral Dissertation. Washington, D. C.: The George Washington University, 1970.
7. Edwards, Allen L. Statistical Methods for the Behavioral Sciences. New York: Holt, Rinehart and Winston, 1964.
8. Fleishman, Edwin A.; Harris, Edwin F.; and Burt, Harold E. Leadership and Supervision in Industry. Columbus, Ohio: Bureau of Educational Research, Ohio State University, 1955.
9. Herzberg, Frederick. "One More Time: How Do You Motivate Employees?" Harvard Business Review, January-February 1968.
10. Janowitz, Morris. The Professional Soldier. New York: The Free Press, 1960, and revised in 1971.
11. Jennings, Eugene E. The Executive: Autocrat, Bureaucrat, Democrat. New York: Harper and Row Publishers, Inc., 1962.
12. _____. The Executive in Crisis. East Lansing, Michigan: Michigan State University, 1965.
13. Just, Ward. "Soldier." The Atlantic, October 1970.
14. Katz, Daniel, and Kahn, Robert L. The Social Psychology of Organizations. New York: John Wiley and Sons, Inc., 1966.
15. Likert, Rensis. The Human Organization. New York: McGraw-Hill Book Co., 1967.

16. Lippitt, Gordon L. Organizational Renewal. New York: Meredith Corporation, 1969.
17. Mager, Robert F. Developing Attitude Toward Learning. Palo Alto, California: Fearon Publishers, 1968.
18. McCune, Shirley D. "An Exploratory Study of the Measured Behavioral Styles of Students in Five Schools of Social Work." Doctoral Dissertation. Washington, D. C.: Catholic University, 1966.
19. Meckling, William H., Executive Director. The President's Commission on an All-Volunteer Armed Force. Washington, D. C.: US Government Printing Office, February 1970.
20. Mosel, James N. "How to Feed Back Performance Results to Trainees." A paper read before the Employee Training Institute at the annual conference of Public Personnel Administration of the Civil Service Assembly, Washington, D. C., October 9, 1966.
21. Petersen, Peter B. "An Investigation of the Effect of Training." Unpublished Doctoral Dissertation. Washington, D. C.: The George Washington University, February 15, 1971.
22. Porter, Lyman W. "Where Is the Organization Man?" Harvard Business Review, November-December 1963.
23. Reimer, David J. "The Relationship Between Childhood Experience and Certain Variables Correlated With Occupational Choice and Performance." Master's Thesis. Washington, D. C.: The George Washington University, 1967.
24. Robinson, William H. "An Element of International Affairs - The Military Mind." Naval War College Review, November 1970.
25. Schein, Edgar H. Organizational Psychology. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965.
26. Shartle, Carroll L. Executive Performance and Leadership. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1956.
27. Stouffer, Samuel A., et. al. "The American Soldier: Adjustment During Army Life," Vol. I. Studies in Social Psychology in World War II. Princeton, New Jersey: Princeton University Press, 1949.
28. This, Leslie E., and Lippitt, Gordon L. "Learning Theories and Training." Training and Development Journal, April-May 1966.
29. Trojanowicz, Robert C. "A Comparison of the Behavioral Styles of Policemen and Social Workers." Unpublished Doctoral Dissertation. East Lansing, Michigan: Michigan State University, 1969.

30. US Department of the Army. Department of the Army Pamphlet 601-1: The OCS Story. Washington, D. C., October 1969.
31. Walther, Regis H. Personality Variables and Career Decisions: A Pilot Study of Law and Social Work Students. Washington, D. C.: The Social Research Group, The George Washington University, 1966.
32. Walther, Regis H., and McCune, Shirley D. Socialization and Work Style of the Juvenile Court. Washington, D. C.: Center for the Behavioral Sciences, The George Washington University, 1965.
33. Walther, Regis H.; McCune, Shirley D.; and Petersen, Peter B. "The Shaping of Professional Subcultures: A Study of Student Groups From Five Professions." Washington, D. C.: The George Washington University, 1968.
34. Woodward, Joan. Industrial Organization: Theory and Practice. London: Oxford University Press, 1965.

CHAPTER 3

EFFECTS OF COMBAT

While stationed in Vietnam during 1969, a group of individuals completed a questionnaire concerning certain self-reported beliefs. There was a significant difference between their beliefs stated in Vietnam and then stated again in the United States a year later. This difference can be attributed to the impact of the stress of combat and its associated fatigue. Members of the 3rd Battalion, 60th Infantry were used in this test. A control group was also used. It consisted of members of Headquarters, First Logistical Command stationed at Long Binh Post, Vietnam. While there was some difference between the control group's self-reported beliefs between Vietnam and the United States, major differences were found in the Infantrymen's beliefs. These differences can be attributed to the stress and fatigue placed upon combat soldiers. The impact of fatigue, asynchronosis, and acclimation in these sustained tactical operations was evident. In discussing practical leadership techniques in a later chapter, to solve these problems, the following influences will be considered:

- a. The environment.
- b. The formal organization.
- c. The informal organization.

The interaction of the above three influences play an important role in considering methods to cope with fatigue in sustained tactical operations.

The effects of combat on individuals returning to civilian life are viewed by Levy¹ as a psychological disorientation that is detrimental to society. He reported a common tendency in a group of 60 randomly selected former combat marines to carry into civilian life the "unbridled violence" that served them well in combat. In contrast, Moskos² considers that American enlisted men return to their civilian roles with qualities that are beneficial to society. Moskos found that compared with when they entered the Army, these men return to civilian life more mature and better suited to contribute to society. A third finding was indicated by Stouffer, et. al. concerning the WW II veteran. "Personal readjustment problems of varying degrees of intensity are disclosed by the veterans in this study. But the 'typical' veteran pictured in some quarters as a bitter, hardened individual does not emerge from this survey."³

It is evident that there is a wide divergence of findings concerning the overall effects of combat. What then are the effects of combat on the beliefs of enlisted infantrymen? The purpose of this chapter is to describe an investigation of the differences in certain self-reported beliefs when the same group of enlisted infantrymen are evaluated while in Vietnam, and then again after they return to the United States.

People differ in the way they respond to various situations that they experience in their lives. The nature of this response affects

¹Charles Levy, "The Violent Veterans," Time, March 13, 1972, pp. 45-46.

²Charles C. Moskos, Jr., The American Enlisted Man, 1970.

³Samuel A. Stouffer, et. al., "The American Soldier: Combat and its Aftermath, Vol. II, Studies in Social Psychology in World War II, 1949, p. 631.

their effectiveness and the satisfaction they receive from the results of their performance in different situations. American enlisted infantrymen in combat in Vietnam found themselves in a setting requiring them to assume different roles from those to which they have been accustomed. It is considered that during the period these individuals were stationed in Vietnam, many of these new roles probably became part of their personality and self-conception. It is also considered that upon returning to the United States, these individuals further changed their personality and self-conception.

Theoretical Framework

An analysis of differences in self-reported beliefs should consider the influences that caused these differences. In this study, the influences of combat are seen in terms of the following: (a) the environment, (b) the formal organization, and (c) the informal organization. The terms "formal organization" and "informal organization" are viewed within the framework described by Likert⁴ pertaining to the characteristics of different management systems.

The effect of these influences are intensified by their interrelationships. Thus, stress experienced by the individual soldier is caused by a combination of the environment (i.e., tropical climate and the presence of Viet Cong), the formal organization (i.e., policies and procedures to follow), and the informal organization (i.e., responsibilities

⁴Rensis Likert, The Human Organization; Its Management and Value, 1967.

to comrades). During WW II, a report by a Special Commission of Civilian Psychiatrists⁵ in describing stress as a major characteristic of combat discussed the following interrelationship of the above three types of influence.

Adjustment to combat . . . means not only adjustment to killing, but also adjustment to danger, to frustration, to uncertainty, to noise and confusion and particularly to the wavering faith in the efficiency or success of one's comrades and command.

Influences by the Environment.

The discomforts of the Mekong Delta are often viewed by infantrymen in terms of heat, humidity, and muddy rice paddies. Heat rash, insects, and forms of immersion foot are prevalent. While these discomforts may be considered as important environmental factors, the major environmental factor for subjects in this study was surviving a potential life or death encounter with the Viet Cong. These encounters ranged from a face-to-face struggle to stepping on a landmine.

Unlike the sophisticated improvements in weapon systems, and command and control systems, today's infantrymen have many of the same human qualities of those individuals who fought in WW II. It seems ironic that the specific unit represented in this study was one of the many military organizations studied by Stouffer, et. al., during WW II. During WW II, it appeared to Stouffer, et. al., that stress was caused by a number of reasons. These reasons, not necessarily in order of their importance, are listed below.

⁵Report of Special Commission of Civilian Psychiatrists Covering Psychiatric Policy and Practice in the United States Army Medical Corps, European Theater, April 20 to July 8, 1945, p. 12.

1. Threats to life and limb and health.
2. Physical discomfort--from lack of shelter, excessive heat or cold, excessive moisture or dryness, inadequacy of food or water or clothing; from insects and disease; from filth; from injuries or wounds; from long-continued fatigue and lack of sleep.
3. Deprivation of sexual and concomitant social satisfactions.
4. Isolation from accustomed sources of affectional assurance.
5. Loss of comrades, and sight and sound of wounded and dying men.
6. Restriction of personal movement--ranging from the restrictions of military law to the immobility of the soldier pinned down under enemy fire.
7. Continual uncertainty and lack of adequate cognitive orientation.
8. Conflicts of values:
 - a. between the requirements of duty and the individual's impulses toward safety and comfort;
 - b. between military duty and obligations to family and dependents at home, to whose well-being the soldier's survival is important;
 - c. between informal group codes, as of loyalty to comrades, and the formal requirements of the military situation which may sometimes not permit mutual aid
 - d. between previously accepted moral codes and combat imperatives.
9. Being treated as a means rather than an end in itself; seemingly arbitrary and impersonal demands of coercive authority; sense of not counting as an individual.
10. Lack of 'privacy'; the incessant demands and petty irritations of close living within the group.

11. Long periods of enforced boredom, mingled with anxiety, between actions.

12. Lack of terminal individual goals; poverty and uncertainty of individual rewards.⁶

While most of the above reasons for stress pertain to environmental influences, it is acknowledged that several of these reasons can be attributed mostly, or in part, to influences from the formal and informal organization.

Influences by the Formal Organization.

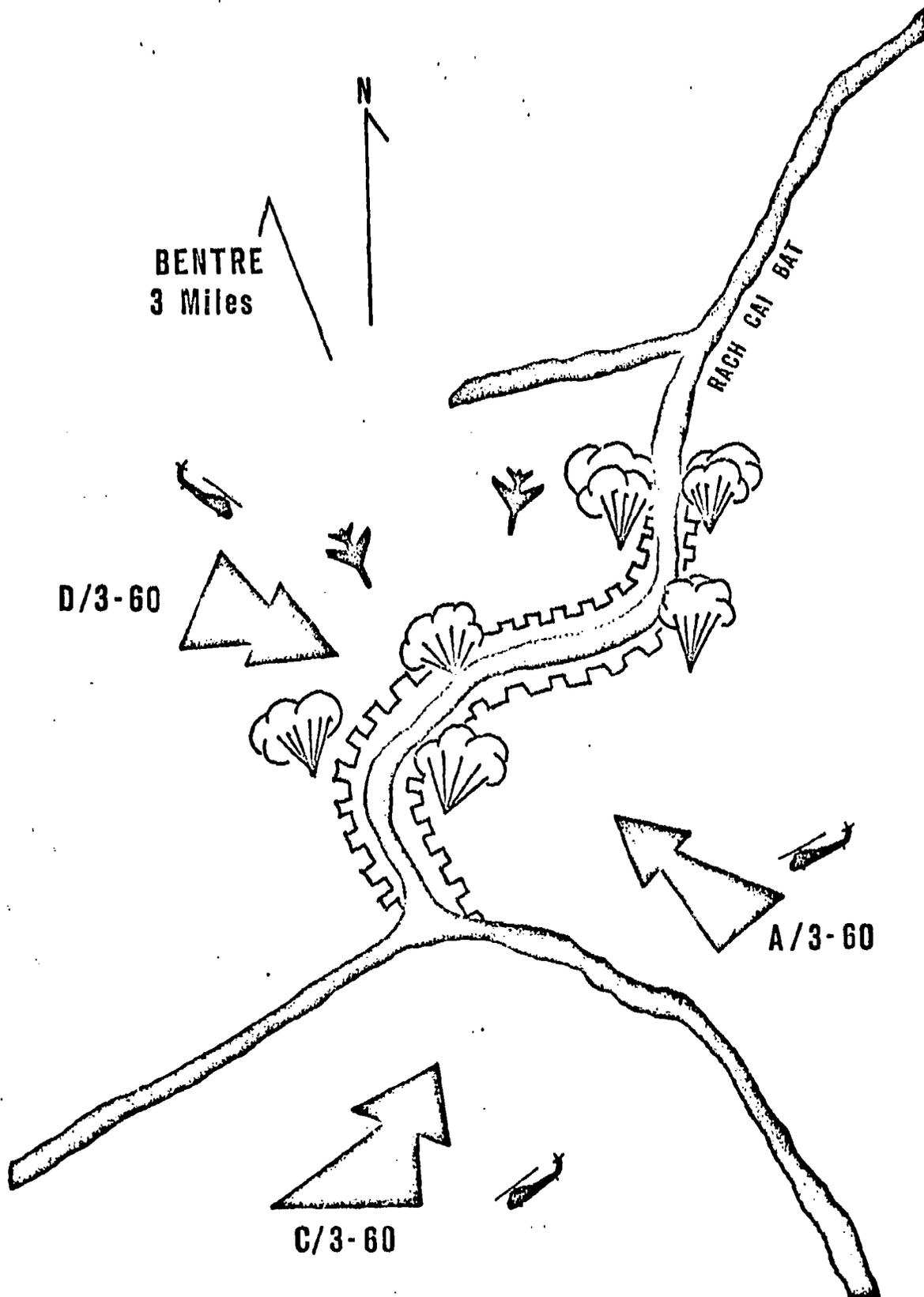
The formal organization in the study described in this chapter is the 3rd Battalion, 60th Infantry (3/60), 2nd Brigade, 9th Infantry Division. The following represents a successful combat operation in terms of the goals and modus operandi of this organization. Approximately 75 percent of the men in this study participated in this particular battle. It is typical of many other battles in which, at one time or another, all of the subjects in this study participated. An account of this tactical operation is also cited in order to describe the elements of surprise, firepower, and violence of action with which these individuals were often associated.

On February 14, 1969, three companies of the 3/60 fought against an estimated main force Viet Cong company in the Mekong Delta. Immediately prior to the battle, the 3/60 conducted airmobile operations in the Mo Cay

⁶Stouffer, et. al., "The American Soldier: Combat and its Aftermath," Vol. II, Studies in Social Psychology in World War II, 1949, p. 77.

District of Kien Hoa Province. At approximately 2:00 p.m., an Air Force forward air controller, operating in the adjacent district of Giong Trom, observed several armed Viet Cong crossing a stream in a sparsely populated area. This indicated the possibility of a larger force in the same vicinity. Fortunately, the commander of the 3/60, his artillery liaison officer from the 3/34th Artillery, and the helicopter company commander (162d Assault Helicopter Company) were airborne in the same helicopter in the vicinity of the observation made by the forward air controller. Company D, airborne in helicopters near Mo Cay, was diverted to the vicinity of the observed enemy. While the infantry was en route, the forward air controller coordinated an air strike by Air Force F-100 fighter jets in the area where the Viet Cong had been observed. During the later phases of the 10-15 minute air strike, the artillery liaison officer fired and adjusted an artillery preparation on two areas considered by the commander of the 3/60 as potential landing sites. The air strike and artillery fires drove several squads of the armed enemy from their camouflaged positions and out into open areas.

The commander of Company D received a fragmentary order via radio while airborne. Subsequently, while still airborne, he briefed his platoon leaders by radio. The landing zone selected by the battalion commander was marked with a smoke grenade by the lead helicopter gun ship. Members of Company D arrived by helicopter and were able to observe the activated smoke grenade. This helped them to make a rapid aerial reconnaissance of their objective area. The use of helicopters enabled the battalion commander to specifically indicate the landing



zone, direction to the objective, and distance to the objective. Preparatory fires by the helicopter gun ships of the supporting airmobile company started simultaneously with the completion of the air strike and artillery preparation. Company D, upon landing, moved rapidly from its landing zone towards the enemy. Helicopters from the airmobile company then promptly landed Company A in a position on the opposite side of the stream from Company D. Next, Company C was airlifted from the flight deck of the barracks ship APL-30, which lay at anchor in the Ben Tre River some three miles distant. Company C completed the cordon by landing south of the enemy force. The helicopters were then used to reinforce Companies A and D with the remaining portions of their respective units. As the cordon contracted, fire teams from Troop D, 3d Squadron, 5th Air Cavalry located in helicopters flying at an altitude of 5-25 yards, engaged enemy troops who were firing from bunkers along the stream.

During the operation, air strikes conducted by members of the Air Force 306th and 510th Tactical Fighter Squadrons continued to impact on enemy positions within the cordoned area. Medical evacuation helicopters evacuated wounded US personnel from landing zones 500-800 yards to the rear of infantry contacts. Helicopters from the cavalry provided suppressing fires during the airmobile medical evacuation. On the return trip to the supply base, helicopters that previously delivered a resupply of ammunition to the infantry, evacuated Viet Cong wounded, Viet Cong prisoners, and recovered the bodies of two American soldiers who had been killed in the battle. A helicopter smoke ship, organic to the 162d Assault Helicopter Company, provided a smoke screen in an attempt to conceal from the enemy the helicopter landings and takeoffs.

In many respects, the procedures that were followed by infantrymen during WW II have changed drastically. The formal organization is no longer an infantry battalion moving together on foot towards the high ground. Today's advances in technology have aided the infantryman in the accomplishment of his mission; however, there are some disadvantages. Communications within the formal organization which rely more heavily on radio seem to lack the effectiveness gained by a face-to-face discussion. In many cases, movement by helicopter requires the infantryman to rapidly orient himself with regards to the enemy and the terrain immediately prior to a skirmish. Fragmentary orders require a stronger reliance on the standing operating procedures of the formal organization. In many respects, infantrymen are more closely tied to the policies and procedures of the formal organization. However, at times the relative isolation of small groups may strengthen the infantrymen's reliance on the informal organization.

Influences by the Informal Organization.

Informal organizations, in regards to the study reported in this chapter, may consist of portions of a rifle squad or portions of a rifle platoon. In some cases, they consist of an entire 11-man rifle squad or an entire 45-man rifle platoon. In exceptionally well-performing squads and platoons, the informal and formal organizations are often one and the same. In such instances,⁷ all social forces are available to support efforts needed to achieve the organization's goals.

⁷Likert, The Human Organization; Its Management and Value, 1967.

In discussing the influence of the informal organization, it is interesting to consider an account of a young sergeant who was a highly valued member of an informal organization. Sergeant Blye's performance is representative of other extraordinary acts by many of the subjects in this study during the same general period of time.

On the afternoon of May 7, 1969, Sergeant Blye distinguished himself while on a reconnaissance operation in Kien Hoa Province south of Ben Tre. When his platoon was hit by heavy small arms and automatic weapons fire, Sergeant Blye immediately deployed his men and began to direct their return fire. Noticing that a machine gun was jammed in one of his key positions, Sergeant Blye, completely ignoring his own safety, raced approximately 30 yards across open terrain under very heavy enemy fire to the gun position. Exposing himself to the enemy fire, he worked fervently to repair the jammed weapon. After finally restoring the weapon to working order, Sergeant Blye stood up in the face of the intense enemy fire and brought a devastating volume of fire on the enemy, routing them from their positions and allowing his wounded comrades to be aided.

The individual cited in the above combat operation is a 21-year-old Black, born and raised in Myrtle Beach, South Carolina. He attended Myrtle Beach High School where he won the Golden Hammer award as the best industrial arts student. He was drafted into the Army in August 1967 and received basic training at Fort Gordon, Georgia, and advanced individual training at Fort Ord, California. Later he was assigned to the Jungle Warfare School in Panama where he became an instructor. In

July 1968, he volunteered for duty in Vietnam. While in Vietnam, he earned two Silver Stars for heroism, two Bronze Stars for achievement and service, four Air Medals for meritorious actions in connection with air assaults, and a Purple Heart.

In an earlier battle, Sergeant Blye's officer platoon leader was wounded and was subsequently evacuated. In the absence of an officer, Sergeant Blye took command of the platoon. Members of the platoon viewed him as a dependable friend as well as a competent leader. His platoon was one of the best in the battalion. Sergeant Blye's success as a leader can be attributed, in part, to the support he received from the platoon members. He was fortunate in being the leader of a platoon where the formal and informal organizations were identical.

Method

Observations of Infantrymen in Vietnam.

The group of individuals in this study were observed in Vietnam for approximately 200 days. As commander of the battalion during this period, this writer had many opportunities to observe the behavior and characteristics of these men who were members of the rifle companies in this particular battalion. In considering the many observations made, the following five appear to be the most significant:

1. The infantrymen represented in this study tended to place a high value on what their peers thought of them. In combat, the importance to them of acceptance by their peers was often reflected in their lack of

self-assertiveness in situations when they were encouraged by their superiors or by the nature of events to compete with their peers.

2. While involved in combat operations, the men represented in this study appeared to have a strong identification with their immediate superiors.

The officer who commanded the personal respect and loyalty of his men could mobilize the full support of a willing followership; he therefore had at his disposal the resources of both the formal coercive system and the system of informal group controls. If, however, the officer had alienated his men and had to rely primarily on coercion, the informal sanctions of the group might cease to bear primarily on the combat mission.⁸

3. The unselfish nature of the infantrymen observed was apparent, particularly in their genuine concern for their friends. The dependence on one another for safety in combat may have been a factor in this comradeship. In addition, individuals seemed to place an extraordinary value in tasks involving interactions with their associates and especially in participating in social activities involving their friends.

4. A common complaint by these infantrymen was the frequency of changes in their combat operations. Typical complaints were "hurry up and wait" and "not another change in today's plans!" Sometimes these complaints were justifiable, while at other times a change in the situation required a change in plans.

5. While in Vietnam, the infantrymen represented in this study seemed to dislike being considered ambitious. In many cases, competent

⁸Stouffer, et. al., "The American Soldier: Combat and its Aftermath," Vol. II, Studies in Social Psychology in World War II, 1949, p. 118.

and highly productive individuals avoided receiving the traditional military rewards that pertain to high status and prestige. Perhaps this was due to their desire to be one of the "boys" rather than to be considered a "hero" or "showoff" by their companions. Also, motivation to some degree may have been missing due to the type of war in which they were engaged.

The observations described above were considered when the predictions for this study were formulated.

Predictions.

Several predictions will be presented in the form of the differences in self-reported beliefs found when the same group of individuals are evaluated in both a combat setting in Vietnam and again after they return to the United States. These differences will be attributed to the removal of the influences of combat. The purpose for posing these predictions is to further examine the observations of the group of 80 enlisted infantrymen listed earlier in this chapter. The differences predicted below are not intended to include all of the differences pertaining to this situation. However, they are selected as being representative of many obvious differences that became apparent during empirical observations.

Compared with when they were stationed as infantrymen in Vietnam, the same group of 80 individuals, after they return to the United States, will tend to significantly change several of their self-reported beliefs.

1. Differences Attributed to Influences by the Formal Organization. Influences by the formal organization are important in combat, therefore,

the following changes in Job Analysis and Interest Measurement (JAIM)⁹ scales are predicted.

a. Scores for the scale "Identifies With Authority" will be significantly lower after these men return to the United States. This scale measures the degree to which the individual identifies with his superior and tries to please him. While involved in combat operations, the group of men represented in this study appeared to have a strong identification with their immediate superiors. After returning to the United States, it is predicted that this group of men will place less importance in identifying with their new immediate superiors.

b. Scores for the scale "Prefers Activity Frequent Change" will be significantly higher after these men return to the United States. This scale measures the degree to which the individual likes to be actively engaged in work providing a lot of excitement and a great deal of variety. A common complaint in combat by these infantrymen was the frequency of changes in their tactical operations. When they return to the United States, it is predicted that their desire for frequent changes in their activities will increase significantly.

2. Differences Attributed to Influences by the Informal Organization.

Influences by the informal organization are important in combat; therefore, the following changes in JAIM scales are predicted:

⁹The Job Analysis and Interest Measurement (JAIM), is a self-descriptive inventory with 125 questions, mostly using a forced choice format. The JAIM is distributed for research purposes by the Office of Special Tests of the Educational Testing Service, Princeton, New Jersey. Appreciation is expressed to Regis H. Walther, author of the test instrument, for his assistance in accomplishing much of the work described in this chapter. Further information pertaining to this instrument is presented in Chapter 1 and Appendix A.

a. Scores for the scale "Values Approval From Others" will be significantly lower after these men return to the United States. This scale measures the degree to which the individual values himself by obtaining the approval from others. In combat, the approval from others seems relatively important to this group of infantrymen; however, after they return to the United States, it is predicted that it will become relatively less important.

b. Scores for the scale "Prefers Social Interaction" will be significantly lower after these men return to the United States. This scale measures the degree to which the individual likes work involving interactions with people. In combat, infantrymen tend to place a high value in tasks involving interactions with their associates and especially in participating in social activities with their friends. After returning to the United States, it is predicted that social interaction will become less important to this group of men.

c. Scores for the scale "Influences by Being Self-Assertive" will be significantly higher after these men return to the United States. This scale measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others. In combat, the individuals represented in this study tended to lack self-assertiveness in situations when they were encouraged by their superiors or by the nature of events to compete with their peers. After returning to the United States, it is predicted that this group of individuals will place a higher value in being self-assertive.

d. Scores for the scale "Prefers Group Participation" will be significantly lower after these men return to the United States. This

scale measures the degree to which the individual identifies himself with a highly valued group. In combat, group participation seems relatively important to these infantrymen; however, when they return to the United States, it is predicted that it will become relatively less important.

e. Scores for the scale "Values Status Attainment" will be significantly higher after these men return to the United States. This scale measures the degree to which the individual values himself by his achievement of the status symbols established by his culture. In combat, many of the individuals represented in this study tended to avoid receiving the traditional military rewards that pertain to high status and prestige. When they return to the United States, it is predicted that there will be an increase in this group's value of status.

