

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

AD-A209 658

1b. RESTRICTIVE MARKINGS

3. DISTRIBUTION/AVAILABILITY OF REPORT
Approved for public release;
Distribution unlimited

FOR FILE COPY

4. PERFORMING ORGANIZATION REPORT NUMBER(S)
39-89

5. MONITORING ORGANIZATION REPORT NUMBER(S)

6a. NAME OF PERFORMING ORGANIZATION
US Army-Baylor University
Graduate Program in Health Care

6b. OFFICE SYMBOL
(If applicable)
Admin/HSHA-IHC

7a. NAME OF MONITORING ORGANIZATION

DTIC
S
JUL 08 1985
E

6c. ADDRESS (City, State, and ZIP Code)

Ft. Sam Houston, TX 78234-6100

7b. ADDRESS (City, State, and ZIP Code)

8a. NAME OF FUNDING / SPONSORING ORGANIZATION

8b. OFFICE SYMBOL
(If applicable)

9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER

8c. ADDRESS (City, State, and ZIP Code)

10. SOURCE OF FUNDING NUMBERS

PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.	WORK UNIT ACCESSION NO.
---------------------	-------------	----------	-------------------------

11. TITLE (Include Security Classification)
A STUDY TO DETERMINE THE DIFFERENCE IN MEDICAL PROFICIENCY BETWEEN HEALTH SERVICES COMMAND AND FORCES COMMAND MEDICAL SPECIALISTS (MOS 91A)

12. PERSONAL AUTHOR(S)
CPT Robert J. Jones

13a. TYPE OF REPORT
Study

13b. TIME COVERED
FROM Jul 85 to Jul 86

14. DATE OF REPORT (Year, Month, Day)
Aug 85

15. PAGE COUNT
55

16. SUPPLEMENTARY NOTATION

17. COSATI CODES

FIELD	GROUP	SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
Health Care, Military Occupational Specialty Proficiency; (KT)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This study was conducted to determine if there is a difference in medical proficiency between Health Services Command and Forces Command Medical Specialists (MOS 91A). Medical Specialists who have been assigned to a hospital and who have been assigned to a field unit were administered a proficiency test to assess their medical proficiency. No difference was found between the two groups on their test performance. The author concludes that these results do not justify deletion of the Proficiency Training system because other, non-measured, factors may be relevant. *Key words: medical training; medical personnel;*

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT
 UNCLASSIFIED/UNLIMITED SAME AS RPT. DTIC USERS

21. ABSTRACT SECURITY CLASSIFICATION

22a. NAME OF RESPONSIBLE INDIVIDUAL
Lawrence M. Leahy, MAJ, MS

22b. TELEPHONE (Include Area Code)
(512) 221-6345/2324

22c. OFFICE SYMBOL
HSHA-IHC

89 6 21 62

A STUDY TO DETERMINE
THE DIFFERENCE IN MEDICAL EFFICIENCY BETWEEN
HEALTH SERVICES COMMAND AND FORCES COMMAND
MEDICAL SPECIALISTS (PROS VIA)

A GRADUATE RESEARCH PROJECT
SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF HEALTH ADMINISTRATION



BY

CAPTAIN ROBERT J. JONES, MSC

August 20, 1985

Accession For	
NTIS	
DTIC	
Unannounced	
Justification	
By	
Distribution	
Availability Codes	
Dist	
A-1	