Procedure.

While stationed in Vietnam during 1969, 321 enlisted infantrymen assigned to the rifle companies of an infantry battalion completed the JAIM questionnaire. During 1970, after they returned to the United States, many of these individuals were contacted and indicated a willingness to complete the same questionnaire again via mail. At the conclusion of the study, 80 questionnaires completed in the United States were suitable for analysis.

Concurrent with testing infantrymen in a combat setting, 121 enlisted men assigned to a relatively safe rear area in Vietnam also completed this questionnaire during 1969. In 1970, after they returned to the United

States, many of these men were contacted again. At the conclusion of the study, 53 questionnaires completed via mail in the United States for this group were suitable for analysis. The group of individuals who were assigned to a relatively safe rear area will be used as a control group. Both the test group and control group were retested in the United States in connection with one of the studies described in Chapter 2.

Results

Table 3 indicates the results. Compared with when they were stationed as infantrymen in Vietnam, the same group of individuals after they returned to the United States significantly changed several of their self-reported beliefs.¹⁰ Of the seven predictions stated earlier, five are confirmed and two are not confirmed inasmuch as five out of seven scales are significant at least at the .05 confidence level pertaining to the predicted increase or decrease.¹¹ Both the group of 80 enlisted infantrymen and the control group had significant changes in their response to the JAIM questionnaire when it was administered on the second occasion. While differences were generally similar for both the group of 80 enlisted

¹⁰Zero is the norm for Table 3 (pertaining only to the standard scores). This was determined by setting zero in place of the average scores representing over 50 occupational groups in the United States. Theoretically, no particular occupational group exactly fits the norm. The purpose of this norm is to establish a "bench mark" so that the scores different groups of people receive, will have relative meaning. It should be recognized that major differences in response may be essential for top performance in different environments. Therefore, the reader should not make a general assumption that "lowest" indicates "worst."

¹¹Confidence level refers to probability theory. A confidence level of .05 would indicate that this finding could only happen by chance one time out of twenty.

TABLE 3

DIFFERENCE IN SEVERAL SELF-REPORTED BELIEFS FOR A GROUP OF 80 MEN
BETWEEN TIME OF TESTING IN VIETNAM AS A MEMBER OF AN INFANTRY
BATTALION AND RETESTING IN THE UNITED STATES
APPROXIMATELY ONE YEAR LATER

| Scales | Test Group | | | | | Control Group ^a | | |
|---|--|--------------------------------|-------------------------|---------------------------------|-----|----------------------------|--------------------|-----|
| | Predicted Increase or Decrease ^b | t-test Results ^c | Prediction Confirmed | Standard Scores ^d | | t-test Results | Standard Scores | |
| | | | | Vietnam | US | | Vietnam | US |
| Identifies With Authority | - | -1.59 | No | -12 | -31 | -.04 | -6 | -7 |
| Prefers Activ- ity Frequent Change | + | +2.45** | Yes | -29 | -4 | -0.42 | -7 | -12 |
| Values Approval From Others | - | -2.72*** | Yes | 16 | -14 | -1.81* | -6 | -26 |
| Prefers Social Interaction | - | -3.62*** | Yes | -3 | -46 | -1.44 | -6 | -24 |
| Influences by Being Self- Assertive | + | +.69 | No | 38 | 45 | .95 | 51 | 62 |
| Prefers Group Participation | - | -1.83* | Yes | 0 | -23 | -2.19* | 24 | -8 |
| Values Status Attainment | + | +2.04* | Yes | -23 | -1 | -.097 | -6 | -16 |

^aControl group consisted of 53 individuals assigned to a relatively safe rear area in Vietnam during the same time period members of the test group were assigned to the rifle companies of an infantry battalion engaged in combat in Vietnam. Both the test group and the control group were retested in the United States approximately one year later via mail.

^bPlus (+) indicates a higher average score for the group of individuals when retested. Minus (-) indicates a lower average score for the group of individuals when retested.

^cComputed on the basis of a one-tailed distribution.

*p < .05

**p < .01

***p < .001

^dAverage of norm group has been equated to zero and the standard deviation to 100.

infantrymen and the control group, the intensity of the changes were noticeably stronger in the case of the group of 80 enlisted infantrymen. In analyzing the changes that are applicable for both the group of 80 enlisted infantrymen and the control group, it is considered that Americans stationed in Vietnam are confronted with influences that require them to assume different roles from those to which they had been accustomed. It is conceptualized that, to some degree, many of these new roles probably became part of their personality and also that these new roles are responsible, at least in part, for changes in their self-reported beliefs. It was further conceptualized that on returning to the United States, individuals in both groups further changed their self-reported beliefs. Specifically, the results of the predictions pertaining to the group of 80 enlisted infantrymen are interpreted as follows:

1. Differences Attributed to Influences by the Formal Organization.

a. In many instances, the survival in combat of the individuals in the group of 80 enlisted infantrymen depended on the competence of their immediate superior. It was predicted that individuals would identify less with authority after they returned to the United States. Results indicated that individuals retested in the United States indicated a decrease in the value they placed in the scale "Identifies With Authority." This decrease, however, was not statistically significant and the prediction was not confirmed.

b. During 1969, the nature of tactical operations in Vietnam required frequent changes in daily operational plans. Many of the soldiers represented in this study expressed a dislike for these constant changes.

Persons scoring low on this scale indicated that they like to finish one task before starting another. After returning to the relatively conventional influences of the United States, there was a significant increase in the value placed in the scale "Prefers Activity Frequent Change."

The prediction concerning this scale was confirmed. (See Chart 5.)

2. Differences Attributed to Influences by the Informal Organization.

a. The infantrymen, while stationed in Vietnam, tended to have a high degree of concern for the approval of their actions by their friends. Persons scoring high on the scale "Values Approval From Others" considered it important to obtain the approval of their peers. In addition, they believed that it is most important to have congenial coworkers, to be well-liked, and to please others through their work. As predicted, there was a significant decrease in the scale "Values Approval From Others" after the individuals returned from Vietnam. It is speculated that the exceptionally high concern for what their friends thought of them during combat accounts for this difference as well as the need for teamwork and mutual support in time of stress. (See Chart 6.)

b. The group of 80 enlisted infantrymen placed an unusually high value on their interactions with their peers. It is understandable that this value would decrease after these individuals returned from Vietnam. Results indicated that there was, in fact, a significant decrease in the scale "Prefers Social Interaction" between the time of testing in Vietnam and retesting approximately one year later. The prediction pertaining to "Prefers Social Interaction" was confirmed. (See Chart 7.)

CHART 5

SOLDIERS RETURNING FROM VIETNAM: EXTENT OF THEIR PREFERENCE FOR FREQUENT CHANGES IN THEIR ACTIVITIES

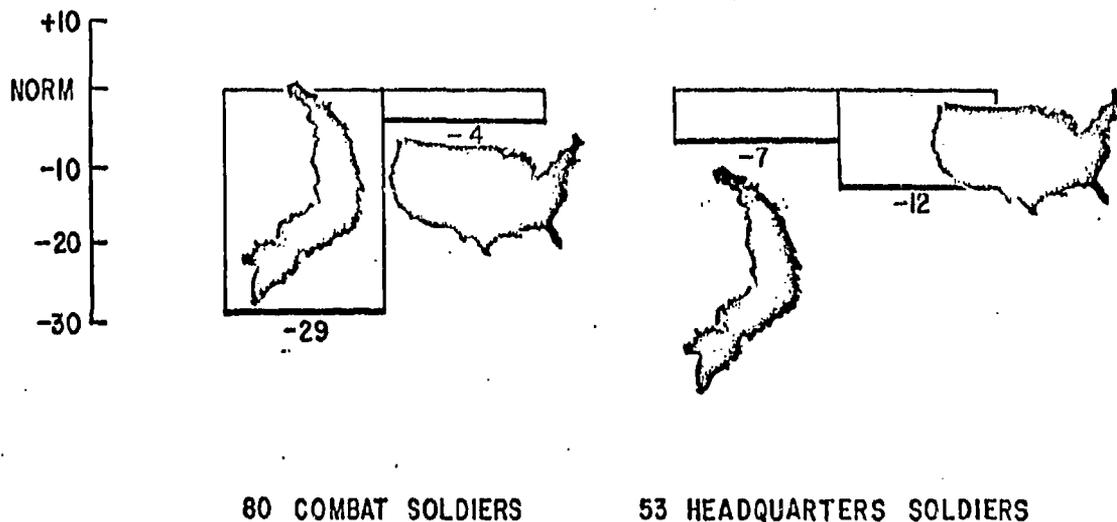


CHART 6

SOLDIERS RETURNING FROM VIETNAM: EXTENT OF THEIR VALUE FOR THE APPROVAL FROM OTHERS

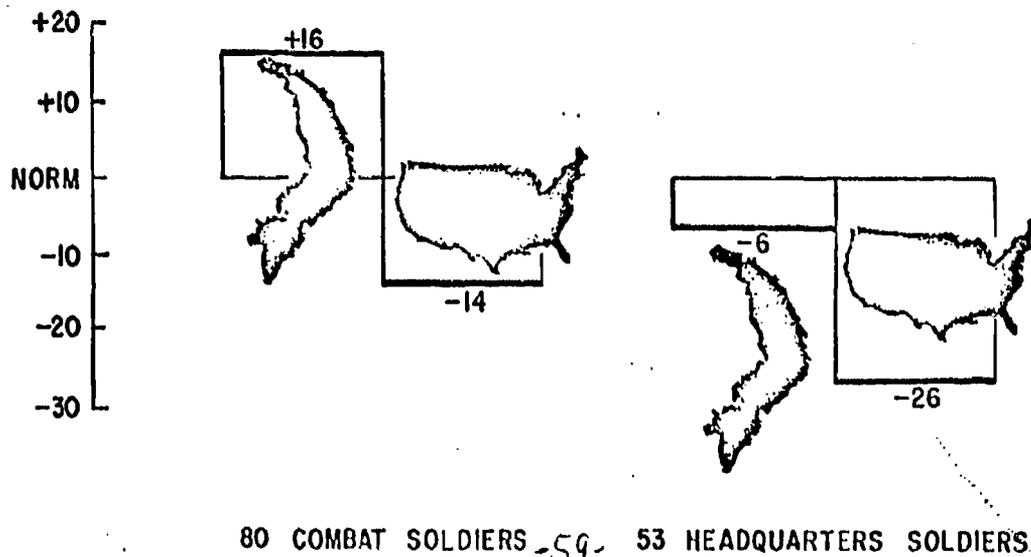


CHART 7

SOLDIERS RETURNING FROM VIETNAM:
EXTENT OF THEIR PREFERENCE FOR SOCIAL INTERACTION

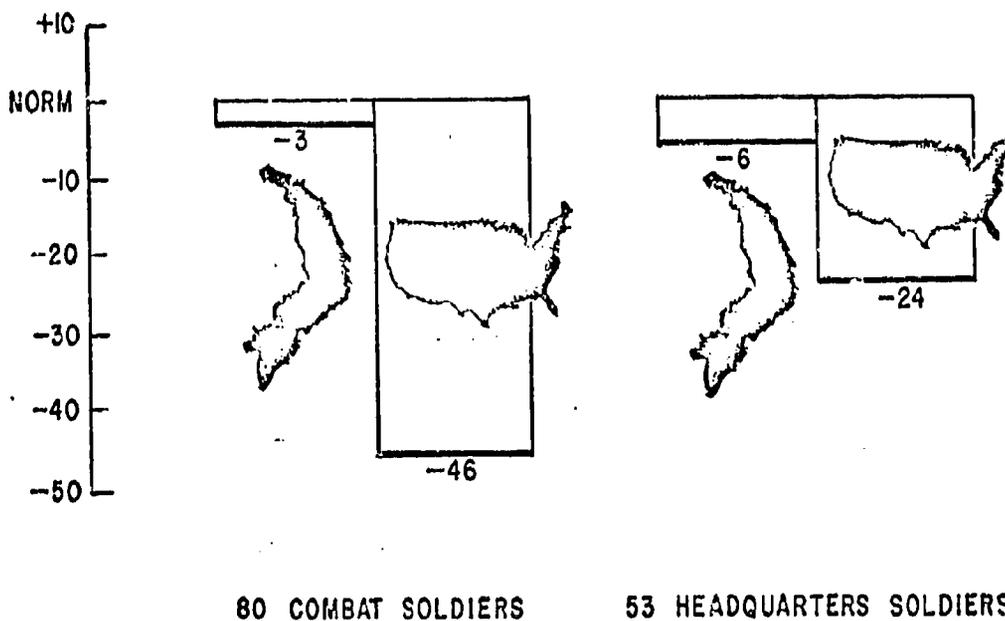
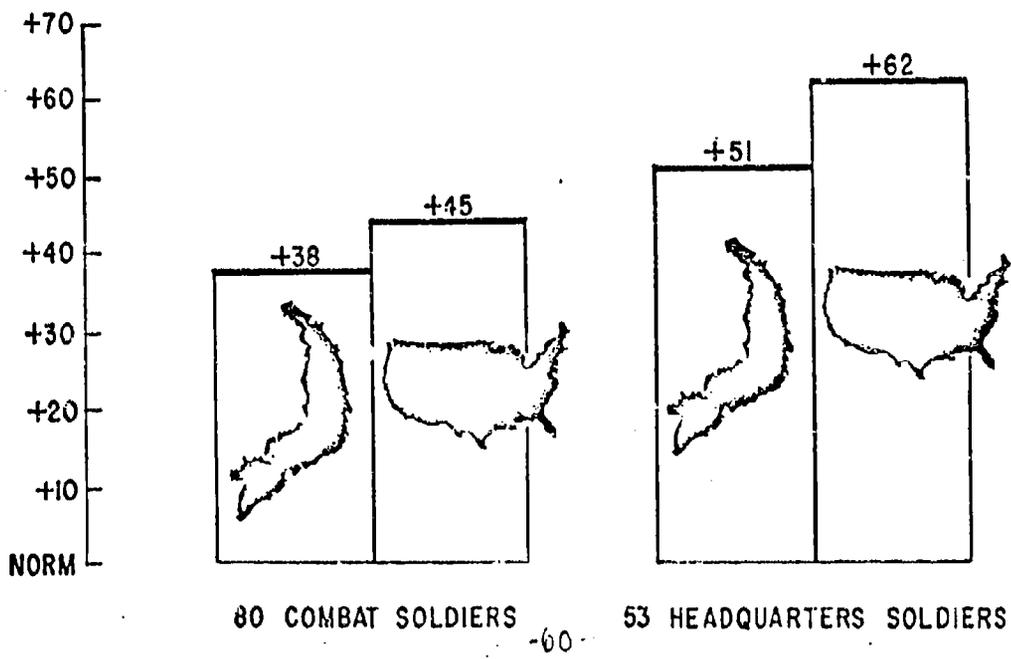


CHART 8

SOLDIERS RETURNING FROM VIETNAM;
EXTENT OF SELF-ASSERTIVENESS



c. It was predicted that when individuals return from Vietnam, their increased independence would lead them to place a higher value on being self-assertive. The scale "Influences by Being Self-Assertive" measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others. Persons scoring high indicated that it is important to avoid being diverted from doing what is right in order to please someone; that they do better under competition or stress; and that they are proficient in athletic games. In Vietnam, it seemed that a high value was placed on teamwork while conversely a low value was placed on competition among individuals. The results indicated that, compared with their answers in Vietnam, individuals having returned to the United States placed a slightly higher value on the scale "Influences by Being Self-Assertive;" however, this increase was not found to be statistically significant and the prediction was not confirmed. (See Chart 8.)

d. The nature of events in Vietnam encouraged individuals to identify with a group of peers. The scale "Prefers Group Participation" measures the degree to which the individual identifies himself with a highly valued group. Persons scoring high indicated that they like best to work as a member of a group and do not like to work apart from other people. As predicted, there was a decrease in the value given to the scale "Prefers Group Participation" after these individuals returned from Vietnam. (See Chart 9.)

e. Individuals in the test group observed in Vietnam did not appear to place any particular value in the attainment of status. The

CHART 9

SOLDIERS RETURNING FROM VIETNAM: EXTENT OF THEIR PREFERENCE FOR GROUP PARTICIPATION

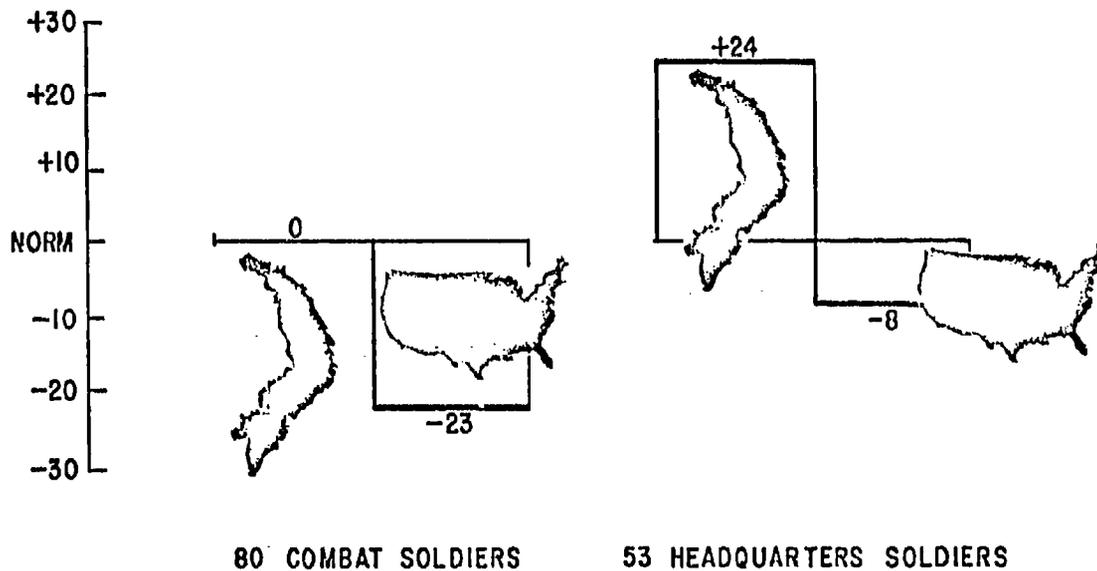
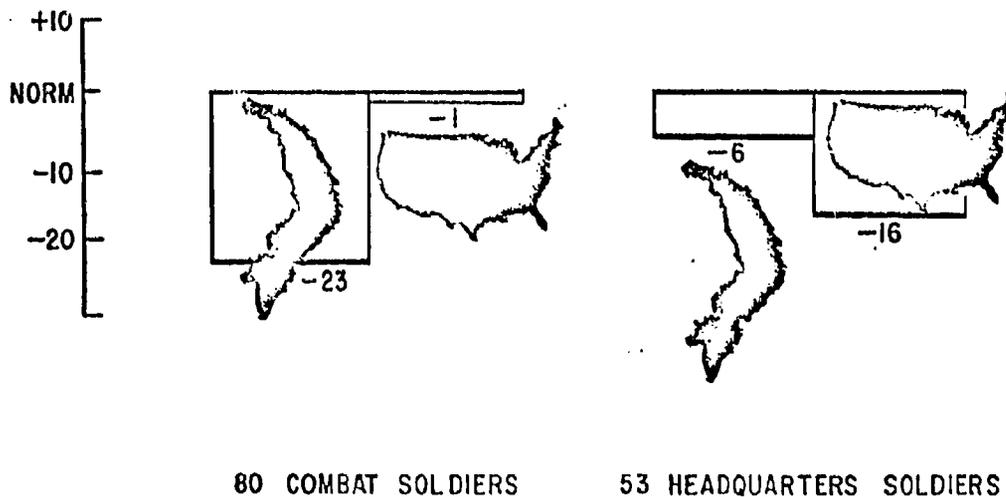


CHART 10

SOLDIERS RETURNING FROM VIETNAM: EXTENT OF THEIR PREFERENCE FOR STATUS



scale "Values Status Attainment" measures the degree to which the individual values himself by his achievement of the status symbols established by his culture. Persons scoring high on this scale indicated that they prefer to be considered ambitious and successful; like to have a job which is recognized to be important or desirable; and think that the ideal job is one which shows they were a success and had achieved high status and prestige. It was predicted that there would be a significant increase in the self-reported evaluation of the scale "Values Status Attainment" when individuals returned to the United States. This prediction was confirmed.

In contrast, the control group, while observed in Vietnam, seemed to place a relatively higher value on status. It is interesting to note that the standard scores for both groups in the United States moved in the opposite direction from those scores in Vietnam. (See Chart 10.)

Summary of Findings

Compared with after they returned to the United States, the same group of individuals, when they were stationed as infantrymen in Vietnam, placed a significantly higher value on the approval from others, social interaction, and group participation, and conversely a lower value on the attainment of status. While both the group of 80 enlisted infantrymen and the control group changed to some degree after they returned to the United States, the group of 80 enlisted infantrymen experienced a greater degree of change which is attributed to the removal of the influences of combat. The nature of these changes clearly indicates, as pertains to

this particular study, that the effects of combat on the beliefs of infantrymen are not detrimental to society. An analysis of the data concerning this study indicates that when the members of the group of 80 enlisted infantrymen were in combat, they tended to be more sensitive to the needs of their friends. Perhaps the daily stress of combat and the adverse environmental conditions of the Mekong Delta encouraged a feeling of comradeship that was welcome in Vietnam, but no longer needed after these men returned to the United States. This feeling of comradeship, and perhaps the possibility of death in combat, may be responsible, at least in part, for this sensitivity. It seems ironic that the horrors of war may cause individuals at the time to become more sensitive in their interactions with their friends. It is perhaps unfortunate that these desirable qualities do not tend to carry over substantially after these men return to the United States.

REFERENCES

1. Levy, Charles. "The Violent Veterans." Time, March 13, 1972.
2. Likert, Rensis. The Human Organization; Its Management and Value. New York: McGraw-Hill, 1967.
3. Report of Special Commission of Civilian Psychiatrists Covering Psychiatric Policy and Practice in the United States Army Medical Corps, European Theater, April 20 to July 8, 1945.
4. Stouffer, Samuel A., et. al. "The American Soldier: Combat and its Aftermath," Vol. II. Studies in Social Psychology in World War II. Princeton, New Jersey: Princeton University Press, 1949.

CHAPTER 4

LEADERSHIP TECHNIQUES FOR COPING WITH FATIGUE IN COMBAT

This chapter will emphasize the application of leadership for coping with fatigue. After the elaboration of several practical leadership techniques, the discussion will focus on the behavioral dimensions of fatigue and how these dimensions relate to the development of satisfaction and the reduction of dissatisfaction. This chapter will conclude by extending the impact of several behavioral dimensions to include such long range decisions as deciding to make the Army a career.

It seems that an individual's attitude towards following orders has an important bearing on his competence, his ability to hold up in high stress and fatigue situations, and even in his determination whether or not he will decide to make the Army a career. For example, a "gung-ho" career soldier would probably hold up better under conditions of fatigue in sustained combat operations than an individual physiologically similar who dislikes the Army and is determined to leave the Army as quickly and as easily as possible.

In developing a number of practical leadership techniques for coping with fatigue in combat, it may be wise to start with several definitions.

Sleep Deprivation: Within the framework of this report, "sleep deprivation" is simply defined as going without sleep. A major problem for the US Army in connection with sleep deprivation is worthy of note:

Military equipment capable of operating for 48 hours or longer is now being developed. When this equipment becomes available, military personnel will be able to participate in sustained combat for longer periods of time than has ever before been possible. While technological advances

will enable this equipment to perform reliably over extended time periods, little is known about the effects of sustained combat on the personnel who will operate the equipment. If they are unable to maintain a satisfactory level of performance, then the new equipment will not be able to function at its maximum potential. New training programs will need to be developed, or changes in military doctrine will be necessary.¹

Combat Fatigue: The condition of an individual who is seriously suffering from the stress of battle is combat fatigue. It is viewed within the total context of stress, and physical and mental fatigue. The following opinion will be used in this study:

Combat fatigue broadly describes the state of a man who is seriously suffering from the stress of battle. It might be likened to the fatigue that can follow any extreme mental or physical stress and to the staleness that may occur in the over-worked or over-trained athlete. . . .²

Combat fatigue must not be confused with fear. Fear may contribute to it but fatigue, to a serious degree, is a physical state which can be prevented and should be rare. Fear on the other hand is the normal reaction of most men to danger. This should be realized because fear that is hidden and merely suppressed can be more dangerous than fear that is recognized, faced and overcome.

There is no disgrace in feeling fear but nothing can ever condone giving way to it.²

Morale, Discipline, and Esprit de Corps: The following definitions from FM 22-100 Military Leadership will pertain to the following three terms:

Morale: The state of mind of the individual. This depends upon his attitude toward everything that affects him.

¹Eugene H. Drucker, L. Dennis Cannon, and J. Roger Ware, "The Effects of Sleep Deprivation on Performance Over a 48-Hour Period," HumRRO Technical Report 69-8, Washington, D.C., May 1969.

²"The Land Battle," Part 1, British Army Pamphlet: Tactics, 1960, p. 101.

Discipline: The individual or group attitude that insures prompt obedience to orders and initiation of appropriate action in the absence of orders.

Esprit de Corps: Loyalty to, pride in, and enthusiasm for a unit shown by its members.³

The following comment concerning morale should be recognized: "All the commanders and theoreticians of military affairs in the past also assigned great importance to the morale factor." -- Marshal of the Soviet Union K. E. Voroshilov.

Practical Leadership Techniques
For Coping With Fatigue in Combat

1. Effective training and experience can minimize the impact of fatigue in combat. However, it must be recognized that individuals have limitations in their physical capability to function without a minimum amount of rest. "Training will teach the soldier to respond from force of habit to specific battle orders, even though battle commands often cannot be given as in training. It will become second nature for him to carry out his own job as a member of the fighting team."⁴

2. Men in combat who are excessively fatigued should be identified and then relieved temporarily. By "excessive" fatigue it is meant that their presence on a combat operation would be counterproductive to the goal of the unit.

3. Effective leadership which encourages the self-confidence of subordinates is essential for coping with fatigue in combat. Within the overall framework of practical leadership techniques used for coping with

³US Department of the Army, Field Manual 22-100: Military Leadership, November 1965.

⁴"The Infantry Platoon in Battle," Vol. IV, British Army Pamphlet: Tactics, 1960, p. 3.

fatigue in combat, the following integration of morale and discipline to achieve effective leadership is worth considering.

Morale:

Field Marshal Montgomery has stressed the supreme importance of morale in war. Morale is founded on discipline, leadership and self-respect. It is the degree of confidence in the mind of a soldier when he identifies himself with a group, accepts its aims and works hard to achieve them. In a platoon, therefore, a soldier's morale means how he feels about himself, his job and the rest of his platoon. If he feels that he is accepted as a member of the platoon, that he is a useful member of it and has a worthwhile job which he does well, the chances are that he will be a happy and enthusiastic soldier. If all the members of a platoon feel like this and are well trained and well led, they will pull together as an efficient team. Each and every man will be determined to avoid letting down either his own friends or the reputation of his platoon, company or battalion. His morale will be high.

Discipline:

Discipline helps the soldier to overcome fear and fatigue. It is founded on self-respect, self-control and a sense of duty. It enables a soldier to carry out orders without regard to his own safety in the interests of the other members of his platoon. It calls for a high standard of leadership. Good discipline results as much from cheerful co-operation as from plain obedience. If morale is high, many a man will impose a much more exacting discipline on himself than anyone else can impose on him.

Leadership:

Leadership amounts to winning the confidence and co-operation of men to such an extent that they will readily and cheerfully undertake any task given to them. Men expect their leaders to set a good example in every way, to be efficient, just and genuinely interested in their personal welfare. Junior leaders will not gain the confidence of their men unless and until they measure up to these standards.⁵

⁵"The Infantry Platoon in Battle," Vol. IV, British Army Pamphlet: Tactics, 1960, p. 3.

4. Rest should be scheduled, particularly for commanders.

The best of men can wear out, particularly when regular rest and sleep are impossible, and it is the duty of all officers to spot men who are not wearing well. The two broad categories of men who may wear badly are:--

(a) The young immature soldier who is unsure of himself.

(b) The seasoned old soldier on whom others have relied and who has sustained them at the cost of drawing too heavily on his own resources.

The prevention of combat fatigue depends on:--

(a) Confident leadership which spreads self-confidence in those led.

(b) Organized rest, particularly for Commanders.

(c) Special measures to obtain rest, possibly assisted by the Medical Officer.⁶

5. Commanders and trainers alike must consider the importance of the attitudes of individual soldiers. In training prior to combat, attitudes can be shaped into a configuration that is responsive to leadership in combat. Conversely, poor attitudes unchanged by training or developed by inadequate training, can cause unfavorable consequences for the unit particularly when the individual, with these poor attitudes, is subjected to the stress and fatigue of combat. Studies pertaining to changes in self-reported beliefs described earlier in this report are substantiated by the following reference:

The Department of the Army has conducted a series of studies on the willingness for combat of the American soldier. These studies support the belief that attitudes and performances during training are related to performance in combat, and that individuals who had the least satisfactory attitude during training later tended to be relatively poor combat soldiers. The results of these surveys also showed

⁶"The Land Battle," Part 1, British Army Pamphlet: Tactics, 1960, p. 101.

that at least 24 percent of the men said that they would rather not, or felt they could not, kill an enemy soldier. It is vitally important that the leader in training be sensitive to the men's attitudes and strive to build an attitude of confidence in their combat skills.⁷

6. Commanders must take action to prevent the ill effects of rumors, fear, panic, and discouragement. Fatigued troops will have a lowered resistance against these potential problems. Much can be accomplished by preventative measures to limit leadership problems of this nature before they occur.

Factors adversely affecting the combat potential of a command include fear, panic, discouragement, isolation, and lack of confidence by the individual in himself, in his unit, or in his leaders. The presence of fear and a tendency to panic vary with changes in condition of the troops, in degree of tactical success, and in the physical conditions on the battlefield. Normally, it is the commander of the small unit who must sense the development of situations which may be interpreted by the troops as critical, and who must take personal action to eliminate conditions which cause fear and panic. However, it is largely the commander of the major unit who trains and indoctrinates the small unit commander, and who initiates policies that later help him to counteract fear and panic.⁸

7. The "spirit of the offense" is a practical technique to reduce the impact of fatigue. In the "spirit of the offense," emphasis is placed on the development of a desire to close with and destroy the enemy. This attitude towards aggressiveness can be developed prior to combat.

"Aggressive action is essential to secure objectives with minimum combat losses. The problem of maintaining aggressiveness is intensified during periods of inactivity."⁹

⁷US Department of the Army, Field Manual 22-100: Military Leadership, November 1965, p. 39.

⁸Ibid., p. 39.

⁹Ibid., p. 42.

8. Units weakened by excessive amounts of stress and fatigue caused by sustained combat operations must be restored to fighting effectiveness.

The following actions will help a commander to rebuild the combat effectiveness of a weakened unit:

- a. Keep informed on the status of personnel, weapons, equipment, and training so replacements of personnel and equipment are made rapidly, and provisions are made for the proper integration of new men.
- b. Personally observe units in action to better assess their capabilities. Require additional training of units if the situation warrants.
- c. Stress improvement of battle techniques and disseminate proven methods to the units.
- d. Carefully observe the physical, emotional, and mental state of the troops. Disseminate information on enemy casualties, the number of prisoners captured, and the amount of enemy equipment destroyed.
- e. Improve the health and welfare of the troops by emphasizing discipline in the field to reduce unnecessary losses from all causes. These may include trench-foot, disease, and poor field sanitation as well as enemy fire.
- f. Insure that the chain of command remains intact by prompt replacement of individuals within the chain of command who are lost in action.
- g. Orient troops on the situation, pointing out that inactivity or defense is always a prelude to offensive combat.
- h. Commend and reward aggressiveness on the part of individuals and units. Express confidence in the unit's combat ability.
- i. Provide for and insure the proper use of the fire support plan.¹⁰

9. Commanders must prevent the deterioration of confidence and aggressiveness in isolated units in combat. It is assumed that members of

¹⁰Ibid., pp. 42-43.

these units will be confronted with a high level of stress and fatigue.

Specific steps that a higher level commander can take are as follows:

- a. Never let a unit think it has been abandoned.
- b. Immediately furnish all possible fire support.
- c. Make a positive attempt to assist the isolated unit.
- d. Reconstitute a chain of command, if necessary.
- e. Keep the unit informed of all actions being taken to assist it.¹¹

The actions of the commander of the isolated unit will play a key role in the success of the unit. Some of the actions which he should consider are:

- a. If communications have been disrupted, make every effort to restore contact with your parent unit. Your men will feel much more confident if they realize that communication has been established with the higher unit. They will feel that requests for supplies, supporting fires, and air strikes will be answered in an effort to assist in extricating them from their isolated situation.
- b. Personally visit subordinate units and give them assurance in their ability and confidence to accomplish their mission.
- c. Issue instructions without overtones of self-pity or defeatism to the unit that it is now, and will be for some time, entirely on its own and must be prepared to take care of itself.
- d. Direct that battlefield discipline be strictly enforced and have the unit reserve rehearse the counterattack plan.
- e. Give special attention to the conservation of strength, food, and ammunition.
- f. Insure that your men are not just sitting around worrying about their plight. Keep them busy doing worthwhile work. These actions will help maintain aggressiveness and combat effectiveness, and the mental, emotional, and physical condition of your troops will be improved. A well-trained unit that

¹¹Ibid., p. 43.

is isolated will suffer no loss of morale or esprit; rather, it will rise to the occasion. Units must expect isolated situations, and they must be trained to fight independently in such circumstances.

g. Insure that necessary reorganization is accomplished and that the chain of command is re-established.

h. Insure that your fire planning has been properly accomplished.¹²

Behavioral Dimensions of Fatigue

A number of studies of human behavior seem to focus on satisfaction and dissatisfaction. One prominent study typical of many others in this particular field is by Frederick Herzberg. He considers that subordinates are motivated by the development of satisfaction. In developing satisfaction, he views job enrichment as a continuous leadership function. In the motivation of subordinates, he considers that a great deal of effort today is wasted on the reduction of dissatisfaction, and that this wasted effort should be applied to the building of satisfaction. In addition, he takes the position that satisfaction is not always the opposite of dissatisfaction. In an extensive research program, he was able to show that, by reducing dissatisfaction, we may not be building satisfaction. In an investigation of factors affecting job attitudes, Herzberg sampled the views of 1,685 employees. He found that their dissatisfaction was attributed to the following:

1. Company policy and administration.
2. Supervision.
3. The relationship with their supervisor.
4. Conditions of the job.

¹²Ibid., p. 43.

5. Salary.
6. Their relationships with their contemporaries.
7. Their own personal life.
8. Their relationship with their subordinates.
9. Status attributed to their job position.
10. Overall security.

In contrast, the factors that were attributed to satisfaction on the job were as follows:

1. Achievement on the job.
2. Recognition for the work that they perform on the job.
3. Performing the work itself.
4. Their own responsibility in accomplishing their particular task.
5. Their advancement and potential for further advancement.
6. Their own particular professional growth as pertaining to performing their particular job.

In analyzing the factors that cause satisfaction and those factors that cause dissatisfaction, it appears that the most important motivators are intrinsic motivators, those motivators that provide satisfaction to the individual by accomplishing the work itself. For example, the achievement on the job of a "job well done" and recognition for excellence in a job position are definitely factors of satisfaction associated with intrinsic motivation. In contrast, dissatisfaction seems to focus on extrinsic types of motivation dealing with such things as salary, company policy, and administration. It seems unfortunate that in many job settings, both within a military framework and a civilian setting, that the majority

of the motivational effort seems to be devoted to the reduction of dissatisfaction. For example, if there is no water cooler in a particular office and a water cooler is added, dissatisfaction may be reduced; however, subsequent motivation to accomplish a task is not associated with this reduction of dissatisfaction. In addition, motivation to reduce dissatisfaction very early reaches a point of diminishing returns. Thus, if in an office, a second water cooler were installed, or a third, or fourth, they would soon lose their value as reducers of further dissatisfaction or as any other form of motivators. In contrast, a system of job enrichment that develops a work situation where an individual can receive recognition on the job and can have some form of meaningful achievement on the job, will in fact, act as a motivator to a greater extent than the reduction of dissatisfaction. It must be recognized, however, that it is a difficult leadership task to develop a situation that will increase satisfaction on the job.

In attempting to develop job enrichment, leaders often make the mistake of job-loading. "In attempting to enrich an employee's job, management often succeeds in reducing the man's personal contribution, rather than giving him an opportunity for growth in his accustomed job. Such an endeavor, which I shall call horizontal job-loading (as opposed to vertical loading, or providing motivator factors) has been the problem of earlier job enlargement programs. This activity merely enlarges the meaninglessness of the job."¹³

An example of this procedure would be to try to challenge an employee by increasing the required output from a meaningless job. Thus, if a

¹³Frederick Herzberg, "One More Time: How Do You Motivate Employees?," Harvard Business Review, January-February 1968, pp. 53-62.

worker is to attach thirty latches a day to an item on an assembly line, requiring him to attach sixty latches a day would be meaningless in terms of job enrichment. Here, by doubling the required output of a meaningless task, no intrinsic motivation was provided. On the contrary, the workload was merely enlarged.

In considering the behavioral dimensions of fatigue, satisfaction and dissatisfaction play an important role. The challenge to the commander is to develop satisfaction, rather than waste his resources by overemphasizing the removal of dissatisfaction. It is in these areas that a shift in techniques can have an important bearing in coping with fatigue in sustained tactical operations.

Behavioral Dimensions in Relation to a Preference
for a Long Range Association with Army

A career soldier with a favorable attitude towards the Army probably differs considerably in several psychological dimensions from an individual who departs from the Army as quickly as possible. These differences, in behavioral terms, have implications that are related to the ability to cope with stress and fatigue in combat. The psychological aspects of morale, discipline, and an aggressive attitude such as the "spirit of the offense," are interrelated and play an important role in an individual's desire to cope with stress and fatigue.

There seems to be a common thread pertaining to retention that is found by examining: (1) the differences in self-reported beliefs between a group of 358 captains who remained in the Army and a group

of 919 former captains who departed, and (2) the reasons why the one group departed. The common thread is that the beliefs of these two significantly different groups were compatible with their career decisions. In addition, it was considered that the group of men who remained in the Army was better qualified to cope with the current requirements of the organization.

1. Self-Reported Beliefs.

a. The group of 358 individuals who decided to remain in the Army placed a significantly higher value on the following self-reported beliefs:

- (1) To believe in moral absolutes.
- (2) To accomplish things in a conventional way, and when things are going smoothly, not to make changes which will cause a disruption.
- (3) To exert leadership in interpersonal situations and to get results through persuasion or negotiation.
- (4) To pursue their own goals when they are in competition with the goals of others.
- (5) To counterattack when someone acts towards them in a belligerent or aggressive manner.
- (6) To make decisions alone.
- (7) To interact with other people.
- (8) To plan and supervise the work of other people.
- (9) To be actively engaged in work providing a lot of excitement and a great deal of variety.

(10) To work as a member of a group and not apart from other people.

(11) To conform to the role requirements of society.

b. The group of 919 individuals who decided to depart from the Army placed a significantly higher value on the following self-reported beliefs:

(1) To have self-confidence.

(2) To withdraw when someone acts toward them in a belligerent or aggressive manner.

(3) To use systematic methodical methods for processing information and reaching decisions.

(4) To analyze problems.

(5) To achieve the status symbols established by their culture.

(6) To obtain the approval of others.

(7) To attain intellectual achievement.

2. Reasons for Departure. A major reason why many company grade officers depart from the Army is that they consider that their potential for a successful Army career is diminishing. It seems ironic that many of their self-perceived mistakes in performance or in the assignments they receive are not actually relevant. It appears that considerable progress could be made by dispelling many of their imagined career management problems. There is strong evidence to support the view that conditions that increase the actual and self-perceived potential of company grade officers will also tend to

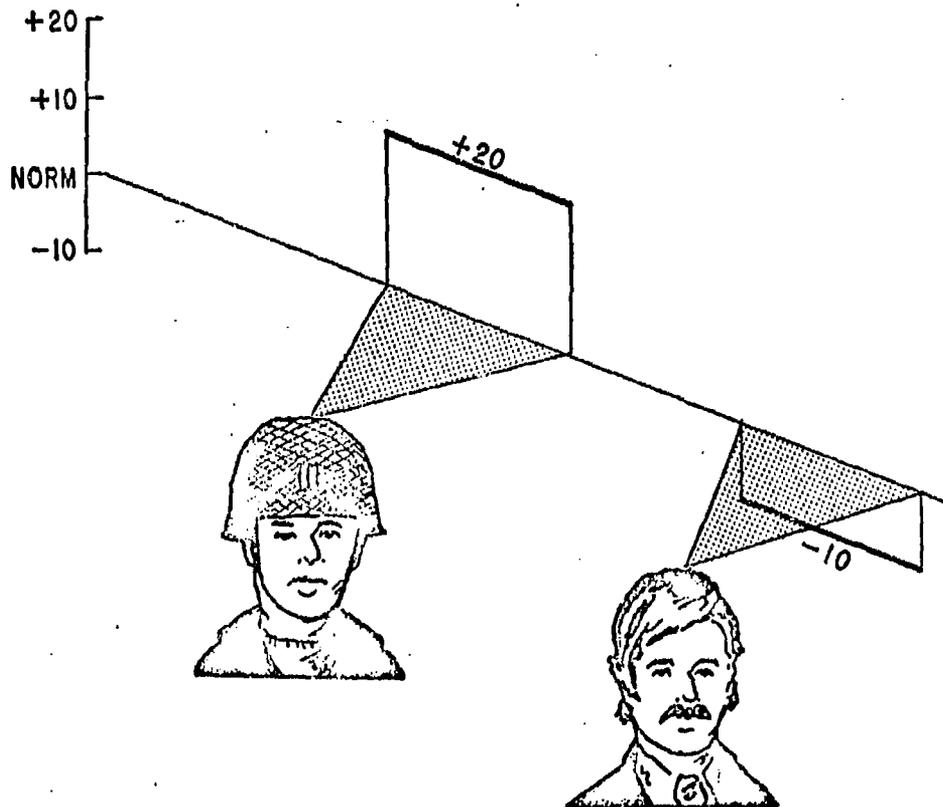
increase the retention of these individuals in the Army. Other major reasons why members of this group departed from the Army are as follows:

- a. They did not intend to remain on active duty beyond that time required to fulfill their obligations.
- b. They wanted to avoid repeated tours of duty in Vietnam.
- c. They wanted to consider the desires of their wife and the welfare of their family.
- d. They wanted to complete their education.
- e. They were dissatisfied with current personnel management procedures.
- f. They were dissatisfied with the performance of their leaders.
- g. They felt a conflict of their goals with the requirements of the organization.

3. Major Goals in Life. While both groups were significantly different in many respects, it is interesting to note that their major goals in life were almost identical. A consolidation of goals for both groups reveals that the most often stated major goal in life is to be successful in their career. This tends to strengthen the above discussion concerning the importance of success in a career. Many other major goals in life that were stated tended to be idealistic and to reflect attitudes of their age group.

CHART II

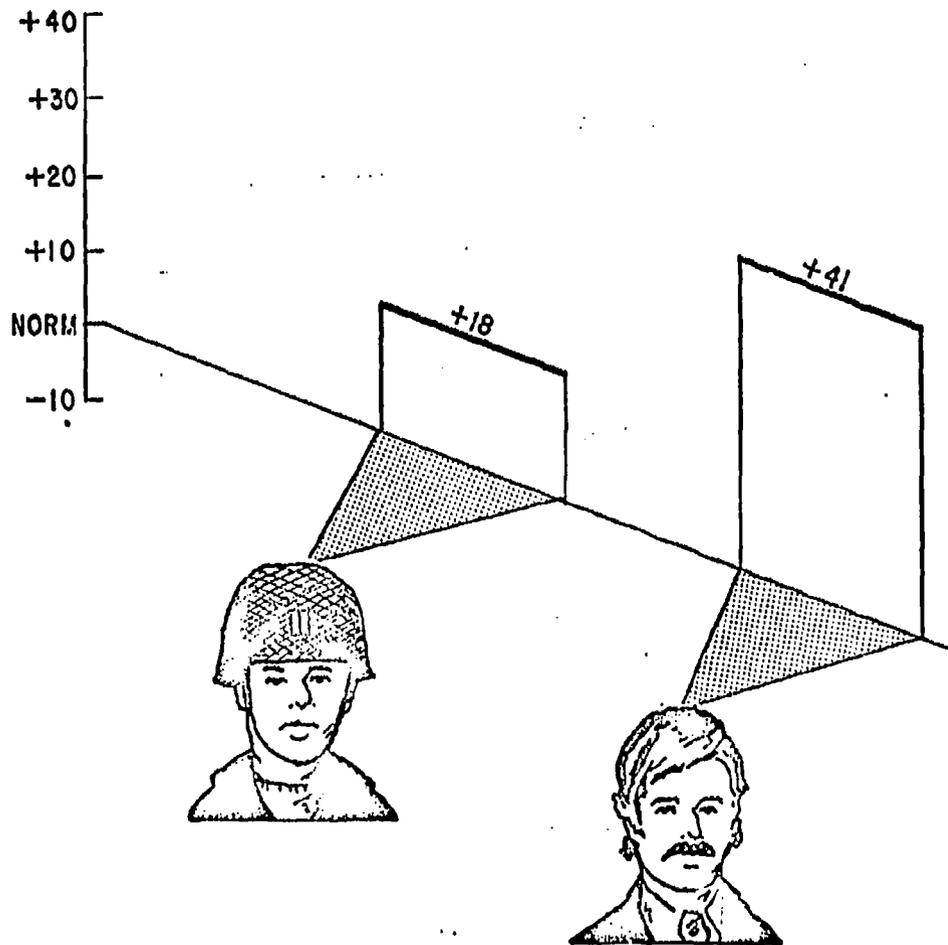
COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Extent of Their Belief in Moral Absolutes *



* Persons scoring high believe that moral principles come from an outside power higher than man; and that it is most important to have faith in something. Individuals scoring low believe that moral principles are not absolute and unchanging but depend upon circumstances.

CHART 12

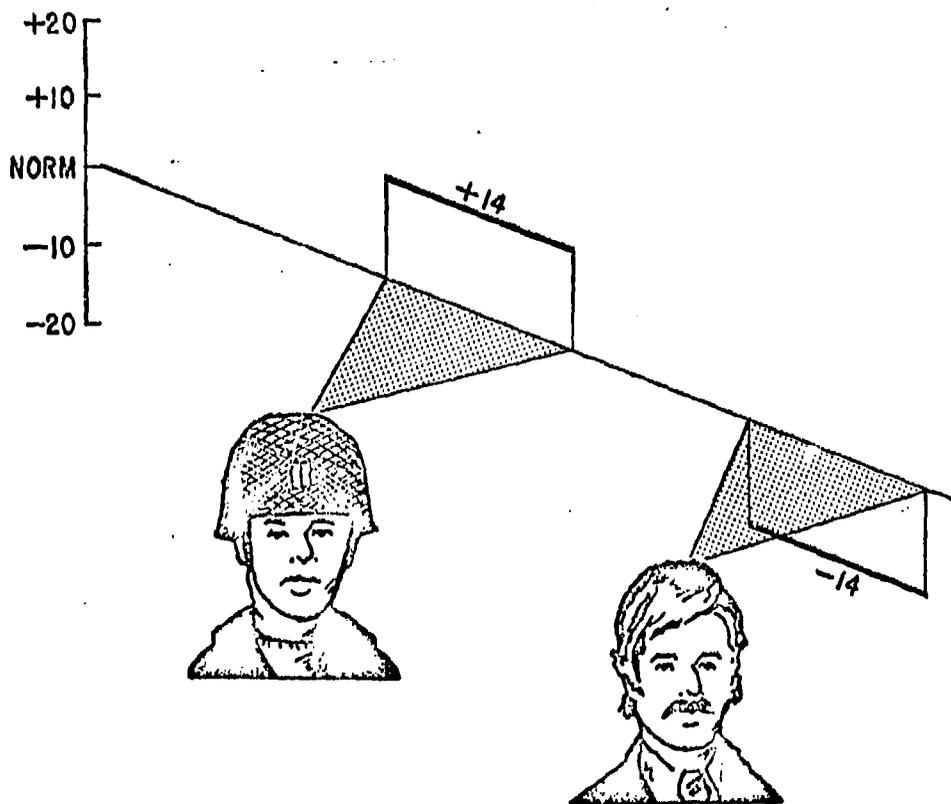
COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Preference for Problem Analysis *



* This scale measures the degree to which the individual likes to analyze situations and develop ingenious solutions to problems. Persons scoring high prefer to be considered ingenious; like to develop new ideas and approaches to problems and situations and like a job which permits them to be creative and original.

CHART 13

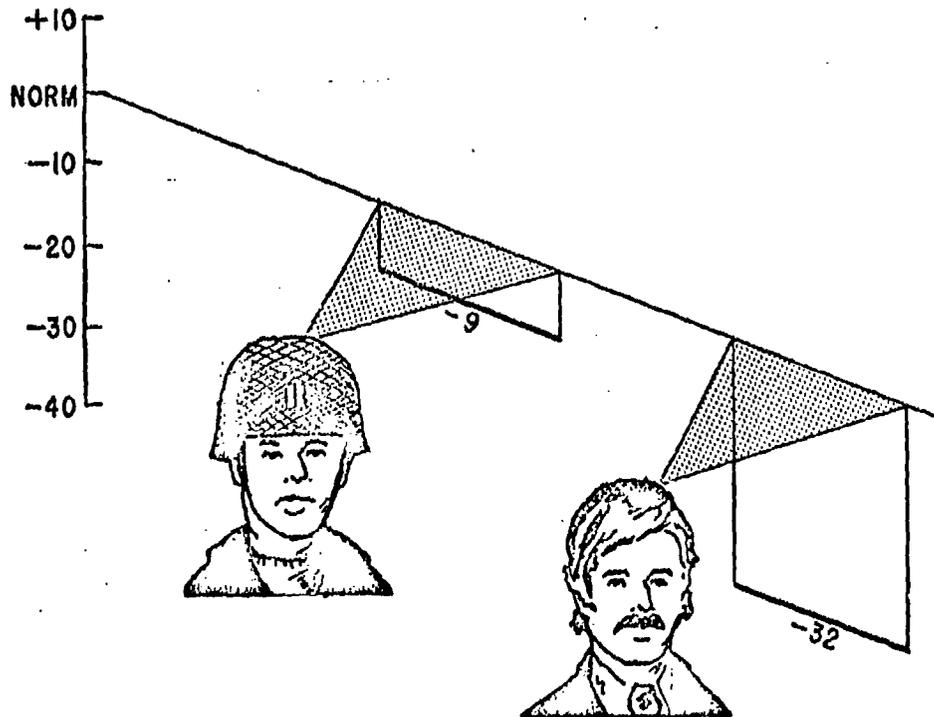
COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Preference for Social Interaction *



* This scale measures the degree to which the individual likes work involving interactions with people. Persons scoring high attend parties or social gatherings once a week or oftener; do not like to work apart from other people; and frequently entertain groups at home.