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....iii

LIST OF FIGURES.....iv

I. INTRODUCTION.....1

 General.....1

 Justification for the Research Effort.....2

 Research Question.....2

 Research Objectives.....3

 Criteria.....3

 Assumptions.....4

 Limitations.....4

 Research Methodology.....4

II. LITERATURE REVIEW/ANALYSIS.....8

 General.....8

 Medical Proficiency.....10

 Development of Survey Test Instrument.....12

III. POPULATION.....19

 General.....19

 Identification of Study Populations.....19

 Survey Results.....20

IV. FINDINGS.....25

 General.....25

 T-test.....27

 ANOVA.....29

 Mann-Whitney Test.....31

V. DISCUSSION.....33

VI. CONCLUSION.....40

APPENDICES

 A. Survey Test Instrument (MOS 91A)

 B. Demographic Survey Instrument

 C. Selected Bibliography

ACKNOWLEDGEMENTS

I would like to express my deep appreciation to my wife, Mija, upon whose patience and understanding I have had to continuously depend during these two years of study. Also, a sincere thanks to Mrs. June Lewing for her endurance in handling my steady and demanding needs for clerical and editorial support throughout the Residency period.

LIST OF FIGURES

FIGURE	PAGE
1. Summary of Medical Specialists Surveyed	20
2. Comparison of Time Spent Working in TDA/TO&E Assignment	23
3. Results of Survey Test	26
4. Distribution of F	30
5. Comparison of Task Proficiency Within Task Domains	36
6. Tasks Showing Greatest Disparity in Proficiency Between Groups	39

I. INTRODUCTION

GENERAL

Prior to being assigned to their initial job sites, soldiers are sent to training centers where they receive instruction in a given occupational skill. Successful completion of these training programs results in the awarding of a specific Military Occupational Specialty (MOS) which places the soldier within selected career management fields. Basic medical specialists receive their instruction from the U.S. Army Academy of Health Sciences (AHS), Fort Sam Houston, Texas, and are assigned an MOS classification of 91A.

Training programs at AHS are designed to provide medical specialists with the competency skills so that they can perform medical duties at the basic entry level. To obtain feedback concerning the effectiveness and relevance of course instruction to the graduate's assignment, AHS dispatches evaluation teams to various locations where course graduates are employed.¹ In most instances these team evaluations have shown that medical skills that are not used are lost, resulting in treatment errors as medics attempt to provide medical care for the injured or sick soldier.

Re-teaching normally results in rapid recovery of these skills. In the hospital environment where medics use their medical skills on a recurring basis to do their job, retention of these skills is believed to be good. For the TO&E (field) medics who only periodically perform medical tasks as part of the unit training program, retention of these skills is believed to be poor. TO&E medics themselves have expressed a lack of confidence in their abilities to render patient care with any degree of proficiency when placed in the

clinic environment. Recognizing the need to maintain skill proficiency among its TO&E soldiers, U.S. Army Forces Command (FORSCOM) established a Medical Proficiency Training (MPT) to reteach skills that were not routinely used. As specified in FORSCOM Reg 350-1, TO&E medics "should" spend a period of time, not to exceed 90 days annually, working in the hospital environment practicing medical skills.²

JUSTIFICATION FOR THE RESEARCH EFFORT

The Fort Polk Army Community Hospital has an established MPT program which annually trains 40 percent of the assigned TO&E medics. A proposal from the MEDDAC would increase this percentage to 90% of eligible medics, based on the assumption that medical skills deteriorate without continued reinforcement. Field commanders, however, do not all agree that MPT programs are needed to enhance medical skills in their soldiers. Some commanders even contend that MPT itself is a training distractor and deteriorates further the unit's ability to do individual and collective training. Neither group has any recent objective data to justify their feelings. This study will hope to provide such data.

RESEARCH QUESTION

The purpose of this study is to determine if there is a difference in medical proficiency between Health Services Command (hospital) and Forces Command (TO&E) medical specialists (MOS 91A).

RESEARCH OBJECTIVES

The objectives of the research are the following:

1. To conduct a literature review to identify relevant methods and techniques used to define and measure medical proficiency among medical specialists.
2. To duplicate, using locally available resources, the methods used to construct a skill proficiency measurement device (Survey test instrument).
3. To identify, using survey questionnaires, two sample study populations of medical specialists (MOS 91A) who have worked continuously in the TO&E or TDA (hospital) environment for at least a year without an interim period of work away from these duties.
4. To determine, using a survey test instrument, individual levels of skill proficiency among study population samples.
5. To select a statistical procedure(s) that can be applied to the results of the survey data to allow appropriate comparisons of medical proficiency between hospital and TO&E medical specialists.