CHART 14

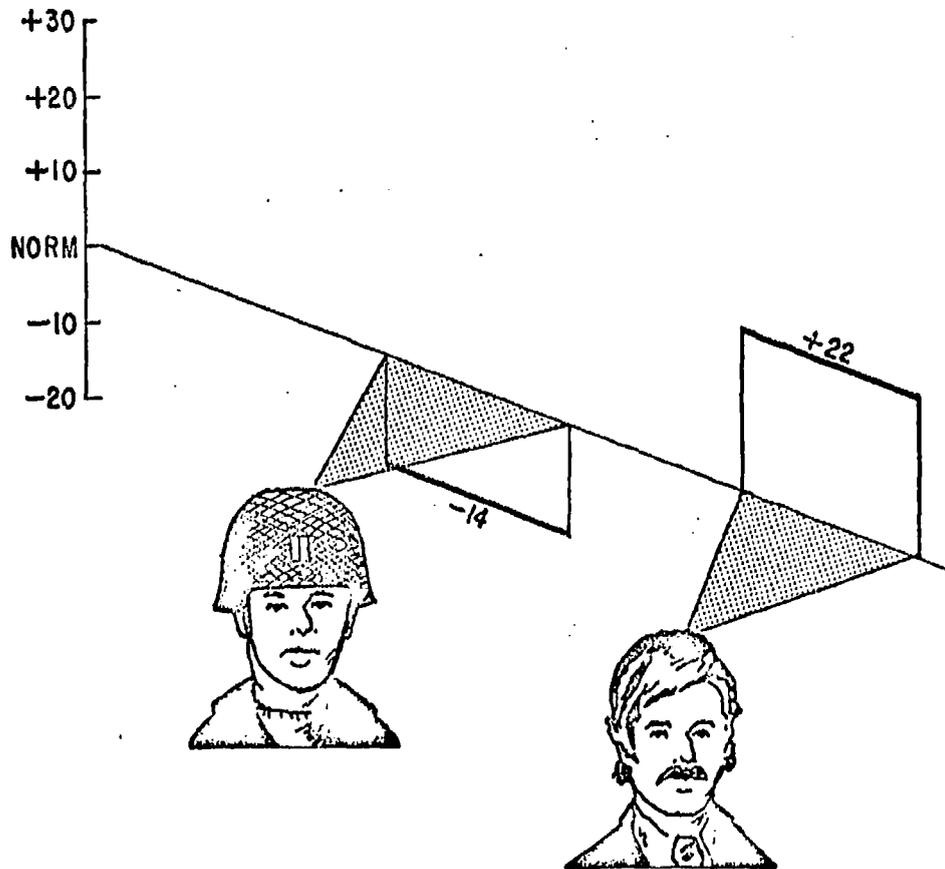
COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Preference for Group Participation *



* This scale measures the degree to which the individual identifies himself with a highly valued group. Persons scoring high say they like best to work as a member of a group and do not like to work apart from other people.

CHART 15

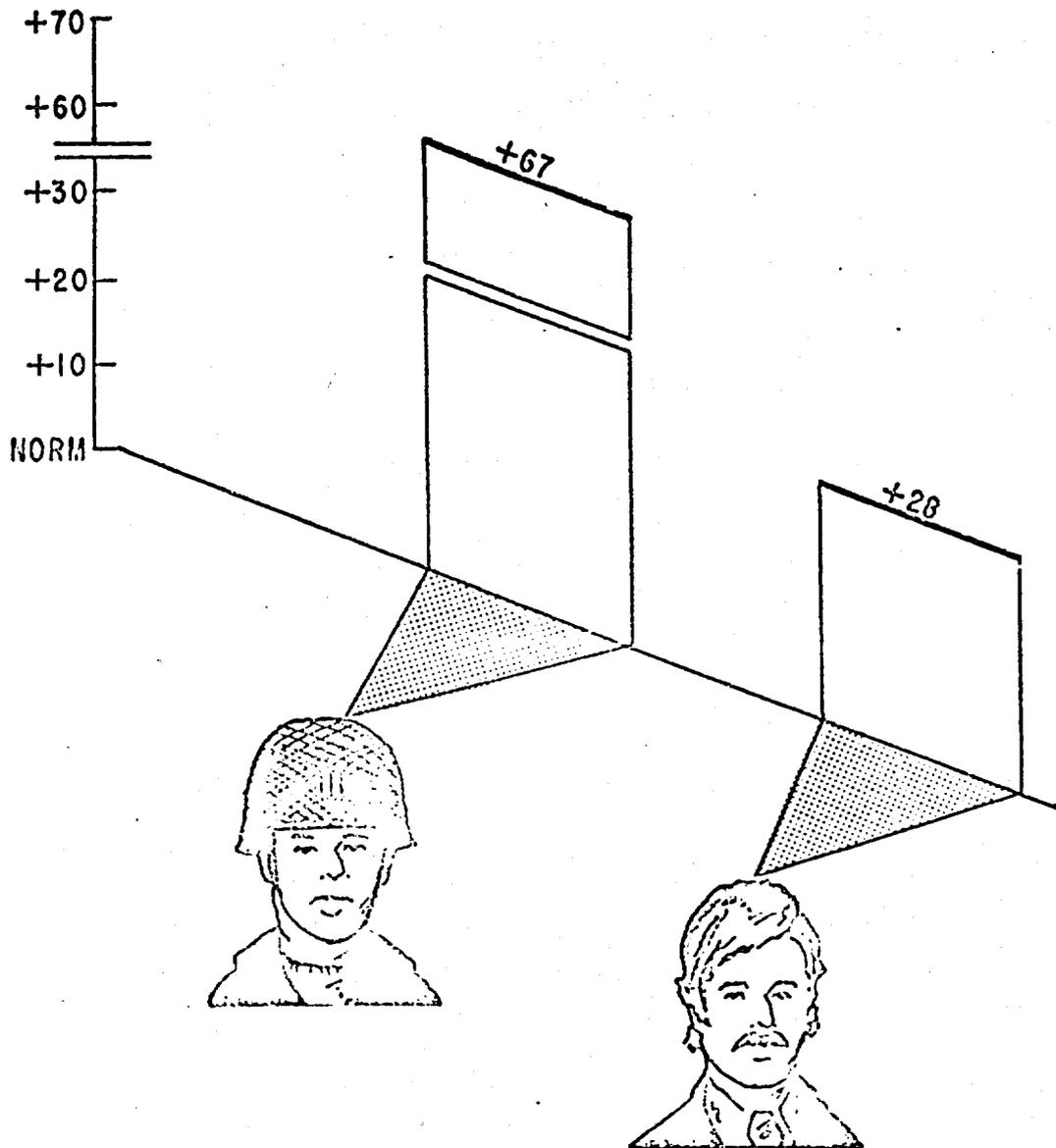
COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Extent of Their Value of Intellectual Achievement *



* This scale measures the degree to which the individual values himself through his intellectual achievements. Persons scoring high like work which permits them to be creative and original; like to be considered ingenious, imaginative, intelligent, and brilliant; and believe that it is important to be intelligent and resourceful as opposed to having faith in something, or being kind and considerate.

CHART 16

COMPARISON OF 358 MEN WHO REMAINED IN ARMY WITH 919 MEN WHO DEPARTED: Extent of Their Value for Role Conformity *



* This scale measures the degree to which the individual values himself according to how successfully he has conformed to the role requirements of society. Persons scoring high say that they prefer to be considered reliable, dependable, trustworthy, and industrious.

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Summary

Man's ability to cope with fatigue is limited. In addition to physiological factors, psychological factors are important. Effective leadership techniques can extend the fighting capacity of a fatigued unit. There is a set of behavioral considerations that have a common relationship with the favorable attitude of individuals to respond to orders, effectiveness in coping with stress and fatigue in combat, and whether or not the soldier will decide to make the Army a career. Psychological rewards and incentives are important. A teenage son, for example, may tire easily when cleaning the family car, but seems to have great stamina when mowing a neighbor's lawn free of charge. The implication is that commanders must consider the "whole man" when devising methods to extend the capabilities of their units. Also to be considered is that various subgroups within the Army are quite different. With this in mind, the next chapter will investigate the differences in six groups of individuals associated with the Army.

CHAPTER 5

DIFFERENCES IN VARIOUS GROUPS OF PERSONNEL

In devising methods to cope with fatigue in sustained tactical operations, provisions must be made to consider major differences between various groups of personnel. In this chapter a comparison will be made of the self-reported beliefs of several diverse groups of individuals associated with the Army. While both physiological and psychological factors have a bearing on the problem, only the psychological aspects will be developed in this chapter. These psychological differences should be considered when policies and procedures pertaining to fatigue in sustained tactical operations are formulated.

A comparison will be made of the following six groups of individuals associated with the Army:

1. Army members of the US Army War College Class of 1972.

The US Army War College is the Army's senior educational institution. The student body during the 1971-72 academic year consisted of 183 Army colonels and senior lieutenant colonels as well as 40 individuals having a comparable grade level from the Navy, Marine Corps, Air Force, Department of State, and other agencies of the Federal Government.

The Senior Service College experience is designed to enhance the competence of selected officers with high general officer potential to assume key

command and staff responsibilities at Department of the Army level and above.¹

2. Non-Army Members of the US Army War College Class of 1972.

This group of 40 individuals has a degree of experience and grade level that is comparable to their 183 Army classmates. These non-Army students consist of 10 Naval officers, 6 Marine officers, 16 Air Force officers, and 8 civilian employees of the Federal Government.

3. Engineer Captains Tested During 1970.

These individuals completed the test in 1970 in connection with a study reported in Chapter 2. All members of this 358-man group had graduated from Engineer Officer Candidate School at Fort Belvoir, Virginia, during 1967.

4. Infantrymen in Combat in Vietnam During 1969.

The 316 individuals tested in this group were members of rifle companies of an infantry battalion, engaged in combat operations in the Mekong Delta. Responses pertaining to the self-reported beliefs of these combat infantrymen were similar to those reported in Chapter 3.

5. Officer Candidate School Graduating Students Tested at Fort Belvoir During 1970.

These 148 men were examined during their last two weeks of Officer Candidate School training. They were all subsequently

¹US Department of the Army, DA Circular No. 351-18: Senior Service College Selection System, 26 October 1972.

commissioned. These individuals were tested in connection with a replication of the study presented in Chapter 2.

6. Former Officer Candidates During 1967 Who Did Not Graduate and Were Tested as Civilians During 1970.

These 182 men were tested in connection with a research project pertaining to the effect of training as reported in Chapter 2.

Results.

Table 4 presents a summary of the results of this comparison. Zero is the norm for Table 4. This was determined by setting zero in place of the average scores of individuals representing over 50 occupations. Theoretically, no occupational group fits the norm. This is evidenced by the fact that there are usually very few zeros in tables like Table 4. The purpose of the norm is to establish a "bench mark" or "baseline" so that the scores of different occupations will have a relative meaning. For example, the reader's attention is invited to the first scale on

TABLE 4

SCORES^a FOR SIX GROUPS OF PERSONNEL WITH THE NORM BEING ZERO

| | 183 | 40 | 358 | 316 | 148 | 182 |
|--|--|--|-------------------------------|--|--|--|
| | ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972 | NON-ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972 | ENGINEER CAPTAINS DURING 1970 | INFANTRY- MEN IN COMBAT IN VIETNAM DURING 1969 | OCS GRAD- UATING STUDENTS BELVOIR 1970 | FORMER OFFICER CANDIDATES DURING 1967 DID NOT GRAD- UATE, TESTED AS CIVILIANS 1970 |
| Extent of Optimism | 31 | 36 | -2 | -105 | -21 | -30 |
| Degree of Self-Confidence | 68 | 58 | 20 | -120 | 23 | -12 |
| Belief in Moral Absolutes | 71 | 62 | 20 | 17 | -5 | -16 |
| Belief in Slow Change | 39 | 17 | 19 | 11 | -13 | -5 |
| Prefers Problem Analysis | 9 | 22 | 18 | -30 | 18 | 45 |
| Prefers Social Interaction | 13 | 27 | 14 | -6 | -1 | -33 |
| Prefers Mechanical Activities | 43 | 10 | 87 | 86 | 46 | 100 |
| Prefers Supervisory Activities | 123 | 68 | 85 | -22 | 48 | 3 |
| Prefers Activity Frequent Change | 51 | 72 | 58 | -51 | 28 | 34 |
| Values Status Attainment | 51 | 29 | 29 | -12 | 35 | 16 |
| Values Social Service | -78 | -56 | -66 | -19 | -27 | -44 |
| Values Approval From Others | -84 | -65 | -90 | 18 | -57 | -58 |
| Values Intellectual Achievement | -16 | 1 | -14 | -60 | 18 | 21 |
| Values Role Conformity | 39 | 7 | 67 | 24 | 8 | 29 |
| Degree of Perseverance | 29 | -6 | 32 | -8 | 39 | 30 |
| Extent of Orderliness | 57 | 10 | 46 | 2 | 37 | 28 |
| Prefers to Plan Ahead | -15 | -27 | -12 | -43 | 2 | -10 |
| Influences by Persuasive Leadership | 88 | 61 | 52 | -73 | 51 | -6 |
| Influences by Being Self-Assertive | 100 | 90 | 114 | 19 | 99 | 84 |
| Move Toward Aggressor | -62 | -64 | -64 | -10 | -48 | -48 |
| Move Away From Aggressor | -53 | -6 | -60 | 11 | -42 | -22 |
| Move Against Aggressor | 69 | 22 | 69 | 13 | 63 | 38 |
| Prefers Routine | -17 | 14 | -4 | 61 | -6 | -5 |
| Identifies With Authority | -24 | -4 | -29 | -9 | -14 | -32 |
| Prefers Independence | 2 | -5 | 20 | -55 | 21 | 24 |
| Prefers Directive Leadership Style | 37 | 11 | 88 | 52 | 84 | 40 |
| Prefers Participative Leadership Style | -24 | 2 | -63 | -55 | -59 | -26 |
| Prefers Delegative Leadership Style | -6 | -11 | -20 | 14 | -25 | -20 |
| Motivates by Knowledge of Results | -20 | -5 | -7 | 0 | -25 | 5 |
| Believes in External Controls | 20 | 19 | 86 | 75 | 81 | 76 |
| Prefers Being Systematic Methodical | -34 | -39 | 19 | 38 | 16 | 38 |
| Prefers Group Participation | 17 | 5 | -9 | 0 | -24 | -49 |

^aInasmuch as the groups of individuals vary in size, standard scores are used in this comparison. The standard scores for each group are determined by comparing the average response for each group pertaining to each scale with the norm. The norms of the test are equated to zero and the standard deviation of 100. Norms for the test instrument are based on a wide variety of occupational groups.

Table 4 "Extent of Optimism." Both Army students and non-Army students in this study reported that they are optimistic. Inasmuch as their scores are positive (31 and 36 respectively), they placed a value higher than the norm on their extent of optimism. Conversely, the other four groups of individuals varied negatively from the norm (-2, -105, -21, and -30 respectively). The group with the strongest value for optimism is the one composed of non-Army members of the US Army War College Class of 1972. Next would be their Army classmates. Conversely, the group that placed the lowest value on optimism was the infantrymen in combat in Vietnam during 1969. Next to the lowest was the group of former officer candidates during 1967, who did not graduate, and were tested as civilians during 1970. Second from the lowest was the group of Officer Candidate School graduating students at Fort Belvoir during 1970. The group having the negative score closest to zero was the group of engineer captains tested during 1970. Stated differently, it can be concluded that the range of optimism from highest to lowest by group was reported as follows:

1. Non-Army members of the US Army War College Class of 1972.
2. Army members of the US Army War College Class of 1972.
3. Engineer captains tested during 1970.
4. Officer Candidate School graduating students, Fort Belvoir, 1970.
5. Former Officer Candidate School students during 1967, who did not graduate, and were tested as civilians during 1970.
6. Infantrymen in combat in Vietnam during 1969.

The reader should keep in mind when making an analysis of these scores that while it may be understandable for students attending the US Army War College to be optimistic, the same intensity of optimism may be quite dangerous for a group of soldiers confronting the reality of an armed enemy in combat. It should be recognized that major differences in response may be essential for top performance in different fields. Therefore, the reader should not make a general assumption that "lowest" indicates "worst."

It seems understandable that the scores of the Army students and the non-Army students attending the US Army War College are somewhat similar. However, there are a few noticeable differences. (See Table 4.)

The group of Army students attending the US Army War College scored higher than all other groups pertaining to self-confidence, orderliness, a belief that changes should be executed slowly, and a belief in moral absolutes. They scored next to highest in optimism (their non-Army classmates scored highest). They were generally similar to other groups pertaining to perseverance, and in their negative value for their capability to plan ahead.

The Army members of the US Army War College Class scored higher than all other groups concerning persuasive leadership. They scored next to highest in self-assertiveness (the group of engineer captains scored the highest).

When given the choice of appeasing, avoiding, or counterattacking a belligerent individual, Army members of the US Army War College Class of 1972 would prefer to counterattack. Along with engineer captains, they received the highest score pertaining to a preference for counterattacking.

The group of Army students attending the US Army War College scored lower than all other groups concerning a preference for routines. It is interesting to note that persons scoring low on a preference for routines indicate that they do not like to have a clear-cut written guide line or manual which tells them clearly what they are supposed to do. All of the groups scored generally the same in their negative value for an identification with authority. Rather than in pleasing their superiors, the goal of these groups tends to be excellent performance. With regards to a preference for independence, Army members of the Class of 1972 scored closest to the norm. Other groups received a wide range of scores.

Army members of the Class of 1972 preferred a directive leadership style, were tolerant of a delegative leadership style, and were not in favor of a participative leadership style. Compared with other groups in this study, however, they placed the next to lowest value on directive leadership (their non-Army classmates placed the lowest). While their value for participative leadership was negative, it was the next to highest (highest value by their non-Army classmates). Their preference for delegative leadership (slightly negative) was the next to highest. The highest preference for delegative leadership was indicated by the group of infantrymen tested in Vietnam. Compared with other groups, Army members of the Class of 1972 scored next to lowest in the belief that a leader gets the best results through intrinsic motivation (Officer Candidate School graduating students scored the lowest). While they believed rather strongly that people require external controls, their score was next to lowest (lowest score was by their non-Army classmates).

Army members of the US Army War College Class received the next to lowest score in a preference for being systematic methodical (lowest score by their non-Army classmates).

Army students attending the US Army War College scored higher than all other groups pertaining to their preference for supervisory activities and group participation. While they placed a high value in their preference for mechanical activities and problem analysis their scores, compared with the other five groups, were next to lowest in each case. They placed a high value in social interaction; however, engineer captains placed a slightly higher value and non-Army members of the US Army War College placed the highest value in social interaction. Their strong preference for activity frequent change was second from the highest (their non-Army classmates scored the highest and engineer captains scored next to highest).

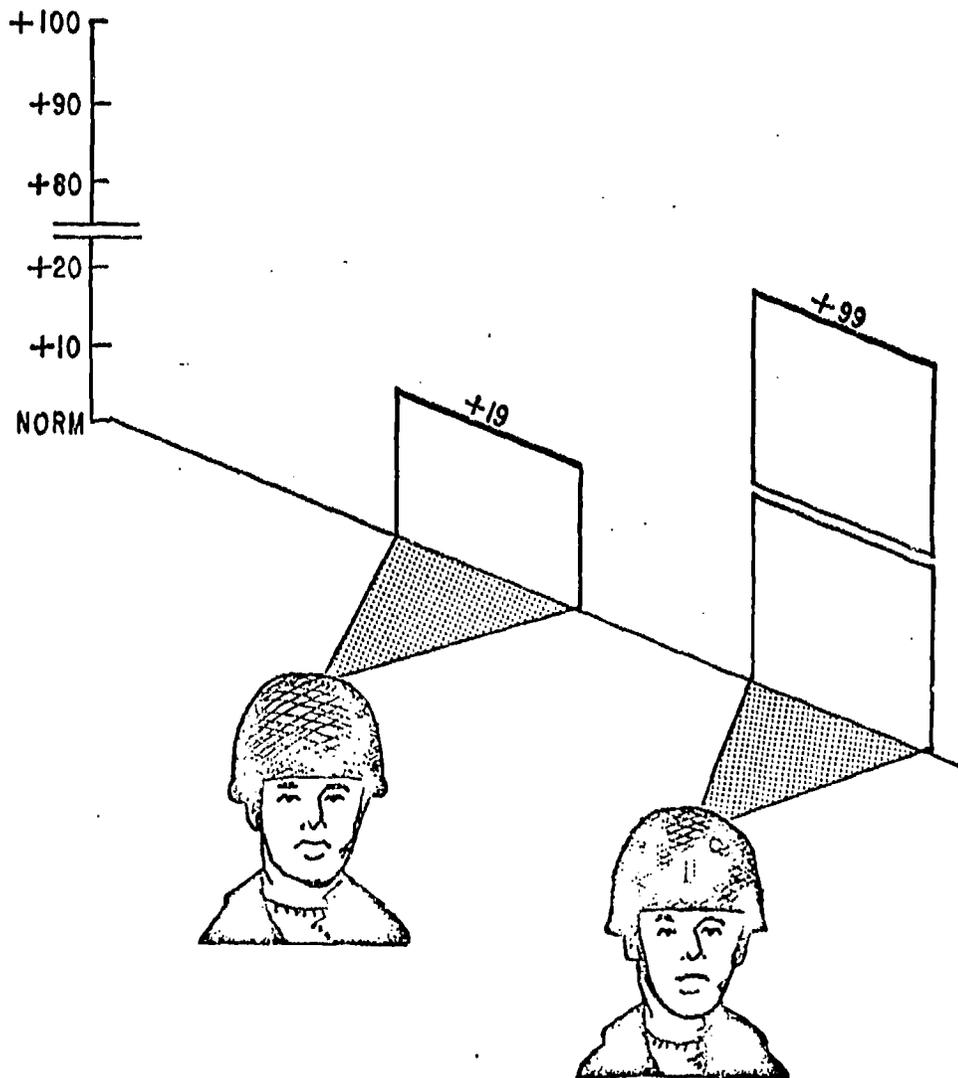
Compared with other groups, Army members of the Class of 1972 received the highest score on the attainment of status and the lowest score in their preference for social service. They received the next to lowest score in their value of the approval from others and their relative value of the importance of intellectual achievement. All of the groups tended to place a high value in role conformity, while Army students attending the US Army War College received a score generally the same as the other groups. As a group, Army members of the US Army War College Class of 1972 were found to be optimistic, self-confident, persuasive individuals who have a strong preference for being a leader. While they are aggressive and highly competitive in actions with their peers, they

are strongly sensitive to the needs of their subordinates. In arriving at a decision, they tend to consider the facts rather than the relative popularity of various courses of action. In cases where the mission conflicts with the approval from others, they place little value in the approval from others. The responses of six groups of individuals associated with the Army are quite different. Each group with its own set of characteristics is probably best suited for its own particular role.

The range of differences between the six groups seems to emphasize that the beliefs of various groups associated with the same profession can be quite diverse. (See Table 4.) These findings tend to agree with the views of Stouffer, Janowitz, and Huntington that various groups of American soldiers are quite different in terms of their beliefs. The value of this data is that it reveals specific differences between the selected groups. These differences have direct implications for the formulation of policies and procedures pertaining to fatigue affecting these six groups. It appears that policies and procedures that have an impact on different groups within the same profession should consider these differences and be developed accordingly.

CHART 17

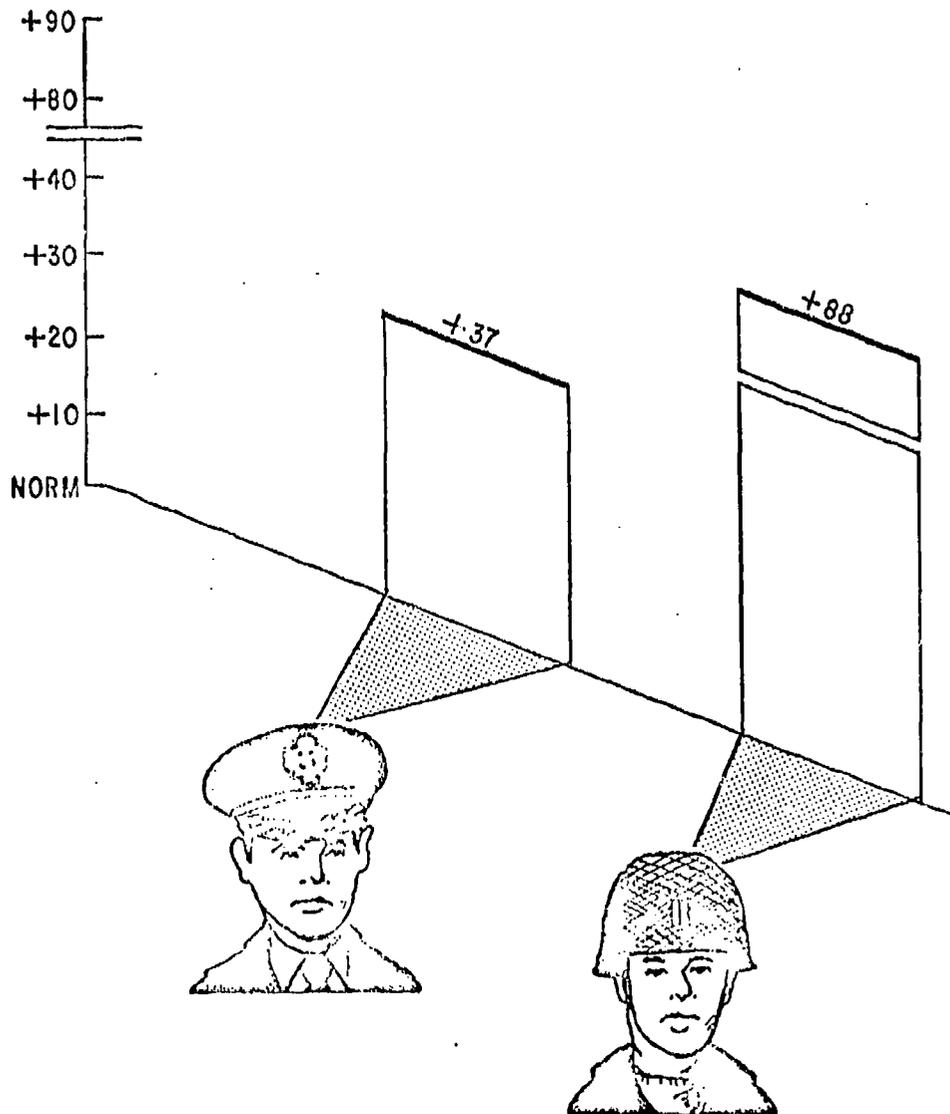
EXTENT OF SELF - ASSERTIVENESS *



* Comparison is made of 316 infantrymen in combat in Vietnam during 1969 with 148 OCS graduating students at Fort Belvoir during 1970. The scale "Influences by Being Self-Assertive" measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others.

CHART 18

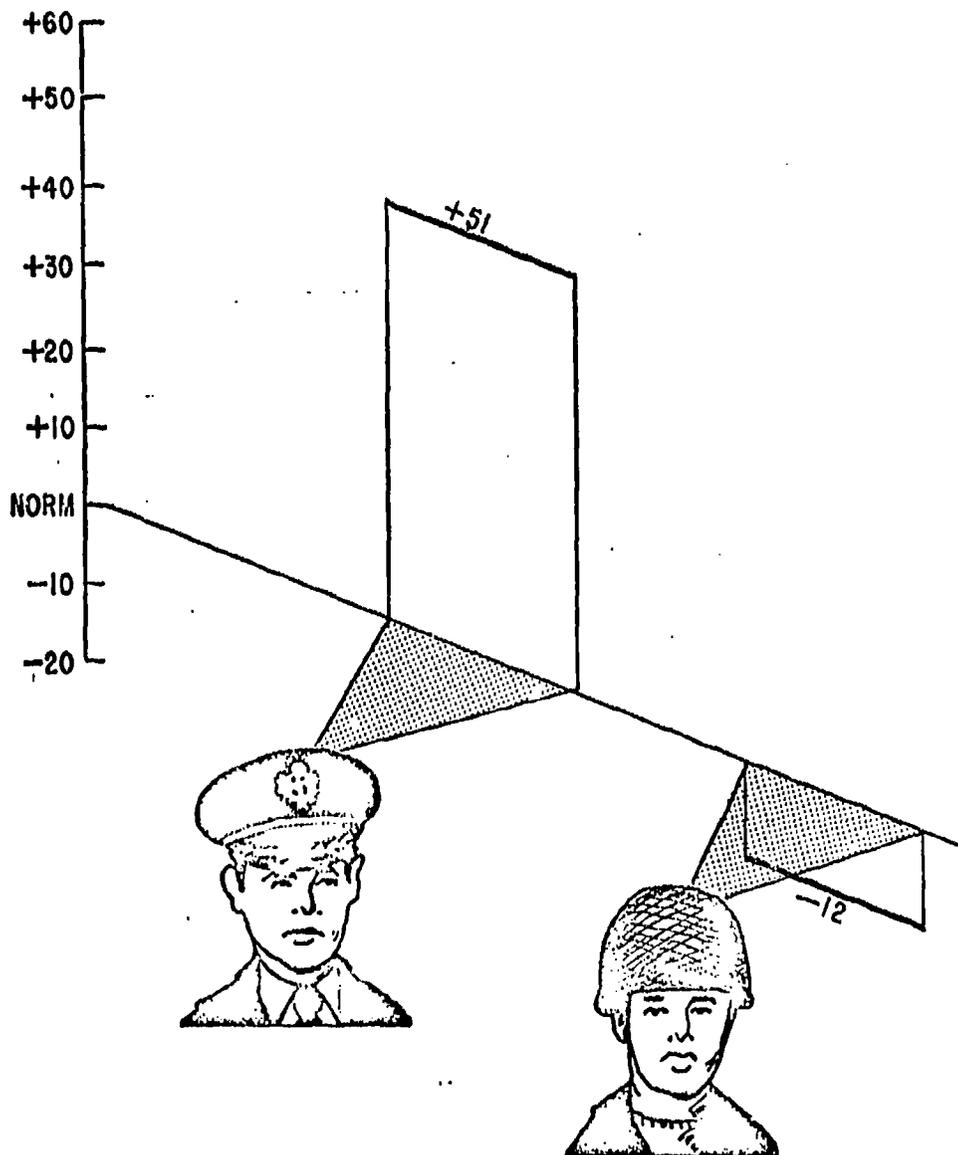
EXTENT OF PREFERENCE FOR DIRECTIVE LEADERSHIP STYLE *



* Comparison is made of 183 Army members of the Army War College class of 1972 with 358 Engineer Captains during 1970. The scale "Prefers Directive Leadership Style" measures the degree to which the individual believes that a leader gets the best results by making decisions himself.

CHART 19

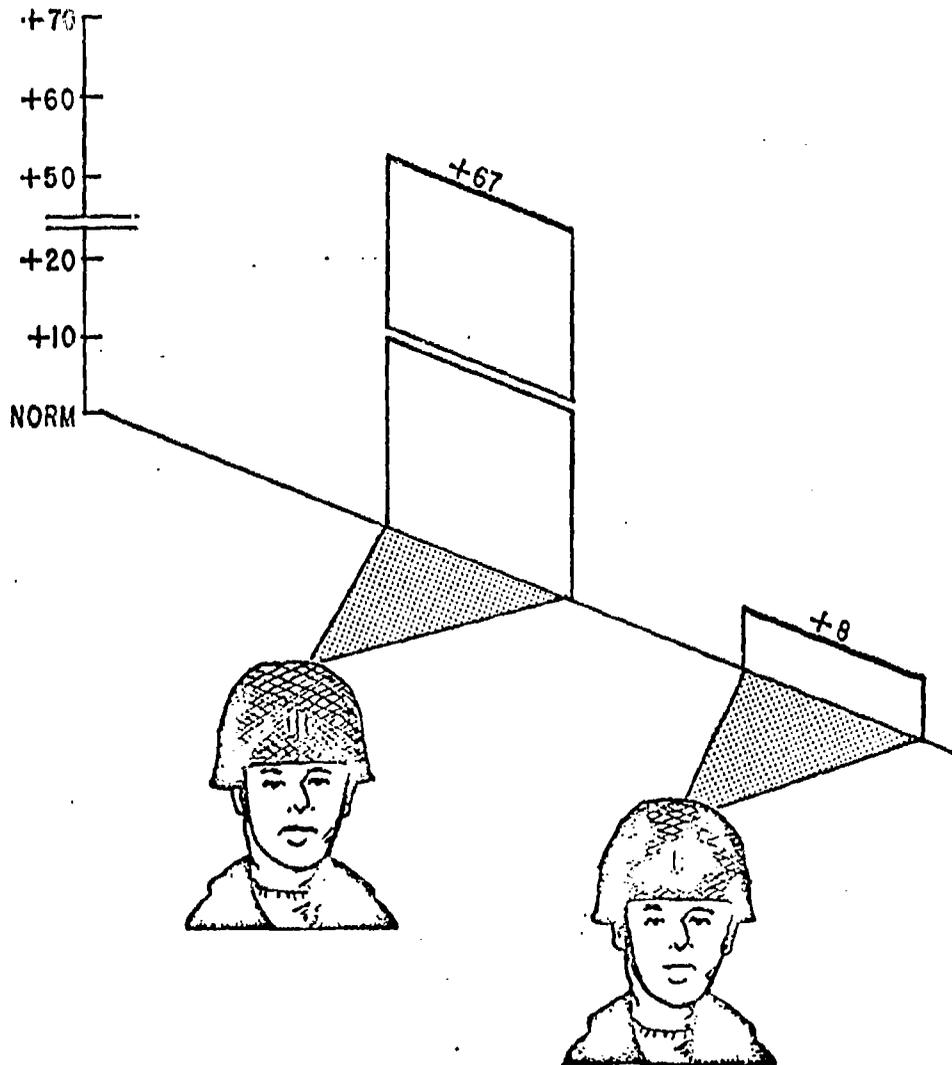
VALUE FOR THE ACHIEVEMENT OF STATUS *



* Comparison is made of 183 Army members of the Army War College class of 1972 with 316 infantrymen in combat in Vietnam during 1969. The scale "Values Status Attainment" measures the degree to which the individual values himself by his achievement of the status symbols established by his culture.

CHART 20

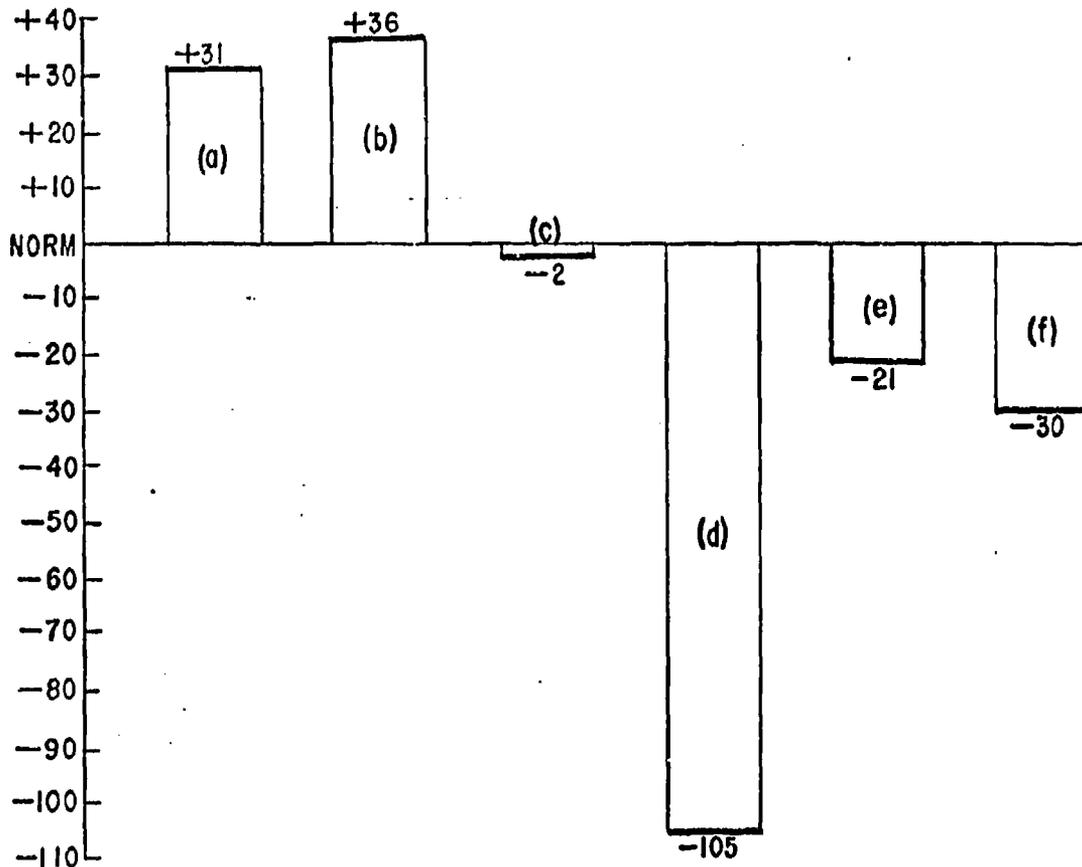
VALUE FOR ROLE CONFORMITY *



* Comparison is made of 358 Engineer Captains during 1970 with 148 OCS graduating students at Fort Belvoir during 1970. The scale "Values Role Conformity" measures the degree to which the individual values himself according to how successfully he has conformed to the role requirements of society.

CHART 21

COMPARISON OF SIX GROUPS: Extent of Optimism

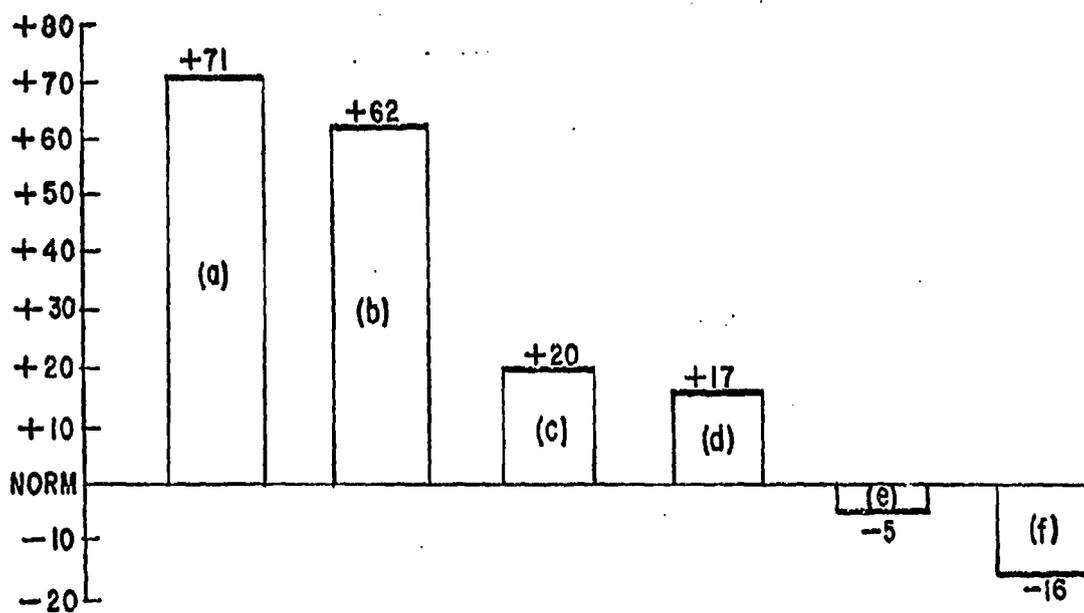


LEGEND:

- (a) 183 ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (b) 40 NON-ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (c) 358 ENGINEER CAPTAINS DURING 1970.
- (d) 316 INFANTRYMEN IN COMBAT IN VIETNAM DURING 1970.
- (e) 148 OCS GRADUATING STUDENTS AT FORT BELVOIR DURING 1970.
- (f) 182 FORMER OFFICER CANDIDATES DURING 1967 WHO DID NOT GRADUATE AND WERE TESTED AS CIVILIANS DURING 1970.

CHART 22

COMPARISON OF SIX GROUPS: Extent of Belief in Moral Absolutes

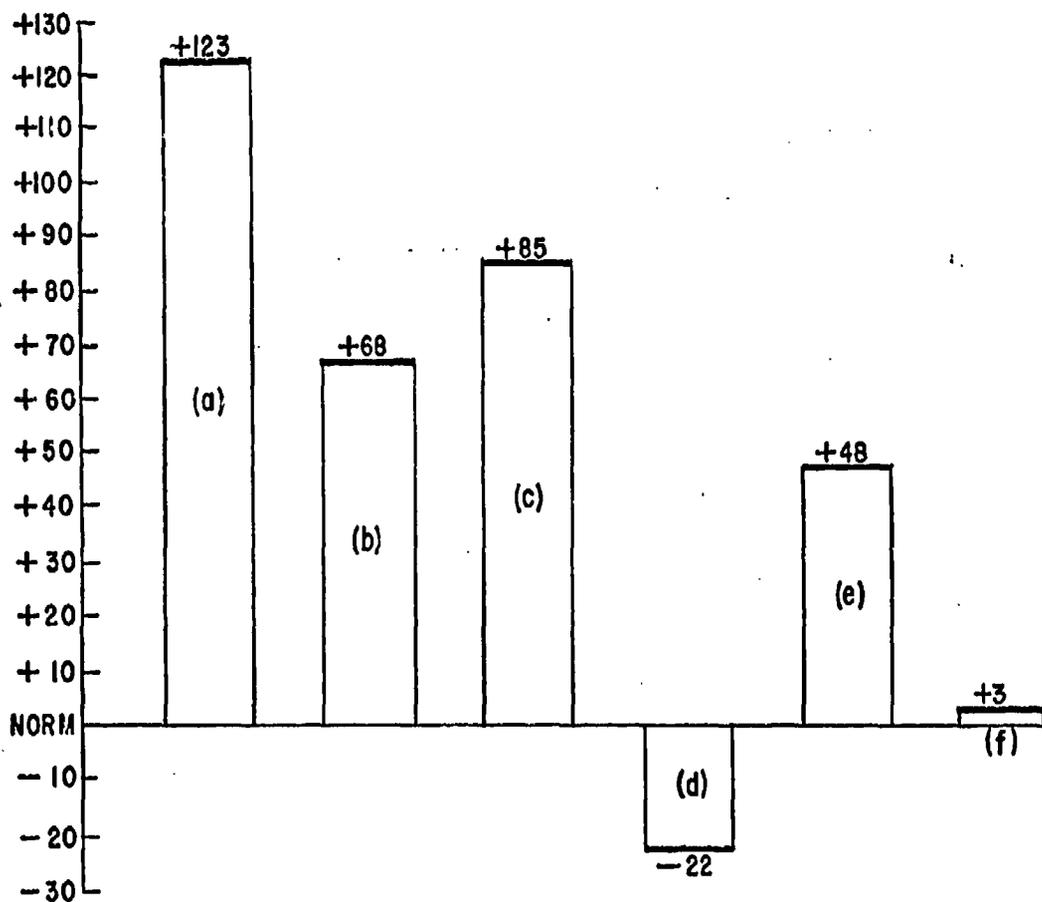


LEGEND:

- (a) 183 ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (b) 40 NON-ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (c) 358 ENGINEER CAPTAINS DURING 1970.
- (d) 316 INFANTRYMEN IN COMBAT IN VIETNAM DURING 1970.
- (e) 148 OCS GRADUATING STUDENTS AT FORT BELVOIR DURING 1970.
- (f) 182 FORMER OFFICER CANDIDATES DURING 1967 WHO DID NOT GRADUATE AND WERE TESTED AS CIVILIANS DURING 1970.

CHART 23

COMPARISON OF SIX GROUPS: Preference for Supervisory Activities

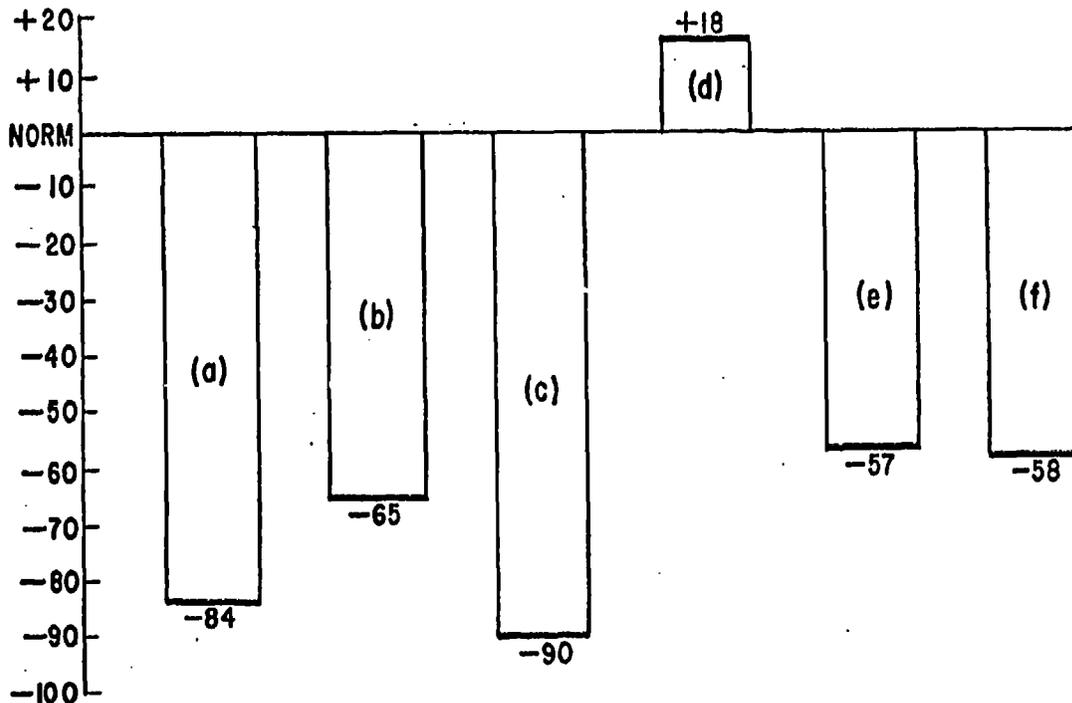


LEGEND:

- (a) 183 ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (b) 40 NON-ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (c) 358 ENGINEER CAPTAINS DURING 1970.
- (d) 316 INFANTRYMEN IN COMBAT IN VIETNAM DURING 1970.
- (e) 148 OCS GRADUATING STUDENTS AT FORT BELVOIR DURING 1970.
- (f) 182 FORMER OFFICER CANDIDATES DURING 1967 WHO DID NOT GRADUATE AND WERE TESTED AS CIVILIANS DURING 1970.

CHART 24

COMPARISON OF SIX GROUPS: Extent of Value for the Approval From Others



LEGEND:

- (a) 183 ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (b) 40 NON-ARMY MEMBERS OF THE ARMY WAR COLLEGE CLASS OF 1972.
- (c) 358 ENGINEER CAPTAINS DURING 1970.
- (d) 316 INFANTRYMEN IN COMBAT IN VIETNAM DURING 1970.
- (e) 148 OCS GRADUATING STUDENTS AT FORT BELVOIR DURING 1970.
- (f) 182 FORMER OFFICER CANDIDATES DURING 1967 WHO DID NOT GRADUATE AND WERE TESTED AS CIVILIANS DURING 1970.

REFERENCES

1. Huntington, Samuel P. The Soldier and the State; The Theories and Policies of Civil-Military Relations. Cambridge, Massachusetts: Harvard University Press, 1967.
2. Janowitz, Morris. The Professional Soldier. New York: The Free Press, 1960 and revised in 1971.
3. Petersen, Peter B. "Leadership Training." Training and Development Journal, Vol. 26, No. 4, pp. 38-42, Madison, Wisconsin: April 1972.
4. _____. "Psychological Dimensions of Army Students Attending the US Army War College: An Analysis." Parameters, Vol. II, No. 1, Carlisle Barracks, Pa.: Spring 1972.
5. Robinson, William H. "An Element of International Affairs - The Military Mind." Naval War College Review, Vol. XXIII, No. 3, Newport, Rhode Island: November 1970.
6. Stouffer, Samuel A., et. al. "The American Soldier: Adjustment During Army Life," Vol. I. Studies in Social Psychology in World War II. Princeton, New Jersey: Princeton University Press, 1949.
7. "US Army War College." US Army War College Pamphlet. Carlisle Barracks, Pa: January 1972.
8. US Department of the Army. DA Circular No. 351-18: Senior Service College Selection System. Washington, D. C.: 26 October 1970.
9. Walther, Regis H. "The Psychological Dimensions of Work: A Research Approach Through Use of a Self-Report Inventory." Washington, D. C.: The George Washington University, February 1972.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

SUMMARY

1. There is an Important Need to Cope Successfully with Fatigue in Sustained Tactical Operations. While advances have been made in machines, man continues for the most part to be the same frail, yet strong, organism as he has been in centuries past. Many concepts today envision that the soldier of the future will cross continents rapidly by various forms of transportation, will be employed abruptly in foreign climates, and that he will operate at top efficiency. The overall assumption that men will hold up and perform well in adverse climatic areas may be a weakness in the systems that we are considering. It is conceivable that an enemy force may perfect techniques to improve ways to cope with fatigue and the need for rapid acclimatization. Then we may have two armies opposing each other, one consisting of acclimated and well rested troops, and the other consisting of the opposite. It could be that battles in the future, as well as relying heavily on technology, will also rely heavily on the capabilities of man to cope with such basic subjects as fatigue and acclimatization.

2. Training. Officer Candidate School training exerts a strong influence on the individuals involved. This training tends to change certain of their self-reported beliefs in terms of: basic beliefs, activity preferences, personal values, and behavioral styles. These changes can be predicted and are beneficial to both the individual

concerned and to the US Army. Years later, those beliefs that are no longer appropriate will tend to change again so that they will be compatible with the individual's new total environment.

An analysis of the data in connection with OCS training strongly indicates that individuals with certain self-reported beliefs will tend to be more successful in coping with stress and its related fatigue. Therefore, one method to improve the quality of a fighting force is to use a selection process to find individuals who have certain self-reported beliefs.

Individuals undergoing intensive training can change certain of their self-reported beliefs. Therefore, training that will change certain self-reported beliefs is another method for improving the capability of a fighting force to cope with stress and its related fatigue.

An understanding by planners and commanders of the physiological and the psychological problems connected with employing fatigued troops should lead to more effective plans and decisions.

3. Effects of Combat. While stationed in Vietnam during 1969, a group of infantrymen completed a questionnaire pertaining to certain self-reported beliefs. There was a significant difference between their beliefs stated in Vietnam and then stated again in the United States a year later. This difference can be attributed, in part, to the impact of the stress of combat and its associated fatigue. It was also found that the same group of individuals were more sensitive to the needs of their friends while they were stationed as infantrymen in Vietnam than they

were after they returned to the United States. It seems unfortunate that these desirable qualities did not carry over substantially after these men returned to the United States.