CRITERIA

The criteria for the research is:

The observed difference between the population parameters (mean scores) must lead to a t-statistic that is sufficiently extreme ($\alpha=0.05$), before the null hypothesis of no difference in population means will be rejected.

ASSUMPTIONS

The assumptions for the research are:

1. Both study populations received the same initial training.
2. Medical proficiency among medical specialists deteriorates rapidly if not routinely used in the performance of their duties.

LIMITATIONS

The limitations for the research are:

1. Study populations will be limited to hospital and TO&E medical specialists (MOS 91A) stationed at Fort Polk, Louisiana, due to fund limitations.
2. Analyses are based on test results obtained from using a locally developed (survey test) instrument instead of the actual SQT, due to restrictions governing the latter's use.

RESEARCH METHODOLOGY

Data Collection

Data collection was pursued in the following manner:

1. A demographic survey was utilized to segregate medical specialists (MOS 91A) into two groups (study populations); (1) medics who have been continuously assigned to the hospital for a period of one year, and (2) medics who have been continuously assigned to a TO&E unit for a period of one year, with no interim period of hospital/clinic rotations.

2. Study populations were administered the survey test instrument under test conditions; individuals were required to complete the test without the aid of study materials or reference texts.

Recording Data

Recording of the research data was accomplished as follows:

1. Individual tests were evaluated against task standards and assigned a numerical score corresponding to the percentage of questions or task tests answered correctly.

2. Sample population mean scores and standard deviations were determined for each study population using descriptive statistic techniques.

Data Analysis

Analysis of the research data included the following actions:

1. A T-test was used to determine whether or not it is reasonable to conclude that there is a significant difference in mean scores between the sample populations.

2. The test statistic³ used was:

$$t = \frac{(x_1 - x_2) - (u_1 - u_2)}{\sqrt{(s_1^2/n_1) + (s_2^2/n_2)}} ; \quad \text{where, } x = \text{sample population mean}$$

$s = \text{sample population std. dev.}$
 $u = \text{hypothesized population mean}$
 $n = \text{sample size}$

3. Analysis of variance (ANOVA) was also used to estimate and test the hypothesis of no difference between sample population mean scores. ANOVA allowed for the richness associated with assessing data whereby the total

variation present is partitioned into several components, such as medics who are not purely TO&E or TDA in their past work experiences.

4. A third, statistical procedure was employed to test the null hypothesis without making underlying assumptions about distribution normality, which is a precondition for both the T-test and ANOVA. The Mann-Whitney Test⁴ was used for this purpose; its test statistic is:

$$T = S - \frac{n(n+1)}{2} ; \text{ where, } S = \text{sum of ranks for population (TO\&E)}$$

$n = \text{sample size of population (TO\&E)}$

5. All statistical analyses tested the null hypothesis of no difference in mean scores between the two study groups, against an alternate hypothesis that there is a difference in mean scores between the two populations. A .05 level of significance was used in determining the acceptance/rejection regions.

FOOTNOTES I

¹U. S. Army Academy of Health Sciences, Institutional Self-Study, Fort Sam Houston, TX., April 1983, p. 11-1.

²U. S. Army Forces Command, FORSCOM Regulation 350-1, Fort McPherson, GA., p. 3-9.

³Wayne Daniel, Biostatistics; A foundation for Analysis in the Health Sciences, III Edition, (New York: John Wiley and Sons, 1983), pp 179-180.

⁴Wayne Daniel,, Applied Nonparametric Statistics, (Dallas: Houghton Mifflin Company, 1978), p. 82.