4. Leadership Techniques for Coping with Fatigue in Combat:

a. Effective training and experience can minimize the impact of fatigue in combat. However, it must be recognized that individuals have limitations of their physical capability to function without a minimum amount of rest.

b. Men in combat who are excessively fatigued should be identified and then relieved temporarily. By "excessive" fatigue it is meant that their presence on a combat operation would be counter-productive to the goal of the unit.

c. Effective leadership which encourages the self-confidence of subordinates is essential for coping with fatigue in combat.

d. Rest should be scheduled, particularly for commanders.

e. Commanders and trainers alike must consider the importance of the attitudes of individual soldiers. In training prior to combat, attitudes can be shaped into a configuration that is responsive to leadership in combat. Conversely, poor attitudes unchanged by training, or developed by inadequate training, can cause unfavorable consequences for the unit particularly when the individual with these poor attitudes is subjected to the stress and fatigue of combat.

f. Commanders must take action to prevent the ill effects of rumors, fear, panic, and discouragement. Fatigued troops will have a lowered resistance against these potential problems. Much can be accomplished by preventative measures to limit leadership problems of this nature before they occur.

g. The "spirit of the offense" is a practical technique to reduce the impact of fatigue. In the "spirit of the offense" emphasis is placed on the development of a desire to close with and destroy the enemy. This attitude towards aggressiveness can be developed prior to combat.

h. Units weakened by excessive amounts of stress and fatigue caused by sustained combat operations must be restored to fighting effectiveness.

i. Commanders must prevent the deterioration of confidence and aggressiveness in isolated units in combat. It is assumed that members of these units will be confronted with both stress and fatigue.

j. The commander should consider the behavioral aspects of fatigue. In this regard, satisfaction and dissatisfaction play an important role. The challenge to the commander is to develop satisfaction rather than waste his resources by overemphasizing the removal of dissatisfaction. It is in these areas that a shift in techniques from extrinsic motivation to intrinsic motivation can have an important bearing in coping with fatigue in sustained tactical operations.

5. Differences in Various Groups of Personnel. In an analysis of six groups of personnel associated with the Army it was determined that there was a significant difference between the average scores of Army students attending the US Army War College during September 1971 and the overall norms of the test instrument. These results are interpreted as being desirable for individuals in their capacity. It appears that the selection process for attendance at the US Army War College is successful. Other differences are evident in a comparison of Army students attending the US Army War College with several other groups of individuals (non-Army students attending the US Army War College, Engineer Captains, Infantrymen in combat in Vietnam, Officer Candidate School graduating

students, and former officer candidates who did not graduate and who were subsequently tested as civilians). The wide range of differences between these groups seems to emphasize that the psychological dimensions of various groups associated with the same profession can be considerably diverse. The implications are that these differences should be considered during the formulation of policies and procedures pertaining to fatigue in sustained tactical operations.

RECOMMENDATIONS FOR FURTHER RESEARCH

The following recommendations have the objective of helping to provide a highly effective fighting force. It is recognized that the end of the "draft" during times of peace may limit the execution of these recommendations. However, those individuals involved in the development of a small but highly effective, Army might find these recommendations worth considering:

1. Recommend that the selection process for infantrymen consider the individual's ability to cope with stress and fatigue. An examination should consider both the physiological and the psychological factors. Further research for redesigning this selection process is needed.
2. Recommend that extensive research be undertaken to isolate those specific psychological dimensions that tend to indicate an individual's ability to cope with fatigue in sustained tactical operations. The psychological dimensions of Officer Candidate School graduating students, described in Chapter 2, and the psychological dimensions of infantrymen in combat, as described in Chapter 3, probably indicate the desirable psychological qualities that are needed to cope with stress and fatigue.

3. Recommend that when Chapter 3, "Human Behavior," of Field Manual 22-100 Military Leadership is revised, that paragraph 35 and 36 be expanded pertaining to "supports and stresses" and "the leaders role" relative to coping with fatigue in sustained tactical operations. Further recommend that the seven pages pertaining to "leadership in combat" (Chapter 9 of the above field manual) be expanded substantially to include more details. Informal coordination with members of the staff at The Infantry School, responsible for the revision of this manual, indicates that these revisions are currently being considered.

4. Recommend that tactical doctrine be revised to emphasize the need for commanders to properly acclimate their troops and to provide them time and facilities for adequate rest. The proper implementation of this recommendation will require extensive review and revision of current tactical doctrine.

5. Recommend that medical research be encouraged to continue to develop appropriate medical preparations such as a short-acting sedative without "hangover" effects, and devices that can safely enable the soldier to receive adequate sleep when because of stress or other reasons sleep cannot be naturally induced. In addition, recommend that medical research also be encouraged to continue to develop appropriate medical preparations and devices that can enable the soldier to safely stay awake for extended periods of time.

APPENDIX A

DESCRIPTION OF QUESTIONNAIRE USED THROUGHOUT RESEARCH PROJECT

APPENDIX A

DESCRIPTION OF QUESTIONNAIRE USED THROUGHOUT RESEARCH PROJECT

There were many considerations involved in the selection of the test instrument used in this study. The major factors that facilitated its application were its capability to discriminate between occupational groups and its capability to be administered equally well via mail. In this particular research project, the same individuals were, over a period of time, situated in different occupational groups. Differences in these groups could, in part, be developed by considering the beliefs of their individual members. The Job Analysis and Interest Measurement (JAIM) appeared to be suited to this task. An instrument was needed that would be reliable when utilized on several different occasions, initially in an Army classroom, later in Vietnam, and then again years later via mail. The JAIM satisfied this need. The established self-consistency of the JAIM fulfilled a need for reliability. Prior applications of the JAIM pertaining to the extent to which the instrument measures what it is supposed to measure satisfied the requirement of validity.

The JAIM is a 125-item questionnaire¹ designed to measure certain self-reported beliefs (other than aptitudes, training, or knowledge) which have an influence on job success or failure. Its 125 multiple-choice items are presented in terms of certain self-reported beliefs.

¹Form 864 of the JAIM was used throughout this research project.

The Job Analysis and Interest Measurement distributed by the Educational Testing Service for research purposes, is designed to measure the personal qualities of the worker, other than his aptitudes, training, or knowledge, which have an influence on success or failure in a job. It has commonly been observed that failures often result not from lack of specific abilities but from 'personality difficulties.' Experienced managers know that, while every job requires a minimal level of knowledge and specific ability, after this level has been reached the determinants of job success or failure are intangible and complex. They are often described in such terms as 'can't stand pressure,' or 'intolerant of ambiguity.' The JAIM was designed to measure these elements.²

It should be recognized that there are no right or wrong answers for this type of test. The instrument³ is based on the overall concept of the need to have a successful match between the professional requirements of an occupation and the qualities of the individual in that occupation. Thus, for example, it can be conceptualized that the occupation of chief librarian and the occupation of locomotive engineer require considerably different types of individuals. Further, that most chief librarians would probably perform poorly as locomotive engineers and that most locomotive engineers would no doubt perform poorly as chief librarians.

An analysis of the results in this study will provide information relative to both the individual and the nature of his organization. The norms of the test instrument are intended only as a point of departure and are based on a wide variety of occupational groups. The JAIM provides measures for 32 scales.

²Regis Walther, Orientations and Behavioral Styles of Foreign Service Officers, 1965, pp. 2-3.

³A copy of both the JAIM questionnaire and answer sheet are presented in Appendixes B and C.

The higher the score on a particular scale, the more often the subject has chosen the options for this scale as being descriptive of himself in preference to the options for other scales and has avoided options which are negatively scored for this scale. The lower the score on a particular scale, the less often the subject has chosen the options for this scale as being descriptive of himself in preference to the options for the other scales and the more often he has selected options which are negatively scored for the scale.⁴

Beliefs.

While it is acknowledged that there are many categories of beliefs, the term "beliefs" will refer to the overall set of self-reported beliefs that are associated with the test instrument. Prior studies seem to substantiate that there is a considerable difference in the self-reported beliefs of individuals before and after training. Further, that this difference can be attributed to the conditioning process. In addition, self-reported beliefs tend to change with changes in job position and changes in environment. Empirical observations and the results of prior studies suggest that within this study a portion of an individual's set of beliefs may be categorized as follows: (a) Basic Beliefs, (b) Activity Preferences, (c) Personal Values, and (d) Behavioral Styles.

1. Basic Beliefs.

Each of us makes judgments about what we can expect from the world, from ourselves, and from other

⁴Regis H. Walther and Shirley D. McCune, Socialization Principles and Work Styles of the Juvenile Court, 1965, pp. 91-92.

people. These judgments depend to a large degree, of course, on the situation. Our judgments are also influenced by our basic expectations or beliefs. These beliefs orient us to the world in terms of optimism or pessimism, self-confidence or self-doubt, and trust or suspicion.⁵

A person's basic beliefs often influence his response on the job. The nature of this response may considerably affect his performance and the satisfaction he receives from the result of his performance in different work situations.

While it is recognized that there are many basic beliefs, the following basic beliefs will be considered: (a) Extent of Optimism, (b) Degree of Self-Confidence, (c) Belief in Moral Absolutes, and (d) Belief in Slow Change.

a. Extent of Optimism - This scale measures the degree to which the individual assumes that the intentions of other people are benevolent and that satisfactions can be expected in the natural course of events. Persons scoring high consider themselves lucky; never or seldom left out of things in group activities; and almost always have had leaders who praised them and gave them credit for work well done.

b. Degree of Self-Confidence - This scale measures the degree to which the individual believes that he can, by his own action, influence future events. Persons scoring high on this scale report that they often become enthusiastic over new things or new plans; that their ideas are often considered unusual and imaginative; and that they work well under

⁵Walther, The Psychological Dimensions of Work: A Research Approach Through Use of a Self-Report Inventory, February 1972.

stress. Individuals scoring low report they get away by themselves when they are troubled; and that they do not perform well under stress.

c. Belief in Moral Absolutes - Persons scoring high believe that moral principles come from an outside power higher than man; and that it is most important to have faith in something. Individuals scoring low believe that moral principles are not absolute and unchanging but depend on circumstances.

d. Belief in Slow Change - This scale measures the degree to which the individual believes that change should be slow. Persons scoring high say that it is usually best to do things in a conventional way; and that when things are going smoothly it is best not to make changes which will disrupt things.

2. Activity Preferences.

Activity preferences involve the anticipation of intrinsic satisfaction from the performance of certain types of tasks. Some people derive their greatest satisfaction from jobs that involve a challenge; some from jobs that emphasize working with people; and some from jobs that require the competent manipulation of tools and materials. Individuals also appear to differ in the amount of environmental stimulation they require without which boredom influences their satisfaction and perhaps also their performance.⁶

With regard to activity preferences, this research project will focus on the following: (a) Prefers Problem Analysis, (b) Prefers Social Interaction, (c) Prefers Mechanical Activities, (d) Prefers Supervisory Activities, and (e) Prefers Activity Frequent Change.

⁶Ibid.

a. Prefers Problem Analysis - This scale measures the degree to which the individual likes to analyze situations and develop ingenious solutions to problems. Persons scoring high prefer to be considered ingenious; like to develop new ideas and approaches to problems and situations; and like a job which permits them to be creative and original.

b. Prefers Social Interaction - This scale measures the degree to which the individual likes work involving interactions with people. Persons scoring high attend parties or social gatherings once a week or oftener; do not like to work apart from other people; and frequently entertain groups at home.

c. Prefers Mechanical Activities - This scale measures the degree to which the individual likes mechanical activities. Persons scoring high on this scale say they are reasonably skilled craftsmen and enjoy fixing things; like making things with tools; and like hunting and fishing.

d. Prefers Supervisory Activities - This scale measures the degree to which the individual likes to plan and supervise the work of other people. Persons scoring high on this scale find that they get along best when they know what they want and work for it; they are generally striving to reach some goal they have established for themselves and like to supervise others in the carrying out of difficult assignments.

e. Prefers Activity Frequent Change - This scale measures the degree to which the individual likes to be actively engaged in work providing a lot of excitement, and a great deal of variety. Persons

scoring high on this scale say they frequently enjoy taking part in a fight for good causes, sometimes enjoy dangerous situations; work best under a great deal of pressure and tight deadlines; and prefer a job in which there is a great deal of activity and opportunity to make frequent decisions. Persons scoring low like to finish one task before starting another.

3. Personal Values.

Each of us has a set of standards or values about what is worthwhile and what is not, what we would like to be and what we would not. We use our standards to judge ourselves and our activities. These values are an essential component of our self-concepts and are reflected in the meaning work has for us.⁷

In considering the personal values category, this research project will concentrate on the following: (a) Values Status Attainment, (b) Values Social Service, (c) Values Approval From Others, (d) Values Intellectual Achievement, and (e) Values Role Conformity.

a. Values Status Attainment - This scale measures the degree to which the individual values himself by his achievement of the status symbols established by his culture. Persons scoring high on this scale prefer to be considered ambitious and successful; like to have a job which is recognized to be important or desirable; and think that the ideal job is one which shows they were a success and had achieved high status and prestige.

b. Values Social Service - This scale measures the degree to which the individual values himself by contributing to social improvement.

⁷Ibid.

Persons scoring high like to be considered understanding and charitable; consider the social usefulness of the work to be important; and like work which permits them to be helpful to others.

c. Values Approval From Others - This scale measures the degree to which the individual values himself by obtaining the approval of others. Persons scoring high consider it most important to have congenial peers; to be well-liked; and like to please others through their work; and like to be considered gracious, attractive, and pleasant.

d. Values Intellectual Achievement - This scale measures the degree to which the individual values himself through his intellectual attainments. Persons scoring high like work which permits them to be creative and original; like to be considered ingenious, imaginative, intelligent, and brilliant; and believe that it is important to be intelligent and resourceful as opposed to having faith in something, or being kind and considerate.

e. Values Role Conformity - This scale measures the degree to which the individual values himself according to how successfully he has conformed to the role requirements of society. Persons scoring high say that they prefer to be considered reliable, dependable, trustworthy, and industrious.

4. Behavioral Styles.

Individuals necessarily develop standard ways for dealing with recurring situations and reserve conscious information processing and decision-making for more significant occasions. This organization gives rise to characteristic types of performance or behavioral styles, conscious and unconscious, in various life situations.⁸

⁸Ibid.

The following behavioral styles are considered pertinent to this research project: (a) Degree of Perseverance, (b) Extent of Orderliness, (c) Prefers to Plan Ahead, (d) Influences by Persuasive Leadership, (e) Influences by Being Self-Assertive, (f) Move Toward Aggressor, (g) Move Away From Aggressor, (h) Move Against Aggressor, (i) Prefers Routine, (j) Identifies With Authority, (k) Prefers Independence, (l) Prefers Directive Leadership Style, (m) Prefers Participative Leadership Style, (n) Prefers Delegative Leadership Style, (o) Motivates by Knowledge of Results, (p) Believes in External Controls, (q) Prefers Being Systematic Methodical, and (r) Prefers Group Participation.

a. Degree of Perseverance - This scale measures the degree to which the individual keeps at something even when he is not particularly interested in it. Persons scoring high say that when working on a hobby, they concentrate for long periods of time and complete each project they start; that they do not tire easily and can work long and steadily; and that other people seldom find something after they have tried and given up. Individuals scoring low say that when they have something to do that doesn't interest them, they either do it after considerable pressure is put on them or they seldom get around to doing it.

b. Extent of Orderliness - This scale measures the degree to which the individual has internal standards which he follows. Persons scoring high say that they like work which requires them to be extremely accurate; that they are usually orderly; and that they get up about the same time each morning and do not like to stay in bed later than their getting-up time.

c. Prefers to Plan Ahead - This scale measures the degree to which the individual is a self-starter and directs his own activity toward goal achievement. Persons scoring high say that they get best results when they establish long-range goals and follow them as much as they can; and that they are generally striving to reach some goal they have established for themselves.

d. Influences by Persuasive Leadership - This scale measures the degree to which the individual exerts leadership in interpersonal situations. Persons scoring high report that they have no difficulty giving a speech or reciting before a large group; that they often take the leadership in groups; and that what they like best in a job is the opportunity to get results through persuasion or negotiation.

e. Influences by Being Self-Assertive - This scale measures the degree to which the individual tends to pursue his own goals when they are in competition with the goals of others. Persons scoring high say that it is important to avoid being diverted from doing what is right in order to please someone; that they do better under competition or stress; and that they are proficient in athletic games.

f. Move Toward Aggressor - This scale measures the degree to which the individual tries to "pour oil on troubled waters" when someone acts toward him in a belligerent or aggressive manner. Persons scoring high say that when a person behaves toward them in a dictatorial or domineering fashion, they try to win him over.

g. Move Away From Aggressor - This scale measures the degree to which the individual withdraws when someone acts toward him in a

belligerent or aggressive manner. Persons scoring high say that when a person acts toward them in a dictatorial or domineering fashion, they keep away from him if they can.

h. Move Against Aggressor - This scale measures the degree to which the individual counterattacks when someone acts toward him in a belligerent or aggressive manner. Persons scoring high say that when someone crowds ahead of them in line, they do something about it; and if someone acts toward them in a dictatorial or domineering fashion, they seek an occasion to have it out with him.

i. Prefers Routine - This scale measures the degree to which the individual likes to have definite procedures available which he can follow. Persons scoring high say they like to have a clear-cut written guideline or manual which tells them clearly what they are supposed to do.

j. Identifies With Authority - This scale measures the degree to which the individual identifies with his superior and tries to please him. Persons scoring high say that they like to work closely with, and be of help to, a superior doing important and interesting work; that their leaders, for the most part, have always been helpful and understanding; that they received high grades while in high school; and that they were either obedient toward or tried to please their parents as an adolescent.

k. Prefers Independence - This scale measures the degree to which the individual likes to act on his own. Persons scoring high say they were independent toward their parents during adolescence; that they have no fixed pattern for getting up in the morning and sometimes get up

early and sometimes sleep late; and that it is most important to teach children to be self-reliant.

l. Prefers Directive Leadership Style - This scale measures the degree to which the individual believes that a leader gets the best results by making decisions himself. Persons scoring high say that an effective leader assigns each subordinate a specific job to do and sees that he does it the way it is supposed to be done.

m. Prefers Participative Leadership Style - This scale measures the degree to which the individual believes that leaders get best results by having the work group participate in decisionmaking. Persons who score high say that it is most important that a leader develop a strong sense of responsibility in the work group as a whole.

n. Prefers Delegative Leadership Style - This scale measures the degree to which the individual believes that the leader gets the best results by delegating decisionmaking authority as much as possible to individual subordinates. Persons scoring high say that to the extent practical, an effective leader permits each subordinate to do the work the way he finds works best for him.

o. Motivates by Knowledge of Results - This scale measures the degree to which the individual believes that people are motivated best by knowledge of results (intrinsic motivation). Persons scoring high say that a leader gets the best results from his work group when he shows the employees the importance of their work. Persons scoring low say a leader gets the best results through rewards or punishment (extrinsic motivation).

p. Believes in External Controls - This scale measures the degree to which the individual believes that most people require external controls. Individuals scoring high say that most people prefer a leader who tells them clearly what to do; and believe that parents get the best results when they maintain strict discipline.

q. Prefers Being Systematic Methodical - Persons scoring high believe that when they have a difficult decision to make and feel that they have enough facts that it is best to spend considerable time reviewing all possible interpretations of the facts before making a decision; they prefer the opportunity for careful consideration of all aspects of the problem and when they have an important problem to consider, they prefer to think it through alone.

r. Prefers Group Participation - This scale measures the degree to which the individual identifies himself with a highly valued group. Persons scoring high say they like best to work as a member of a group and do not like to work apart from other people.

REFERENCES

1. Walther, Regis H. Orientations and Behavioral Styles of Foreign Service Officers. New York: Carnegie Endowment for International Peace, 1965.
2. _____. Psychological Dimensions of Work: A Research Approach Through Use of a Self-Report Inventory. Washington, D. C.: The George Washington University, February 1972.
3. Walther, Regis H., and McCune, Shirley D. Socialization Principles and Work Styles of the Juvenile Court. Washington, D. C.: The George Washington University, 1965.

APPENDIX B

JAIM QUESTIONNAIRE

THE JOB ANALYSIS AND INTEREST MEASUREMENT

FORM 864

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JOB ANALYSIS AND INTEREST MEASUREMENT (JAIM)

Mark the one option in each of the following questions which best applies to you. Mark only one in each question. Answer EVERY QUESTION.

1. While in school how often were you an elected officer in an organization?
 - a. President or vice president of some organization almost every year.
 - b. Often an officer but not usually president.
 - c. An officer a few times.
 - d. Never an officer of an organization.
2. How often do you write personal letters?
 - a. Frequently because you enjoy exchanging letters.
 - b. Frequently but as a matter of obligation.
 - c. Sometimes.
 - d. Seldom.
 - e. Almost never.
3. How often do you attend parties or social gatherings?
 - a. Several times a week.
 - b. About once a week.
 - c. About once or twice a month.
 - d. Several times a year.
 - e. Almost never.
4. Which one of the following school or college subjects did you enjoy most?
 - a. Social Sciences and/or English.
 - b. Shop.
 - c. Mathematics, Chemistry, and/or Physics.
 - d. Biology and/or Botany.
 - e. None of the above.
5. Which of the following best describes your mathematical skill?
 - a. You can add and subtract.
 - b. You can add, subtract, multiply and divide whole numbers.
 - c. You can do arithmetic involving fractions, decimals, and percentages.
 - d. You can do ordinary algebraic and geometric problems.
 - e. You can do advanced mathematics, such as the differential and integral calculus.
6. How were your grades in high school?
 - a. Excellent.
 - b. Good.
 - c. Fair.
 - d. Failing.
 - e. Did not attend high school.

7. If you went to college, what was your academic standing?
 - a. An honor student and awarded commendation.
 - b. Above the average of your class.
 - c. About the average of your class.
 - d. Below the average of your class.
 - e. Did not go to college or have just started.

8. When in school were you
 - a. A member of many clubs and organizations.
 - b. A member of few clubs and organizations.
 - c. Seldom or never a member of any clubs or organizations.

9. Which of the following do you like best in a job?
 - a. Analyzing situations.
 - b. Working with other people.
 - c. Using skill with tools to make something.

10. Which one of the following conditions of a job do you dislike most?
 - a. Working apart from other people.
 - b. A great deal of pressure on you.
 - c. A poor supervisor.
 - d. Detailed and specific instructions.

11. Which one of the following conditions of a job do you dislike least?
 - a. Working apart from other people.
 - b. A great deal of pressure on you.
 - c. A poor supervisor.
 - d. Detailed and specific instructions.

12. The thing you like best in playing cards or similar competitive games is
 - a. The competition.
 - b. The sociability.
 - c. The opportunity to play well.
 - d. You do not like competitive games.

13. Are you at your best during a written examination?
 - a. Yes.
 - b. No.
 - c. Don't know.

14. As an adolescent you were mostly
 - a. Obedient toward your parents or guardians.
 - b. Trying to please your parents or guardians.
 - c. Independent.
 - d. Rebellious.
 - e. Resentful.

15. How many friends do you have?
 - a. One or two friends.
 - b. A few friends, but these are really close friends.
 - c. No very close friends, but many casual friends.
 - d. Many friends.
 - e. No friends.

16. It is most important for a supervisor to
 - a. Organize and direct the work so that he gets the most out of each employee.
 - b. Give the work group a sense of direction and purpose so that the whole group is motivated.
 - c. Make it possible for each individual worker to do his job well.

17. Which of the following is most important to you in a job?
 - a. Steadiness and permanence of work.
 - b. Congenial co-workers.
 - c. Promotion opportunities.
 - d. Competent co-workers.

18. Which of the following is least important to you in a job?
 - a. Steadiness and permanence of work.
 - b. Congenial co-workers.
 - c. Promotion opportunities.
 - d. Competent co-workers.

19. When people try to take advantage of you, are you most likely to
 - a. Have nothing further to do with them, at least temporarily.
 - b. Insist that they stop.
 - c. Try to understand them and get them to be reasonable.

20. It is most important for you to be
 - a. Independent.
 - b. Successful.
 - c. Well-liked.
 - d. Socially useful.

21. How lucky do you feel you have been?
 - a. Almost always lucky.
 - b. Usually lucky.
 - c. Neither lucky nor unlucky.
 - d. Somewhat unlucky.
 - e. Very unlucky.

22. You prefer to be considered
 - a. Successful.
 - b. Ingenious.
 - c. Unselfish.
 - d. Well-liked.
 - e. Reliable.

23. You get along best when you
 - a. Respect the rights of others.
 - b. Respect the feelings of others.
 - c. Do what has to be done even if it doesn't please everyone.

24. It would compliment you most to be called
 - a. Brilliant.
 - b. Helpful.
 - c. Industrious.
 - d. Gracious.
 - e. Powerful.

25. You get along best when you
 - a. Know what you want and work to get it.
 - b. Do what seems to be appropriate in each situation.
 - c. Follow established principles and standards.

26. Which of the following do you like best in a job?
 - a. To work closely with a superior doing important and interesting work.
 - b. To get results on your own.
 - c. To be a member of a group with high morale and high performance standards.
 - d. To organize and direct the carrying out of an important task.
 - e. None of the above.

27. When you have something to do that doesn't interest you, you
 - a. Nearly always do it without delay.
 - b. Do the things that interest you first.
 - c. Do it after considerable procrastination.
 - d. Do it after pressure is put on you.
 - e. Seldom get around to doing it.

28. If you were asked to be an officer of an organization, you would prefer
 - a. To be president.
 - b. To be vice president.
 - c. To be secretary.
 - d. To be treasurer.
 - e. To hold no office.

29. You have been doublecrossed by people
 - a. Often.
 - b. Sometimes.
 - c. Almost never.

30. It is most important for a supervisor to
 - a. Praise employees for the work they do well.
 - b. Prod employees for greater effort to get them to work up to capacity.
 - c. Let employees know the results of their work.

31. People are most likely to be influenced by
 - a. The fear of punishment.
 - b. The possibility of rewards.
 - c. The chance to accomplish something.

32. In your personal habits you consider yourself
 - a. Unusually orderly.
 - b. More orderly than average.
 - c. About average in orderliness.
 - d. Somewhat below average in orderliness.
 - e. Considerably below average in orderliness.

33. When you have an appointment or have to be somewhere you are
 - a. Almost always there ahead of time.
 - b. Almost always on time.
 - c. Sometimes a little late.
 - d. Frequently late.
 - e. Almost always late.

34. It is most important that a supervisor
 - a. Make definite assignments and insist that deadlines be met.
 - b. Develop a strong sense of responsibility in the work group as a whole.
 - c. Encourage each subordinate to do as much as he can on his own and give him help when he needs it.

35. Which type of supervisor do you prefer?
 - a. One who makes use of your ability.
 - b. One who tells you clearly what is expected of you.
 - c. One who expects and permits you to work on your own.

36. As a child the discipline you received was
 - a. Very strict.
 - b. Strict but not harsh.
 - c. Lenient.
 - d. Lax.
 - e. Strict from one parent and lenient from the other.

37. Which of the following statements best describes how you spend your spare time?
 - a. Frequently have trouble finding something to do.
 - b. Sometimes have trouble finding something to do.
 - c. Almost always have something to do, but don't always enjoy it.
 - d. Almost always have something to do that you enjoy.

38. In your work you like to
 - a. Be guided by professional standards and practices.
 - b. Have definite procedures and written instructions which you can follow.
 - c. Help your supervisor with whatever needs to be done.
 - d. Decide for yourself what to do and how to do it.

39. You enjoy taking part in a good fight for a good cause
- Frequently.
 - Sometimes.
 - Almost never.
40. Your associates consider you
- Too concerned with details.
 - Very careful about details.
 - Somewhat careless about details.
 - Very careless about details.
41. Have your supervisors or teachers praised you and given you credit for work done well?
- Almost always.
 - Usually.
 - Seldom.
42. As an adolescent, you openly disagreed with one or both of your parents or your guardian on political, religious, social, or other issues
- Frequently.
 - Occasionally.
 - Rarely or never although you sometimes disagreed with them.
 - Rarely or never because you almost always agreed with them.
43. Which of the following aspects of a job do you find most desirable?
- Using persuasion to get things done.
 - Helping others deal more successfully with a problem.
 - Making things through use of tools.
 - Having a job or position which is recognized to be important or desirable.
 - None of the above.
44. Which of the following do you like best?
- To work as a member of a group engaged in some useful activity.
 - To develop new ideas and approaches to problems and situations.
 - To direct and coordinate the efforts of other people.
 - To get results by overcoming obstacles and resistance.
 - None of the above.
45. A supervisor gets the best results from his work group when he
- Requires a little bit more work than his employees think they can do.
 - Rewards loyalty and good performance.
 - Shows employees the importance of their work.
46. When engaged in athletics or physical activities what effect does competition or stress have on your performance?
- You do better under competition or stress.
 - You do better when there is no competition or stress.
 - Competition or stress does not affect your performance.

47. Which do you like best in a job?
- To solve difficult problems on your own through use of ingenuity.
 - To supervise the carrying out of a difficult assignment.
 - To use tools to make something.
 - To work with other people.
 - None of the above.
48. During your working career your jobs have
- Almost always been interesting.
 - Usually been interesting.
 - Seldom been interesting.
49. Your supervisors for the most part have
- Shown a lack of sympathy and understanding in dealing with you as an employee.
 - Been for the most part indifferent.
 - Been friendly but not particularly helpful.
 - Usually been helpful and understanding.
 - Almost always been helpful and understanding.
50. Do you complain to the waiter when you are served inferior or poorly prepared food?
- Whenever complaint is justified.
 - Sometimes when complaint is justified.
 - Almost never.
51. You find you get along best when you
- Establish long range plans and goals and follow them as much as you can.
 - Adapt yourself to the current situation and avoid unrealistic, "ivory tower" plans.
 - Do what is expected and required of you.
52. When working in your spare time on a hobby or something that interests you, do you
- Concentrate for long periods of time and complete each project you start.
 - Work on a number of things at the same time and complete most of them but not necessarily in the order in which you started them.
 - Finish those things that continue to interest you and forget about the others.
 - Start many things but finish only a few.
 - Seldom finish anything you start in your spare time.
53. An effective supervisor
- Assigns each subordinate a specific job to do and sees that he does it the way it is supposed to be done.
 - To the extent practicable permits members of the work group to decide among themselves how things should be done.
 - To the extent practicable permits each subordinate to do the work the way he finds works best for him.

54. Do you entertain groups at home?
- Frequently.
 - Occasionally.
 - Almost never.
55. How do people feel about you?
- Almost all of them like you.
 - Most of them like you.
 - A few of them like you.
 - Almost none of them likes you.
56. Your political, religious, and social views are
- Almost identical with those of your parents.
 - Similar to those of your parents.
 - Different in some important respect from those of your parents.
 - Very substantially different from those of your parents.
 - Different in almost every important respect from those of your parents.
57. An effective supervisor
- Takes every opportunity to praise employees on their performance.
 - Only praises employees occasionally or for unusually good work since employees usually know when they are doing well.
 - Praises employees occasionally but also keeps a careful watch for deficient performance to discipline those who fall below standard.
58. How much energy do you have?
- Do not tire easily and can work long and steadily.
 - Have spurts of energy particularly when working on something interesting.
 - Work hard for long periods of time but then sometimes suddenly feel great fatigue.
 - Have about the average amount of energy.
 - Tire more easily than the average person.
59. When you feel troubled do you
- Talk it over with someone.
 - Get away by yourself.
 - Get busy and active.
60. Do you feel that laws and social conventions are useless and hamper an individual's personal freedom?
- Frequently.
 - Sometimes.
 - Seldom.
 - Never.
61. When a friend or relative makes an obvious grammatical mistake do you
- Correct the mistake so that he will know what is right.
 - Correct the mistake if it has been made a number of times.
 - Correct the mistake only if you know that he wants to be corrected.
 - Correct the mistake if it can be done without embarrassing him.
 - Never correct the mistake.

62. You prefer to be considered
- Intelligent.
 - Conscientious.
 - Considerate.
 - Influential.
 - Attractive.
63. Which do you like best?
- Working closely with and being of assistance to a supervisor doing important and interesting work.
 - Working as a member of a group doing important and interesting work.
 - Working by yourself doing important and interesting work.
64. When dealing with other people it is most important to
- Avoid hurting the feelings of others.
 - Avoid being diverted from doing what is right in order to please someone.
 - Avoid unpleasant controversial situations.
65. If someone crowds ahead of you in a line do you usually
- Pay no attention.
 - Say nothing, but give him an angry look.
 - Make a comment to someone else which the offender can hear.
 - Ask him if he knows he has pushed ahead.
 - Insist that he go to the proper place in line.
66. Which of these do you prefer?
- To be where there is something going on.
 - To get away sometimes by yourself and have time for your own thoughts.
 - Usually to get away by yourself.
67. Do you feel that you are left out of things, perhaps intentionally, in group activities?
- Never.
 - Seldom.
 - Sometimes.
 - Frequently.
 - Almost always.
68. Which one of the following outside interests appeals to you most?
- Plays, concerts, or art exhibits.
 - Competitive games.
 - Working with your hands.
 - Social activities.
 - None of the above.

69. Which of these best describes you?
- You work best under a great deal of pressure and tight deadlines.
 - You prefer to work at an even pace, but you are able to work well under pressure.
 - You prefer not to work under pressure, but you are able to meet most reasonable deadlines.
 - You do your worst work if unreasonable pressure is put on you.
70. Which do you like best?
- Work through which you can influence others.
 - Work resulting in social improvement.
 - Work involving the analysis of data.
 - Steady work without frequent interruptions.
 - Work through which you can please others.
71. You prefer to be considered
- Imaginative.
 - Ambitious.
 - Understanding.
 - Dependable.
 - Popular.
72. Do you consider your memory for names and faces to be
- Above average.
 - Average.
 - Below average.
73. Parents get the best results with their children if they
- Praise and encourage them.
 - Praise them sometimes but also maintain strict discipline.
 - Give them freedom and opportunity to learn from their own experience.
74. People are most likely to be influenced by
- Requests from people they like.
 - Orders from someone in authority.
 - Opinions of qualified experts.
75. Which of these is most characteristic of you?
- You budget your income carefully and follow the budget closely.
 - You budget your income and follow the budget within reason.
 - You keep records of personal expenses and check them roughly against what you plan to spend.
 - You keep no records, but have a rough plan for personal expenditures.
76. Which of the following aspects of a job do you consider most important?
- Opportunity to work with a group with high morale and performance standards.
 - Opportunity for personal accomplishment.
 - Steady permanent work.
 - Social usefulness of the work.
 - None of the above.

77. When you have a difficult decision to make and feel that you have enough facts do you find it
- Best to come to a quick decision.
 - Best to spend considerable time reviewing all the possible interpretations of the facts before making a decision.
78. Which do you like best in a job?
- To work closely with and be of help to a supervisor doing important and interesting work.
 - To have clear-cut written guidelines or manuals which tell you exactly what you are supposed to do.
 - To have a supervisor who tells you clearly what he expects you to do.
 - To have a supervisor who expects and permits you to work on your own.
79. Which of the following describes you best?
- You get up at about the same time each morning and do not like to stay in bed later than your getting up time.
 - You usually get off to a slow start in the morning.
 - You have no fixed pattern and sometimes get up early and sometimes sleep late.
80. Which of the following is most important to you?
- Opportunity to understand just how your supervisor expects work to be done.
 - Freedom in working out your own methods of doing the work.
 - Opportunity to apply professional standards and skills.
81. When an unpleasant controversy or fight is beginning, you are most likely to
- Try to "pour oil on troubled waters" and head off the difficulty.
 - Keep from getting involved if you can.
 - Stop the controversy or fight before it gets out of hand.
82. Which of the following types of supervisors do you like best?
- A supervisor who insists on high performance standards for himself and his subordinates.
 - A supervisor who gives you clear-cut instructions and is always available for advice.
 - A supervisor who is considerate and understanding.
83. When procedural changes need to be made, an effective supervisor
- Makes a definite decision himself as to what is to be done and how it is to be done.
 - Tells each subordinate the purpose and to the extent practicable lets each one work out his own methods.
 - Consults with the work group and encourages them to decide what changes should be made and how they should be put into effect.

84. If a person behaves toward you in a dictatorial or domineering fashion, you
- Keep away from him if you can.
 - Seek an occasion to have it out with him.
 - Try to understand him and slowly win him over.
85. What responsibility do you think each person has for social improvement?
- Each individual should devote some time and effort to improving social conditions.
 - Each individual should take care of his own responsibilities and avoid "do good" activities.
86. How fast do you drive a car?
- Faster than average.
 - Slower than average.
 - About average.
 - You do not drive.
87. Have you found that people break promises which they have made to you?
- Frequently.
 - Sometimes.
 - Seldom.
 - Almost never.
88. When watching sports or other competitive activities you usually
- Support the champion or skillful performer.
 - Support the "underdog" or the one who is losing.
 - Do neither, or each about equally.
89. It is most important to
- Have faith in something.
 - Be intelligent and resourceful.
 - Be kind and considerate.
90. Do you prefer to be considered
- Compassionate.
 - Trustworthy.
 - Effective.
 - Pleasant.
 - Resourceful.
91. Do you take the initiative in planning a party?
- Frequently.
 - Sometimes.
 - Almost never.
92. Which of these describes your experience with athletic games?
- Have received formal recognition of your skill at athletic games.
 - Enjoy and are or at one time were reasonably good at athletic games.
 - Enjoy but have never had any particular skill at athletic games.
 - Do not particularly enjoy athletic games.
 - Do not like and generally avoid athletic games.

93. What is your ability to fix things around the house?
- A reasonably skilled craftsman and enjoy fixing things.
 - Able to make minor repairs.
 - Try to fix things only in an emergency.
 - Almost never try to fix anything.
94. How well do you keep track of your possessions?
- Everything is almost always in its place.
 - Most everything is in its place.
 - Sometimes things get misplaced.
 - Frequently things get misplaced.
 - You have great difficulty keeping track of things.
95. How effective are you at finding lost objects?
- Other people seldom find something after you have tried and given up.
 - You are usually able to find things.
 - You sometimes have difficulty finding things.
 - You frequently have to ask for help or else let it go.
96. Do you enjoy trying to solve mathematical or logical puzzles?
- Yes.
 - No.
 - Sometimes.
97. In what way do you find that you can put your point across best?
- In writing.
 - Orally.
 - Don't know or it doesn't make much difference.
98. How difficult do you find it to give a speech or to recite before a large group?
- You have no difficulty.
 - You are a little nervous at first but have no difficulty after getting started.
 - You do not enjoy it but are able to do it adequately when required.
 - You avoid public speaking or reciting whenever possible.
99. Does it bother you to have to give orders to other people?
- Very much.
 - A little.
 - Not at all.
100. How often do you find yourself taking a position of leadership in a group you are with?
- Often.
 - Occasionally.
 - Almost never.
101. Which of the following describes you the best?
- Happy.
 - Ambitious.
 - Cautious.

102. Does it bother you to leave a task unfinished?
a. Almost always.
b. Usually.
c. Seldom.
d. Only if it is very important.
103. The ideal job for you would
a. Enable you to look forward to a stable, secure future.
b. Permit you to be creative and original.
c. Give you an opportunity to be helpful to others.
d. Show that you were a success and had achieved high status and prestige.
e. Provide you with excitement and variety.

Mark the one statement in each of the following pairs which best applies to you. Mark only one in each pair. Answer EVERY QUESTION.

104. a. You prefer a great deal of activity and the opportunity to make frequent decisions.
b. You prefer the opportunity for careful consideration of all aspects of a problem or situation.
105. a. You like to work steadily and be busy all the time.
b. You like to work hard when necessary including putting in overtime.
106. a. You like to finish one task before starting another.
b. You like to work on several things at once.
107. a. You like clear-cut guidelines or instructions so you know exactly what is expected of you.
b. You like to decide for yourself how the work should be done.
108. a. You like to be given interesting assignments which you can do yourself.
b. You like to accomplish results through supervising others.
109. a. You believe most people are more inclined to help others.
b. You believe most people are more inclined to look out for themselves.
110. a. You would describe yourself as self-confident.
b. You would describe yourself as cautious.

Mark as many of the following statements as apply. You do NOT need to limit yourself to one response.

111. Which of the following statements apply to you?
a. You usually carry through your plans in spite of opposition.
b. You have no difficulty in turning down unreasonable requests.
c. Most people have confidence in your ability.

- d. You have no difficulty in maintaining your opinion when other people disagree with you.
 - e. None of the above applies to you.
112. Which of the following statements apply to you?
- a. You believe it is seldom wise to change your plans in the midst of an undertaking.
 - b. You try to follow a way of life based on duty.
 - c. You have a work and study schedule which you follow carefully.
 - d. You are always careful about your manner of dress.
 - e. None of the above applies to you.
113. With which of the following statements do you agree?
- a. It is usually best to do things in a conventional way.
 - b. It is usually best to change things slowly.
 - c. You would rather be a steady and dependable worker than a brilliant but unstable one.
 - d. When things are going smoothly it is best not to make changes which will disrupt things.
 - e. You do not agree with any of the above.
114. Which of the following statements apply to you?
- a. You have found that people who make quick decisions frequently make poor ones.
 - b. You frequently see so many different aspects of a problem or situation that you find it difficult to make a decision.
 - c. When you have an important problem to consider, you prefer to think it through alone.
 - d. You frequently become so absorbed in what you are doing that you find it difficult to turn your attention to something else.
 - e. None of the above applies to you.
115. With which of the following statements do you agree?
- a. Spare the rod and spoil the child.
 - b. There are certain types of behavior which are always right, moral, and good.
 - c. Moral principles come from an outside power higher than man.
 - d. Obedience and respect for authority are among the most important virtues children should learn.
 - e. You do not agree with any of the above.
116. Which of the following statements apply to you?
- a. Like to keep going until you have finished a job.
 - b. You are thorough in any work you undertake.
 - c. You have a reputation for keeping at something after other people have lost interest.
 - d. You are generally striving to reach some goal you have established for yourself.
 - e. None of the above applies to you.

117. Which of the following apply to you?
- a. When things are dull you frequently like to stir up some excitement.
 - b. You frequently like to take a chance rather than play it safe.
 - c. You sometimes enjoy a dangerous situation.
 - d. You enjoy a race or a game better when you bet on it.
 - e. None of the above applies to you.
118. With which of the following statements do you agree?
- a. The best defense is a good offense.
 - b. It is more important to be respected than to be liked.
 - c. People are more competitive than they are cooperative.
 - d. No matter what a superior officer says he should always be obeyed.
 - e. You do not agree with any of the above.
119. Which of the following statements apply to you?
- a. You can deal more effectively with words than you can with numbers.
 - b. You often depend on overall impressions more than on systematic analysis.
 - c. You frequently find it is better to act now rather than to take the extra time needed to plan and think things through carefully.
 - d. You believe that moral principles are not absolute and unchanging but depend upon circumstances.
 - e. None of the above applies to you.
120. Which of the following statements apply to you?
- a. Your ideas are often considered unusual and imaginative.
 - b. It does not disturb you to be different from other people and to do things which are not customary.
 - c. You often contribute new ideas to your work.
 - d. You often become enthusiastic over new things or new plans.
 - e. None of the above applies to you.
121. Which of the following activities do you enjoy a great deal?
- a. Reading nonfiction or serious novels.
 - b. Hunting or fishing.
 - c. Playing cards.
 - d. Making things by using tools.
 - e. You do not particularly enjoy any of the above activities.
122. Which of the following sayings have you found frequently to be true?
- a. "It is often necessary to be cruel in order to be kind."
 - b. "Give someone an inch and he will take a mile."
 - c. "Familiarity breeds contempt."
 - d. "Good fences make good neighbors."
 - e. You have not found any of the above to be frequently true.

123. Which of the following leisure-time activities interested you in high school?
- a. Doing scientific experiments.
 - b. Using tools to build, improve, and repair things.
 - c. Playing on a school athletic team.
 - d. Participating in social affairs.
 - e. None of the above.
124. Which of the following statements describe the attitudes of most people toward their work?
- a. Most people shirk their duties whenever they think they can get away with it.
 - b. Most people prefer a supervisor who tells them clearly what to do.
 - c. Most people take very little interest in their work.
 - d. Most people prefer an easy uninteresting job to a hard interesting one.
 - e. None of the above applies to most people.
125. Which of the following statements apply to you?
- a. You frequently like to get away by yourself with your own thoughts.
 - b. When you are walking somewhere you are more likely to concentrate on your own thoughts than to notice the things around you.
 - c. You are more a theorist than a practical person.
 - d. You often find it necessary to stand up for your principles or standards.
 - e. None of the above applies to you.

Look over your answer sheet and make sure you have answered every question. There should be only one option checked for questions 1-110. As many options as apply should be checked for questions 111-125.

APPENDIX C

JAIM ANSWER SHEET

Job Analysis and Interest Measurement (JAIM)

Name.....Date.....

Current Position

Specialty, if any, in your occupation.....

AgeSex.....

Questions 1-110 require your choosing only ONE option. Please PRINT a capital letter for your choice (A, or B, or C, or D, or E) on the line following the number of the question. Please make the letter large and distinct. Answer EVERY question.

- | | | | | | |
|-----------|-----------|-----------|-----------|-----------|------------|
| 1. _____ | 20. _____ | 39. _____ | 58. _____ | 77. _____ | 96. _____ |
| 2. _____ | 21. _____ | 40. _____ | 59. _____ | 78. _____ | 97. _____ |
| 3. _____ | 22. _____ | 41. _____ | 60. _____ | 79. _____ | 98. _____ |
| 4. _____ | 23. _____ | 42. _____ | 61. _____ | 80. _____ | 99. _____ |
| 5. _____ | 24. _____ | 43. _____ | 62. _____ | 81. _____ | 100. _____ |
| 6. _____ | 25. _____ | 44. _____ | 63. _____ | 82. _____ | 101. _____ |
| 7. _____ | 26. _____ | 45. _____ | 64. _____ | 83. _____ | 102. _____ |
| 8. _____ | 27. _____ | 46. _____ | 65. _____ | 84. _____ | 103. _____ |
| 9. _____ | 28. _____ | 47. _____ | 66. _____ | 85. _____ | 104. _____ |
| 10. _____ | 29. _____ | 48. _____ | 67. _____ | 86. _____ | 105. _____ |
| 11. _____ | 30. _____ | 49. _____ | 68. _____ | 87. _____ | 106. _____ |
| 12. _____ | 31. _____ | 50. _____ | 69. _____ | 88. _____ | 107. _____ |
| 13. _____ | 32. _____ | 51. _____ | 70. _____ | 89. _____ | 108. _____ |
| 14. _____ | 33. _____ | 52. _____ | 71. _____ | 90. _____ | 109. _____ |
| 15. _____ | 34. _____ | 53. _____ | 72. _____ | 91. _____ | 110. _____ |
| 16. _____ | 35. _____ | 54. _____ | 73. _____ | 92. _____ | |
| 17. _____ | 36. _____ | 55. _____ | 74. _____ | 93. _____ | |
| 18. _____ | 37. _____ | 56. _____ | 75. _____ | 94. _____ | |
| 19. _____ | 38. _____ | 57. _____ | 76. _____ | 95. _____ | |

On the remaining fifteen questions (111-125), you may mark as many options as apply; you need not limit yourself to one. All five responses are therefore listed by the letters (a,b,c,d,e); CIRCLE the option or options which apply.

- | | | |
|----------------|----------------|----------------|
| 111. a b c d e | 116. a b c d e | 121. a b c d e |
| 112. a b c d e | 117. a b c d e | 122. a b c d e |
| 113. a b c d e | 118. a b c d e | 123. a b c d e |
| 114. a b c d e | 119. a b c d e | 124. a b c d e |
| 115. a b c d e | 120. a b c d e | 125. a b c d e |

BIBLIOGRAPHY

1. Argyris, Chris. Executive Leadership: An Appraisal of a Manager in Action. New York: Harper and Row Publishers, Inc., 1953.
2. _____. Integrating the Individual and the Organization. New York: John Wiley & Sons, Inc., 1964.
3. _____. Organization and Motivation. Homewood, Ill.: Richard D. Irwin, Inc., and The Dorsey Press, 1965.
4. Army War College Leadership Study. Carlisle Barracks, Pa.: US Army War College, June 30, 1970.
5. Barnes, Peter. Pawns: The Plight of the Citizen-Soldier. Also promotional indorsement by Robert Sherrill. New York: Alfred A. Knopf, Inc., 1972.
6. Baumgartner, John S. The Lonely Warriors; Case for the Military-Industrial Complex. Los Angeles: Nash Publishing Co., 1970.
7. Bennis, Warren G. "Revisionist Theory of Leadership." Harvard Business Review, January-February 1961.
8. Bennis, Warren G.; Benne, Kenneth D.; and Chin, Robert. The Planning of Change: Readings in the Applied Behavioral Sciences. New York: Holt, Rinehart and Winston, 1964.
9. Bienvenu, Bernard J. New Priorities in Training. American Management Association, 1969.
10. Bieri, J. "Changes in Interpersonal Perceptions Following Social Interaction." Journal of Abnormal and Social Psychology, Vol. 48, 1953.
11. Bletz, Donald F. "After Vietnam: A Professional Challenge." Military Review. Fort Leavenworth, Kan.: August 1971.
12. _____. "Military Professionalism: A Conceptual Approach." Military Review. Fort Leavenworth, Kan.: May 1971.
13. _____. "Mutual Perceptions: The Academic and the Soldier in Contemporary America." Parameters, Vol. 1, No. 2. Carlisle Barracks, Pa.: Fall 1971.
14. _____. The Role of the Military Professional in US Foreign Policy. New York: Praeger Publishers, 1972.

15. Bossom, J., and Maslow, A. H. "Security of Judges as a Factor in Impressions of Warmth in Others." Journal of Abnormal and Social Psychology, Vol. 55, 1957.
16. Broom, Leonard, and Selznick, Phillip. Sociology. New York: Row Petersen and Co., 1958.
17. Bunting, Josiah, Major. The Lionheads. New York: George Braziller, Inc., 1972.
18. Burke, R. L., and Bennis, W. G. "Changes in Perception of Self and Others During Human Relations Training." Human Relations, Vol. 2, 1961.
19. Cantril, Hadley. "Perception and Interpersonal Relations." American Journal of Psychiatry, Vol. 114, No. 2, 1957.
20. Chapman, Herschel E. Officer Candidate School Evaluation and Training. Fort Benning, Ga.: The Infantry School, June 1956.
21. Chung, Ly Qui. Between Two Fires: The Unheard Voices of Vietnam. New York: Praeger Publishers, 1970.
22. Cross, Edward M. The Behavioral Styles, Work Performances and Values of an Occupational Group: Computer Programmers. Unpublished Doctoral Dissertation. Washington, D. C.: The George Washington University, 1970.
23. Dearborn, D. C., and Simon, H. A. "Selective Perception: A Note on the Departmental Identifications of Executives." Sociometry, Vol. 21, 1958.
24. Deutsch, M., and Soloman, L. "Reactions to Evaluations by Others as Influenced by Self-Evaluation." Sociometry, Vol. 22, 1959.
25. Douglas, William O. International Dissent. New York: Random House, 1971.
26. Edwards, Allen L. Statistical Methods for the Behavioral Sciences. New York: Holt, Rinehart and Winston, 1964.
27. Eichelberger, Robert L. Our Jungle Road to Tokyo. New York: The Viking Press, Inc., 1950.
28. Festinger, Leon, et. al. "The Influence Process in the Presence of Extreme Deviates." Human Relations, Vol. 5, 1952.
29. Finn, James, ed. A Conflict of Loyalties: The Case for Selective Conscientious Objection. New York: Western Publishing Co., 1968.