II. LITERATURE REVIEW/ANALYSIS

GENERAL

The White Paper on the Army of the '80s establishes training as the priority effort for commanders during the decade.¹ Threats to our security are dangerous and growing, emphasizing the need to improve readiness. A multitude of warfighting systems that bring unrivaled mobility and lethality are being developed and fielded in the Army. Many of these devices require a high level of knowledge and proficiency if we are to capitalize on their capabilities. Additionally, an evolution of doctrine and tactics is taking place requiring commanders to strongly emphasize excellence in professionalism and military skills in leaders at all levels.² Paramount to achieving success in the face of these diverse and demanding missions is the necessity to hone our soldiers and units into a disciplined, proficient fighting force. Proficiency in training thus becomes a cornerstone for building an Army that is ready to fight, so that peace is assured.

Similar issues concerning readiness are being raised within the Army Medical Department (AMEDD). Numerous initiatives have been and are currently underway to upgrade the AMEDD's ability to receive and treat casualties in a variety of combat scenarios. In the early '80s the U.S. Army Academy of Health Sciences began restructuring the basic medical specialist training program to provide a greater depth of knowledge and experience to units in and close to the battle zone. In addition, training manuals have been updated and sent to the field, carrying the message that training programs must be

relevant and continuously evaluated to ensure levels of proficiency are commensurate with conditions expected on the battlefield. Medical wartime missions are also being reevaluated as new concepts of waging war are introduced. With an understanding that the next war will be a people-poor war, a Medical System Program Review (MSPR) is viewing the medical treatment of soldiers as a continuum from the front lines to the medical treatment facility and looking for ways to get soldiers back to duty at the earliest opportunity.³ These initiatives and those to follow place a high demand on the need for improved and exact training so that proficiency among our soldiers is the best it can be.

Here at Fort Polk commanders are also serious about the business of going to war and make use of every available opportunity to train and enhance unit proficiency. But, how exactly do commanders define proficiency? The term is used frequently in training circles but little has been written to define its parameters or express its full implication. For instance, in answering questions relating to MOS proficiency, Soldier Report III, 1984, states, "85% of the Field Grade officers queried" felt that the soldiers they work with were proficient in their jobs, but no objective means for quantifying the use of proficiency were given⁴. Training doctrine espouses the importance individual task proficiency plays in the collective mission of the Army, but makes a feeble attempt of defining proficiency as the "soldier's, ability to correctly perform tasks critical to the unit's mission."⁵ The senior leadership of the Army, in its efforts to create an Army of Excellence, also underlines the importance of proficiency and the need for a single measure of individual proficiency which satisfies the majority of Army needs.⁶ Their

mandates are explicit about what this single measure of proficiency will be and how it will impact on the individual's overall career progression, but they don't specifically state what proficiency is! Nor is it within the purview of this study to derive a definition for proficiency. Instead a systematic effort was made to quantify its parameters using current teachings from the literature, so that meaningful comparisons concerning its use can be made.

MEDICAL PROFICIENCY

Proficiency as defined by Webster's New Collegiate Dictionary is the "state or quality of being proficient," which in turn means to "perform in a given skill with expert correctness and facility."⁷ From this definition, one could infer that proficiency requires an adept display of manual dexterity in a given skill, and most would agree that this is a fair and accurate description of the term. Army training theorists have also recognized the hands-on testing of skills as a valuable component of performance-oriented evaluation and have used it extensively throughout their training system.⁸ However, a recent study by the U. S. Army Training and Doctrine Command states that "insistence upon standardized, hands-on testing across the entire Army has imposed a massive administrative burden."⁹ To alleviate the burden, the hands-on component has been decentralized to a normal command function to be used as a diagnostic tool in conjunction with unit training programs. More specifically, the hands-on component assessments will be "integrated into team and crew proficiency training programs," to be evaluated "informally year-round using checklists which will be incorporated into as many Soldier's

Manuals as possible."¹⁰ This same study (the white paper on the Army of the '80's) also reaffirms the significance of an objective written, MOS-specific Skill Qualification Test (SQT) and redefines its use in the overall individual evaluation process. SQT will be refined to change its perspective from a test which evaluates "duty position proficiency" to test that is "more indicative of total MOS proficiency."¹¹ Additionally, "the test will be directly related to actual task performance" and will be a "comprehensive measure of individual proficiency."¹² Army Regulation (AR) 350-37 (Army Individual Training Evaluation Program) has been updated to reflect this refined philosophy concerning SQT and states, "SQTs are designed to evaluate soldier MOS and skill level proficiency."¹³ Also, "SQTs will be written tests taking a representative sample or cross section of Soldier's Manual tasks and evaluated by multiple choice questions."¹⁴ This refinement of the SQT process provides the basis from which assessments of medical proficiency will be determined for this study.

Since the SQT for the 91A MOS has not yet been completed and regulations prohibit the use of the actual test, except during specified testing periods, a local survey test instrument was formulated, using identical procedures to those employed by the Performance Measurement Branch, Academy of Health Sciences (AHS), the proponent agency for development of medical-related SQTs. With exception of a few modifications, these procedures were closely adhered to and duplicated using local resources.

DEVELOPMENT OF SURVEY TEST INSTRUMENT

Development of the survey test instrument was accomplished in accordance with the procedures outlined in TRADOC Regulation 351-2, Guidelines for Development of Skill Qualification Test. Additionally, the referenced text, Organizational Surveys: Development and Application provided supplementary guidance for developing an effective assessment instrument and was used extensively for this purpose. In general, the survey test was developed according to the following sequence of events, each to be explained in greater detail in the succeeding sections.

- A. Select tasks for survey.
- B. Select task performance measures to evaluate.
- C. Decide what type of questions to write for each selected performance measure.
- D. Tryout of Survey Test Instrument.

Select Task for Survey

To achieve the goal of measuring the knowledge base of medical specialists (MOS 91A), tasks selected must be representative of the overall task domain for the MOS.¹⁵ In deciding the minimum number of tasks needed to give a reasonably accurate estimate of the soldier's proficiency on all tasks in the domain, a technique similar to that used by Gallup/Nielson rating pollsters to accurately predict presidential election results or television market shares was utilized. For a task domain the size of the 91A MOS task list (68 tasks), the Gallup/Nielson technique recommends a minimum of 26 tasks be selected for evaluation.¹⁶ Twice as many tasks were selected (52 tasks),

thereby making the estimate of proficiency even more accurate. (Note: Also, a tryout of the survey test revealed that using twice the recommended number of tasks did not exceed the recommended time administration limits of one to two hours for the survey test). Equally important to the task selection process was the method of selecting a sample of representative tasks. Care was taken to ensure the task selection process was free of bias. Using a random number generator from a simple computer program, 68 tasks numbers were entered and the system queried to produce an 80% random selection rate, approximately 52 questions. Output from the data entry produced 52 random digits. Selecting more tasks than the minimum requirement also provided flexibility in case some tasks must be dropped out as a result of a tryout.

Select Task Performance Measures

Once tasks to be surveyed were selected, the next step was to decide which performance measure was the key performance, or measures which could best discriminate soldiers who can perform the tasks from those who cannot. This step was important because some tasks had many performance measures, all of which were not key nor could be evaluated within the constraints of time and survey designed. To aid in the task performance measure selection process, extensive interviews and evaluations were conducted with senior noncommissioned officers and senior wardmasters. Also, insight into selecting key performance measures was gained from reviewing SQT task questions used during previous testing periods. Additionally, performance measures that may result in serious damage or injury were considered key indications of proficiency.¹⁷