30. Finn, James, ed. Conscience and Command; Justice and Discipline in the Military. New York: Random House, 1971.
31. Fleishman, Edwin A.; Harris, Edwin F.; and Burt, Harold E. Leadership and Supervision in Industry. Columbus, Ohio: Bureau of Educational Research, Ohio State University, 1955.
32. Getlein, Frank. Playing Soldier. New York: Holt, Rinehart, and Winston, 1971.
33. Glasser, Ronald J. 365 Days. New York: George Braziller, Inc., 1971.
34. Glick, Edward B. Soldiers, Scholars, and Society; The Social Impact of the American Military. Pacific Palisades, Calif.: Goodyear Publishing Co., Inc., 1971.
35. Gordon, Leonard V., and Medland, Francis F. Values Associated With Military Career Motivation. Washington, D. C.: US Department of the Army, 1964.
36. Hamrick, Tom. "Coping With the Boob Image." Army. Washington, D. C.: July 1970.
37. Hauser, William L. "Professionalism and the Junior Officer Drain." Army. Washington, D. C.: September 1970.
38. Hayes, Thomas L. American Deserters in Sweden; The Men and Their Challenge. New York: Association Press, 1971.
39. Herzberg, Frederick. "One More Time: How Do You Motivate Employees?" Harvard Business Review, January-February 1968.
40. Hickman, Martin B. The Military and American Society. Beverly Hills, Calif.: Glencoe Press, 1971.
41. Holmen, Milton G., et. al. An Assessment Program for OCS Applicants. Washington, D. C.: Human Resources Research Office, The George Washington University, 1956.
42. Holmen, Milton G., and Katter, Robert V. Attitude and Information Patterns of OCS Eligibles. Washington, D. C.: Human Resources Research Office, The George Washington University, 1953.
43. Hunt, George P., Managing Editor. "Our Four-Star Military Mess." Life, Vol. 70, No. 23. New York: June 18, 1971.
44. Huntington, Samuel P. The Soldier and the State; The Theory and Policies of Civil-Military Relations. Cambridge, Mass.: Harvard University Press, 1967.

45. Janowitz, Morris. The Professional Soldier. New York: The Free Press, 1960, and revised in 1971.
46. Jennings, Eugene F. The Executive: Autocrat, Bureaucrat, Democrat. New York: Harper and Row Publishers, Inc., 1962.
47. _____. The Executive in Crisis. East Lansing, Mich.: Michigan State University, 1965.
48. Johnson, Haynes, and Wilson, George C. "Army in Anguish." The Washington Post, September 12, 1971.
49. Johnston, Jerome, and Bachman, Jerald G. Young Men Look at Military Service. Ann Arbor, Mich.: Institute for Social Research, University of Michigan, April 1971.
50. Just, Ward. Military Men. New York: Alfred A. Knopf, Inc., 1970.
51. _____. "Soldier." The Atlantic, October 1970.
52. Katz, Daniel, and Kahn, Robert L. The Social Psychology of Organizations. New York: John Wiley & Sons, Inc., 1966.
53. Kelley, H. H. "The Warm-Cold Variable in First Impressions of Persons." Journal of Personality, Vol. 18, 1950.
54. Killmer, Richard L.; Lecky, Robert S.; and Wiley, Debrah S. They Can't Go Home Again. Philadelphia, Pa.: Pilgrim Press, 1971.
55. Killmer, Richard L., and Lutz, Charles P. The Draft and the Rest of Your Life. Minneapolis, Minn.: Augsburg Publishing House, 1972.
56. Kirch, J. M. The Successful Police Educator: A Profile. Master's Thesis. Washington, D. C.: The George Washington University, 1969.
57. Kirkpatrick, D. L. Techniques for Evaluating Training Programs. A Series of Four Articles, November 1959 - February 1961.
58. Kotula, Leo J., and Haggerty, Helen R. Research on the Selection of Officer Candidates and Cadets. US Army Technical Research Report 1146, 1966.
59. Lehner, G. F. J. "Some Relationships Among Personal Adjustment Self-Ratings, Self-Scores, and Assigned 'Average' Scores." Journal of Psychology, Vol. 50, 1960.
60. Leider, Robert. Why They Leave: Resignations From the USMA Class of 1966. A Study by the US Department of the Army, July 6, 1970.

61. Leonard, R. G. An Exploratory Study of Executive Personality Patterns Within Selected Private Industry. Doctoral Dissertation. Washington, D. C.: The George Washington University, 1972.
62. Levy, Charles. "The Violent Veterans." Time. Chicago, Ill.: Time Inc., March 13, 1972.
63. Lieberman, Seymour. "The Effects of Changes in Roles on the Attitudes of Role Occupants." Human Relations, Vol. 9, 1956.
64. Likert, Rensis. The Human Organization. New York: McGraw-Hill Book Co., 1967.
65. Lippitt, Gordon L. Effects of Information About Group Desire for Change on Members of a Group. Unpublished Doctoral Dissertation. Washington, D. C.: American University, 1959.
66. _____. Organizational Renewal. New York: Meredith Corp., 1969.
67. _____. "What Do We Know About Leadership?" National Education Journal, December 1955.
68. Lippitt, Gordon L., and Petersen, Peter B. "Development of a Behavioral Style in Leadership Training." Training and Development Journal, Vol. 21, No. 7, Madison, Wisc.: July 1967.
69. _____. Measuring Changes in Behavioral Styles During a Leadership Program: A Study of an Officer Candidate School. Unpublished Paper. Washington, D. C.: The George Washington University, 1967.
70. Lippitt, G. L.; McCune, S. D.; and Church, L. D. "Attitudes of Training Directors Toward the Application of Research to Training Programs." Training Director's Journal, Vol. 18, No. 3, March 1964.
71. MacArthur, Douglas, General. Farewell Address to the Men of West Point, May 12, 1962.
72. Mager, Robert F. Developing Attitude Toward Learning. Palo Alto, Calif.: Fearon Publishers, 1968.
73. Mayeske, G. W.; Harmon, F. L.; and Glickman, A. S. "What Can Critical Incidents Tell Management?" Training and Development Journal, Vol. 20, No. 4. Madison, Wisc.: April 1966.
74. McCune, Shirley D. An Exploratory Study of the Measured Behavioral Styles of Students in Five Schools of Social Work. Doctoral Dissertation. Washington, D. C.: Catholic University, 1966.
75. McCune, S. D., and Mills, E. W. Continuing Education for Ministers, A Pilot Evaluation of Three Programs. Washington, D. C.: Ministry Studies Board, 1968.

76. Meckling, William H., Executive Director. The President's Commission on an All-Volunteer Armed Force. Washington, D. C.: US Government Printing Office, February 1970.
77. Medland, F. F., and Olans, J. L. Peer Rating, Stability in Changing Groups. US Army Technical Research Note 142, April 1964.
78. Menzel, Paul. Moral Argument and the War in Vietnam. Nashville, Tenn.: Aurora Publishers, Inc., 1971.
79. Miles, Matthew B. "Human Relations Training: Processes and Outcomes." Journal of Counseling Psychology, Vol. 7, 1960.
80. _____. Learning to Work in Groups. Teacher's College. New York: Columbia University Press, 1959.
81. Miller, James C. A Study in Officer Motivation (New View). Washington, D. C.: US Air Force Studies and Analysis, DCS/Plans and Operations, November 1966.
82. Miller, Robert E., and Creager, John A. Predicting Achievement of Cadets in Their First Year at the Air Force Academy, Class of 1962. Texas: Lackland Air Force Base, Personnel Laboratory, 1960.
83. Mosel, James N. How to Feed Back Performance Results to Trainees. A paper read before the Employee Training Institute at the Annual Conference of Public Personnel Administration of the Civil Service Assembly. Washington, D. C.: October 9, 1966.
84. Moskos, Charles C., Jr. The American Enlisted Man. New York: Russell Sage Foundation, 1970.
85. Murdick, R. G. "Measuring the Profit in Industry Training Programs." Journal of the American Society of Training Directors, Vol. 14, No. 4, April 1960.
86. Nelson, Paul D. "Similarities and Differences Among Leaders and Followers." Journal of Social Psychology, Vol. 63, 1964.
87. Opinion Research Corporation. Attitudes and Motivations of Young Men Toward Enlisting in the US Army. A Study Prepared for N. W. Ayer & Son, Inc., and the US Army. Princeton, N. J.: May 1971.
88. Oppenheimer, Martin, ed. The American Military. Chicago, Ill.: Transition Books, Aldine Publishing Co., 1971.
89. _____. The American Military. Chicago, Ill.: Transition Books, Aldine Publishing Co., 1971. Pp. 16-36: "Vietnam; Why Men Fight," by Charles C. Moskos.

90. Osborne, J. K. I Refuse. Philadelphia, Pa.: The Westminster Press, 1971.
91. Petersen, Peter B. The American Soldier of the Vietnam War. Arlington, Va.: Behavioral Sciences Division, Army Research Office, US Army, June 25, 1971.
92. _____. Comparison of Behavioral Styles. Proceedings of Military Testing Association Convention. San Antonio, Texas: September 18, 1968.
93. _____. A Comparison of Behavioral Styles Between Entering and Graduating Students in Officer Candidate School. Unpublished Master's Thesis. Washington, D. C.: The George Washington University, 1967. On file in US Army service school libraries. Available at cost from the National Technical Information Service, US Department of Commerce, Springfield, Virginia 22151 (Document No. AD 644 833). Also for sale by University Microfilms, Ann Arbor, Michigan (Document No. M-1272).
94. _____. Comparison of Certain Self-Reported Beliefs Between a Group of Men Who Remained in the US Army (n=358) and a Group of Men Who Departed (n=919). Pending Publication.
95. _____. "Effect and Stability of Leadership Training." Research in Education. ERIC Processing and Reference Facility, 4833 Rugby Avenue, Bethesda, Maryland 20014, December 1971.
96. _____. The Effect of OCS Training. Unpublished Paper. Arlington, Va.: December 1970.
97. _____. Effects of Combat on the Beliefs of Infantrymen (n=80). Pending Publication.
98. _____. An Exploratory Study of the Psychological Dimensions of Army Students Attending the US Army War College. Monograph. Carlisle Barracks, Pa.: US Army War College, February 14, 1972.
99. _____. An Investigation of the Effect and Stability of Training (n=210). Pending Publication.
100. _____. An Investigation of the Effect of Training. Unpublished Doctoral Dissertation. Washington, D. C.: The George Washington University, February 15, 1971. On file in the Library of Congress and in US Army service school libraries. Available at cost from the National Technical Information Service, US Department of Commerce, Springfield, Virginia 22151 (Document No. AD 721 394). Also for sale by University Microfilms, Ann Arbor, Michigan (Document No. 71-14 185).

101. Petersen, Peter B. "Leadership Training." Training and Development Journal, Vol. 26, No. 4. Madison, Wisc.: April 1972.
102. _____. Nonmonetary Factors of Retention Pertinent to a Modern Volunteer Army. Arlington, Va.: Behavioral Sciences Division, Army Research Office, December 1971.
103. _____. "Psychological Dimensions of Army Students Attending the US Army War College: An Analysis." Parameters, Vol. II, No. 1, Carlisle Barracks, Pa.: US Army War College, Spring 1972.
104. _____. Reevaluation of the OCS Training Process. Unpublished Paper. Arlington, Va.: May 17, 1971.
105. _____. Transition from Vietnam. Unpublished Paper. Arlington, Va.: May 17, 1971.
106. Petersen, Peter B., and Lippitt, Gordon L. "Comparison of Behavioral Styles Between Entering and Graduating Students in Officer Candidate School." Journal of Applied Psychology, Vol. 52, No. 1, Part 1. Washington, D. C.: February 1968.
107. Polner, Murray. No Victory Parades: The Return of the Vietnam Veteran. New York: Holt, Rinehart and Winston, 1971.
108. Porter, Lyman W. "Where Is the Organization Man?" Harvard Business Review, November-December 1963.
109. Public Opinion Surveys, Inc. Attitudes of Adult Civilians Toward the Military Services as a Career. Prepared for the Office of the Armed Forces Information and Education, Washington, D. C.: US Department of Defense, 1955.
110. Pullen, John J. Patriotism in America: A Study of Changing Devotions 1770-1970. New York: American Heritage Press, 1971.
111. Reedy, George E. Who Will Do the Fighting for Us? New York: The World Publishing Co., 1969.
112. Reeves, Edgar A., Jr. A Comparative Study of Behavioral Style as Measured by the Job Analysis and Interest Measurement (JAIM) of Retired Adult Participation and Non-Participation in the Institute of Lifetime Learning. Doctoral Dissertation. Washington, D. C.: The George Washington University, 1969.
113. Reimer, David J. The Relationship Between Childhood Experience and Certain Variables Correlated With Occupational Choice and Performance. Master's Thesis. Washington, D. C.: The George Washington University, 1967.

114. Rensberger, Boyce. "Delayed Trauma in Veterans Cited." New York Times, May 3, 1972.
115. Report of Special Commission of Civilian Psychiatrists Covering Psychiatric Policy and Practice in the United States Army Medical Corps, European Theater, April 20 to July 8, 1945.
116. Rivkin, Robert S. GI Rights and Army Justice. New York: Grove Press Inc., 1970.
117. Robinson, William H., Jr. "An Element of International Affairs - The Military Mind." Naval War College Review, Vol. XXIII, No. 3. Newport, R. I.: November 1970.
118. Rodberg, Leonard S., and Shearer, Derek. The Pentagon Watchers. Garden City, N. Y.: Doubleday and Co., 1970.
119. Rohr, John A. Prophets Without Honor. Nashville, Tenn.: Abingdon Press, 1971.
120. Roth, R. M. Personal Characteristics of the Overseas Chief School Administrator and the Relationship of These Characteristics to the Type of His School, and Its Geographic Location. Doctoral Dissertation. Philadelphia, Pa.: Temple University, 1972.
121. Schein, Edgar H. "Management Development as a Process of Influence." Industrial Management Review of the School of Industrial Management (MIT), May 1961.
122. _____. Organizational Psychology. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1965.
123. Schein, Edgar H.; Schneier, Inga; and Barker, Curtis H. Coercive Persuasion. New York: W. W. Norton and Co., Inc., 1961.
124. Shartle, Carroll E. Executive Performance and Leadership. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1956.
125. Sherrill, Robert. Military Justice Is to Justice as Military Music Is to Music. New York: Harper and Row Publishers, Inc., 1970.
126. _____. "Some Advice the Pentagon Should Heed." Washington Post, (Book World), January 9, 1972.
127. Slater, Philip E., and Bennis, Warren G. "Democracy Is Inevitable." Harvard Business Review, Vol. 42, No. 2, March/April 1964.
128. Stapp, Andy. Up Against the Brass. New York: Simon and Schuster, 1970.

129. Stavins, Ralph; Barnet, Richard J., and Rasking, Marcus G. Washington Plans an Aggressive War. New York: Random House, 1971.
130. Stephenson, R. W.; Erickson, C. E.; and Lehner, G. F. J. Self-Perception Changes in a Sensitivity Training Laboratory. Washington, D. C.: National Training Laboratories, National Education Association, No. 5, 1965.
131. Sterner, F. M. "Determining Training Needs: A Method." Training Director's Manual. Vol. 19, No. 9, September 1965.
132. Stevens, Franklin. If This Be Treason. New York: Peter H. Wyden, Inc., 1970.
133. Stouffer, Samuel A., et. al. "The American Soldier: Adjustment During Army Life," Vol. 1. Studies in Social Psychology in World War II. Princeton, N. J.: Princeton University Press, 1949.
134. _____. "The American Soldier: Combat and its Aftermath," Vol. II. Studies in Social Psychology in World War II. Princeton, N. J.: Princeton University Press, 1949.
135. Tannenbaum, R.; Weschler, I. R.; and Massarik, F. Leadership and Organization. New York: McGraw-Hill Book Co., 1961.
136. Tauber, Peter. The Sunshine Soldiers. New York: Simon and Schuster, 1971.
137. This, Leslie E., and Lippitt, Gordon L. "Learning Theories and Training." Training and Development Journal. Madison, Wisc.: April-May 1966.
138. Trojanowicz, Robert C. A Comparison of the Behavioral Styles of Policemen and Social Workers. Unpublished Doctoral Dissertation. East Lansing, Mich.: Michigan State University, 1969.
139. US Army Command and General Staff College. Leadership RB22-1. Fort Leavenworth, Kans.: US Department of the Army, 1952.
140. "US Army War College." US Army War College Pamphlet. Carlisle Barracks, Pa.: US Army War College, January 1972.
141. US Congress. House. Committee on Appropriations. Subcommittee on Department of Defense. Department of Defense Appropriations for 1972. Hearings, 92nd. Cong., 1st sess. Washington, D. C.: US Government Printing Office, 1971.
142. US Department of the Army. Advertising Guidelines From Reenlistment Research. A study prepared by N. W. Ayer & Sons, Inc., Washington, D. C., March 1970.

143. US Department of the Army. DA Circular No. 351-18: Senior Service College Selection System. Washington, D. C.: 26 October 1970.
144. _____. Department of the Army Pamphlet 601-1: The OCS Story. Washington, D. C.: June 1, 1966.
145. _____. Department of the Army Pamphlet 601-1: The OCS Story. Washington, D. C.: October 1969.
146. _____. Field Manual 21-50: Military Courtesy and Discipline. Washington, D. C.: War Department, June 15, 1942.
147. _____. Field Manual 100-5: Field Service Regulations-Operations. Washington, D. C.: February 19, 1962.
148. _____. Reenlistment Study: An Attitudinal Survey. A summary of data prepared by Behavior Systems, Inc., Philadelphia, Pa.: March 1970.
149. Wald, Max. A Story of Selected Personnel and Behavioral Characteristics of Public School Principals in the Commonwealth of Pennsylvania. Doctoral Dissertation. Philadelphia, Pa.: Temple University, 1971.
150. Walther, Regis H. "ASTD Members--Their Perceptions and Training Goals." Training and Development Journal. Madison, Wisc.: March 1971.
151. _____. "The Functional Occupational Classification Project: A Critical Appraisal." Personnel Guidance Journal, Vol. 38. Washington, D. C.: 1960.
152. _____. Job Adjustment and Employee Health. Washington, D. C.: Social Research Group, The George Washington University, 1969. Report submitted in connection with Grant No. UI 00447, Public Health Service, US Department of Health, Education and Welfare.
153. _____. "Job Analysis and Interest Measurement." Education, 1963.
154. _____. Job Analysis and Interest Measurement. Princeton, N. J.: Educational Testing Service, 1964.
155. _____. Orientations and Behavioral Styles of Foreign Service Officers. New York: Carnegie Endowment for International Peace, 1965.
156. _____. Orientations and Behavioral Styles of Public School Officials. Washington, D. C.: Social Research Group, The George Washington University, 1967.

157. Walther, Regis H. Personality Variables and Career Decisions: A Pilot Study of Law and Social Work Students. Washington, D. C.: Social Research Group, The George Washington University, 1966. Available from the US Office of Education, ERIC Document Reproduction Service (Document No. ED 012 937), National Cash Register, Box 2206, Rockville, Maryland 20852.
158. _____. The Prediction of Occupational Adjustment Through Measured Behavioral Styles. Doctoral Dissertation. Washington, D. C.: The George Washington University, 1963.
159. _____. The Psychological Dimensions of Work: A Research Approach Through Use of a Self-Report Inventory. Washington, D. C.: The George Washington University, February 1972.
160. _____. The Psychological Dimensions of Work: An Experimental Taxonomy of Occupations. Washington, D. C.: The George Washington University, 1964. Available from the US Office of Education, ERIC Document Reproduction Service (Document No. ED 012 937), National Cash Register, Box 2206, Rockville, Maryland 20852.
161. _____. Relationship Between Self-Description and Occupational Choice. Master's Thesis. Washington, D. C.: The George Washington University, 1960.
162. _____. "Self-Description as a Predictor of Rate of Promotion of Junior Foreign Service Officers." Journal of Applied Psychology, Vol. 46. Washington, D. C.: 1962.
163. _____. "Self-Description as a Predictor of Success or Failure in Foreign Service Clerical Jobs." Journal of Applied Psychology, Vol. 45. Washington, D. C.: 1961.
164. Walther, Regis H., and McCune, Shirley D. "Juvenile Court Judges in the United States, Part II: Working Styles and Characteristics." Crime and Delinquency, October 1965.
165. _____. Socialization Principles and Work Styles of the Juvenile Court. Washington, D. C.: Center for the Behavioral Sciences, The George Washington University, 1965.
166. Walther, Regis H.; McCune, Shirley D.; and Petersen, Peter B. The Shaping of Professional Subcultures: A Study of Student Groups From Five Professions. Washington, D. C.: Social Research Group, The George Washington University, 1968. Available from NCR/EDRS, 4936 Fairmont Avenue, Bethesda, Maryland 20014 (Document No. ED 038 904). Also ERIC Processing and Reference Facility, 4833 Rugby Avenue, Bethesda, Maryland 20014 (Document No. ED 038 904).

167. Walther, Regis H.; McCune, Shirley D.; and Trojanowicz, Robert C. "The Contrasting Occupational Cultures of Policemen and Social Workers." Experimental Publication System. Washington, D. C.: American Psychological Association, December 1970.
168. Waterhouse, Larry G., and Wizard, Mariann G. Turning the Guns Around. New York: Praeger Publishers, 1971.
169. Westmoreland, William C., General, US Army. Briefing Presented at Fort Benning, Georgia, September 24, 1971.
170. White, Ralph K., and Lippitt, Ronald O. Autocracy and Democracy: An Experimental Inquiry. New York: Harper, 1960.
171. Whyte, William H. The Organization Man. New York: Simon and Schuster, 1956.
172. Williams, Roger N. The New Exiles. New York: Liveright Publishers, 1971.
173. Woodward, Joan. Industrial Organization: Theory and Practice. London: Oxford University Press, 1965.
174. Yarmolinsky, Adam. The Military Establishment: Its Impact on American Society. New York: Harper and Row Publishers, Inc., 1971.
175. Zajonc, Robert B., and Wolfe, Donald M. "Cognitive Consequences of a Person's Position in a Formal Organization." Human Relations, Vol. 19, No. 2, 1966.

SELECTED REFERENCES PERTAINING SPECIFICALLY
TO FATIGUE, ASYNCHRONOSIS AND
ACCLIMATIZATION IN SUSTAINED TACTICAL OPERATIONS

1. Aschoff, Jurgen, "Desynchronisation and Resynchronisation of Human Circadian Rhythms." AGARD Conference Proceedings No. 25, Oct 1967.
2. Bartley, S. Howard, and Chute, Eloise. Fatigue and Impairment in Man. New York: McGraw-Hill, 1947.
3. Bernstein, Robert. "Getting to the Fight." Student Research Paper, US Army War College, Carlisle Barracks, Pa., March 1964.
4. Buley, L. E.: Experience with a physiologically-based formula for determining rest periods on long-distance air travel. Aerospace Medicine. 41: 680-683, 1970.
5. Crane, J. E.: The time zone fatigue syndrome. Flying Physician 7: 19-22, 1963.
6. Fiore, Vitantonio. "Psychology and Command." Military Review, Vol. XLIII, July 1963, pp. 79-88.
7. Frazier, Thomas W. "Circadian Rhythms in Complex Vigilance Performance," Department of Experimental Psychophysiology, Walter Reed Army Institute of Research, Dec 1968.
8. Hale, Henry B., Endocrine -Metabolic Effects of Unusually Long or Frequent Flying Missions in C-130E or C-135B Aircraft, USAF School of Aerospace Medicine Aerospace Medical Division (AFSC), Brooks Air Force Base, Texas.
9. Hanty, G. T., and T. Adams: Phase shifts of the human circadian system and performance deficits during the periods of transition:
I. East - west flight: Aerospace Medicine. 37: 668-674, 1966.
II. West - east flight: Aerospace Medicine. 37: 1027-1033, 1966.
10. Kleen, K. E., et al: Circadian rhythm of pilots efficiency and effects of multiple time zone travel. Aerospace Medicine. 41: 125-132, 1970.
11. Kleen, K. E., et al. "Periodic Variations in Indices of Human Performance, Physical Fitness and Stress Resistance" Institut fur Flugmedizin der DVL, Bad Godesberg, Germany.
12. Knapp, Stanley C., "Problems of Adaption to Long Range Large Scale Aerial Troop Deployment" US Army Aeromedical Research Laboratory, Fort Rucker, Alabama 36360, 1972.

13. Kratochvil, Clyde H. "Circadian Rhythms and Military Man," AGARD Conference Proceedings No. 25, Oct 1967.
14. Lockheed Aircraft Corp., Human Factors Research Dept. Human Performance as a Function of the Work-Rest Cycle. Washington: National Academy of Sciences, National Research Council Publication 882, 1961.
15. Moh'ler, S. R., et al: The time zone and circadian rhythms in relation to aircraft occupants taking long-distance flights. American Journal of Public Health. 58: 1404-1409, 1968.
16. Newman, A. S. "Sleep and the Soldier." Army, Vol. 14, Oct 1963, pp. 28-32.
17. Parrish, Matthew, "Man Team Environment Systems in Vietnam," Psychiatry Consultant, Headquarters, USAV Office of the Surgeon, APO San Francisco 96375, Jan 1968.
18. Post, W., and Gatty, H.: Around the World in Eight Days. London, England: John Hamilton, Ltd., 1931.
19. Rioch, David McK. Personal interview concerning fatigue and psychological aspects of combat. Washington: 1 Nov. 1963.
20. Siegel, P. V., et al: Time-zone effects: disruption of circadian rhythms poses a stress on the long distance air traveller. Science 164: 1249-1255, 1969.
21. Strughold, H.: Physiologic day-night cycle in global flights. Journal Aviation Medicine. 23: 464-473, 1952.
22. Whiteside, T. C. D.: Sleep rhythms in transatlantic civil flying. Conference Proceedings. 14: Paris: AGARD/NATO 1966, p. 27-28.
23. Whiteside, T. C. D.: AGARD/NATO Study on Aeromedical Aspects of Troop Transport and Combat Readiness Technical Evaluation, NATO Hqs, Brussels, November 1968.