Decide Type of Question to Develop

In deciding the soldier's ability to perform a given task, the task test should be as close to the actual task performance as possible, given the constraints of a written test. As an example, a task that requires a specific calculation as part of the performance measure, should require the soldier to perform a sample calculation as part of the task test. For tests that require demonstration of a physical skill, which cannot be directly tested under written conditions, the development of a task test must focus on the "how to," "when to" or "where to," of performing a task.¹⁸ These methods of measuring task performance introduce two types of questions used by TRADOC proponents to evaluate task proficiency under written conditions. These two methods are the performance and performance-based questions.¹⁹ To demonstrate the difference between performance and performance-based questions the following example is given. One of the performance measures for setting up an oxygen tank requires the soldier to demonstrate or state the proper method for storing oxygen cylinders. A performance-based question would ask how the cylinder should be stored, and give a variety of answers from which to select the appropriate response, i.e., in a vertical position, laying on its side, etc. On the other hand, a performance question would actually have the soldier select the appropriate method, given a selection of different storage methods simulated by using photographs. Since most of tasks in the SM require that a skill be demonstrated, the majority of task tests evaluate task proficiency using performance-based questions.

Tryout of Survey Test Instrument

Once development of the task questions was completed, the tasks were organized and formatted into a survey that instrument using multiple choice questions. It is not appropriate at this point to assume that the questionnaire is an acceptable means of assessing skill proficiency. A number of checks and reviews were conducted to assure that tasks were doctrinally accurate and understandable to the soldier. Peer review and task list review were the first steps in the process to systematically improve the effectiveness and relevance of the survey test instrument. Tasks list were reviewed by the NCOIC of the Nursing Education and Training Branch and wardmasters to ensure all tasks were representative of the tested soldier's MOS. The same individuals were used in the capacity of a murder board, once tasks that were not representative of the MOS were eliminated. The murder board (expert review) functioned to identify obvious test construction deficiencies (e.g. ambiguous wording, insufficient information, overlapping alternatives, etc) and to correct grammar/syntax errors to make the written test easier to understand. Additionally, the expert review panel evaluated tasks to ensure task tests are doctrinally accurate and that incorrect alternatives are mistakes that frequently occur on the job. Many improvements occurred as a result of the expert review process, and several tasks required complete revision prior to trying the test out. A tryout of the test was done once the revisions were completed to determine if soldiers could complete the test in a reasonable time period (1 to 2 hrs), and to further identify tasks which appeared not to segregate performers from nonperformers. This step was valuable to establishing the validity of the survey tool, because it aided in

the identification of tasks which were not good discriminators of task proficiency and tasks that were answered correctly due to chance (guessing). By eliminating a large percentage of the guess work, the survey test instrument became a truer measure of actual proficiency levels.

Tryout procedures began by selecting a population to take the test. Twenty soldiers were randomly selected and asked to self-rate themselves as to how well they think they can do each task, using the rating scale below:

- A. Very well (can do the task to Soldier Manual Standard)
- B. Fairly well (can probably do the task to Soldier Manual Standard)
- C. Not very well (probably cannot do the task to Soldier Manual Standard)
- D. Not familiar with the task.

Each question required the soldier to rate himself on his/her ability to answer correctly. Soldiers who rated themselves as either A or B were considered performers for that task and those answering C or D were considered nonperformers. Two screens were used to weed out bad questions in the survey test.

- A. Questions showing a larger percentage of pass for nonperformers than performers were set aside to be revised.
- B. Also, questions where less than 50 percent of performers could answer correctly were set aside for revision.

This screening process produced two sets of questions: (1) those that were flagged and required revision or elimination, and (2) those that were "keepers" and were used in the final version of the test. From the original 52 questions that comprised the initial test, five produced zero performers

and were thus eliminated, after carefully considering whether removal of these tasks would bias one group over the other. Seven other questions showed nonperformers scoring a higher "percentage passed" than performers and were subsequently revised using input from the expert panel. Once the flagged tasks were revised, a second tryout was performed using 20 more randomly selected soldiers. Of the 47 remaining questions, five showed nonperformers outscoring performers and two were unable to produce sufficient performers who were able to answer the question correctly. The latter two questions were dropped from the test and the other five were revised after reexamining the key performance measure and restructuring the question design (using a performance-based question instead of a performance question). In its final form (Appendix A) the survey test instrument was comprised of 45 multiple choice questions and required an average time of 45-50 minutes to complete.

FOOTNOTES 11

¹Department of the Army, "SQT Program Refinement," (Fort Eustis, Virginia: U.S. Army Training Support Center, 18 June 1982).

²Department of the Army, "Guide posts for a Proud and Ready Army," (Washington D.C.: The Chief of Staff, 1 March 1985), p 6.

³John T. Robertson and Calvin J. Glazier, "New Methods to Improve Medical Readiness," Army Research, Development and Acquisition Magazine (July-August 1985), pp. 17-20.

⁴Department of the Army, "Soldiers Report III (SR III)," (Washington, D.C.: Office of the Deputy Chief of Staff for Personnel, 21 November 1984), p. 3-20.

⁵Department of the Army, "Army Regulation 350-37," (Washington, D.C.: The Office of the Deputy Chief of Staff for Operations and Plans, 15 November 1983).

⁶"SQT Program Refinement," p. 3.

⁷Webster's New Collegiate Dictionary, (Springfield, Mass: Merriam-Webster Inc., 1984).

⁸Department of the Army, "Training and Doctrine Command Regulation 351-6," (Fort Monroe, Virginia: U. S. Army Training and Doctrine Command), p. 22.

⁹"SQT Program Refinement," p. 2.

¹⁰Ibid.

¹¹Ibid.

¹²Ibid.

¹³"AR 350-37," p. 4-1.

¹⁴"SQT Program Refinement," p. 4.

¹⁵Department of the Army, "TRADOC Regulation 351-2," (Fort Monroe, Virginia: U. S. Army Training and Doctrine Command, February 1983), p. 47.

¹⁶Ibid.

¹⁷Ibid.

¹⁸TRADOC Reg 351-2," p. 55

¹⁹Ibid.

III. POPULATION

GENERAL

In general, Medical Specialists (91A) do not neatly fit into categories of TO&E (field) or TDA (hospital) and medics, unless their assignments have permitted them to work exclusively in one environment during their entire tour of duty. Even then, the strict definition may not apply to TO&E medics, who are required to spend a period of time annually working in the hospital environment to maintain proficiency in their skills. However, there are medics who prefer working in one type of environment over the other and through the course of their careers have managed to arrange their assignments to suit their preferences. These medics would more appropriately lend themselves to be categorized as either "pure" field or "pure" hospital medics and would provide ideal populations from which comparisons of skill proficiency could be made. But, since the number of medics fitting into "pure" categories is relatively small (less than 5% for the population at Fort Polk) for each group, alternate criteria were needed to classify the groups into study populations.

IDENTIFICATION OF STUDY POPULATIONS

For the purpose of this study medical specialists (MOS 91A) were divided into two study populations, either TO&E or TDA (hospital) medics, based on the criteria of being assigned to their current work sites for at least a year. This length of time was chosen to provide an adequate settling out period for

individual levels of proficiency. The hospital medic population consisted of medical specialists who served continuously in the hospital/clinic environment for at least a year. Similarly, TO&E medics must have been assigned to a TO&E unit for at least a year without interruption by duty in a hospital or Troop Medical Clinic (TMC). TMC duty is considered to be an extension of the hospital environment because medical personnel routinely perform patient care duties overseen by qualified health care practitioners i.e., physicians, physician assistance, RNs, etc.

SURVEY RESULTS

A demographic survey (Appendix B) was performed to identify population samples meeting the criteria specified above. Figure 1., Summary of Medical Specialist Surveyed, illustrates the results of this survey.

<u>MEDICAL SPECIALISTS (MOS 91A) SURVEYED</u>		
	<u>TO&E</u>	<u>TDA</u>
Assigned	156	84
Met Criteria	53	26
Avail for Test	45	20
Total Tested	29	20

Figure 1. Summary of Medical Specialists (MOS 91A) Surveyed

The largest percentage (65%) of hospital medics in the MOS 91A not meeting the criteria were new recruits (PVI through PFC) who had not been in the Army for more than a year or were recent graduates of training programs for less than one year. Other medics eliminated from the study population were new arrivals from TO&E assignments. Six medics who met the criteria were not available for testing due to annual leaves or TDY.

Several TO&E units on Fort Polk possessed medical specialists who were to comprise the TO&E study populations. Coordination was made with the Division Surgeon to identify these units and to solicit their participation in the study. The commanders of the units were contacted and each expressed an interest in the study and were willing to provide participants for testing. From the total population of 156 TO&E medical specialists, 123 were assigned to four medical TO&E units. Testing all eligible TO&E medics assigned to Fort Polk would have been tedious and have resulted in multiple test dates and test locations. Of the 123 TO&E medics surveyed, 53 met the criteria of being assigned to their units for a period of at least one year and had not performed duties in the TMC or hospital. A large proportion of those not meeting the criteria had participated in the hospital's MPT program within the past year. Estimates from unit commanders established that approximately 45 of the 53 medics identified would be available on the "best" test dates that could be arranged, given their busy schedules rotating to and from the training sites. All units were tested the first two weeks in June 1985 with make-up dates scheduled for the third week in June. When actual testing was completed, a total of 29 TO&E medical specialist had underwent testing. The

other 16 "possible" medics available for testing did not materialize due to leave, illness, TDY, FTX, and range commitments. Due to the limitation of using only medical specialists assigned to Fort Polk, all samples identified in the demographic survey were used in the testing phase of the study.

A summary of the time in service and the percentage of this time spent working in TDA/TO&E environments for the different study groups is presented in Figure 2. Overall, the majority of members in each study population spent the bulk of their careers working in the environments they were representing in the study, a fact brought about primarily due to the greater percentage of first term enlistees captured in the study groups (91A medical specialists are generally soldiers in the grades E1-E4). All but four of the 20 TDA medics spent 50% or greater of their time in service working in the hospital environment; average percent time in service spent working in the hospital for the group was 66.85%. For the group of TO&E medics, three out the 29 medics tested had spent less than 50% of their time in service working in the field environment, with a mean percentage for the group of 72.24 percent.

PAST WORK EXPERIENCE					
TO&E			TDA		
Sample #	Time in Service	% Time Spent in TO&E Units	Sample #	Time in Service	% Time Spent in TO&E Units
1	18	72	1	17	71
2	31	61	2	34	85
3	20	75	3	60	33
4	86	42	4	17	71
5	17	71	5	16	75
6	17	71	6	84	43
7	33	91	7	31	84
8	17	71	8	35	83
9	17	71	9	34	82
10	33	36	10	34	91
11	17	71	11	49	31
12	33	82	12	17	71
13	62	23	13	35	80
14	33	91	14	17	71
15	17	71	15	54	31
16	17	71	16	56	66
17	109	95	17	30	50
18	22	77	18	58	52
19	35	57	19	35	83
20	22	77	20	32	84
21	146	97			
22	21	76			
23	21	71			
24	33	82			
25	16	69			
26	33	91			
27	25	80			
28	16	75			
29	23	78			
$\bar{x} = 72.24$			$\bar{x} = 66.85$		

Figure 2. Comparison of Time Spent in TDA/TO&E Assignments

FOOTNOTES III

¹Wayne Daniel, Applied Nonparametric Statistics, (Dallas: Houshton Mifflin Company, 1978), p. 19.

²Wayne Daniel, Biostatistics: A Foundation for Analysis in the Health Sciences, III Edition, (New York: John Wiley and Sons, 1983) p. 222.

IV. FINDINGS

GENERAL

All data were analyzed using summary statistics and, where comparisons appeared meaningful, T-tests and Analysis of Variance (ANOVA) were used. Relevant assumptions about population parameters were made and are discussed separately for each test. The Mann-Whitney test provided an alternative method of evaluating research data while making only minimal assumptions about distribution normality and population variances.

The application and corresponding findings of each statistical method employed in the study followed the general format discussed in Daniel's, Applied Nonparametric Statistic, which breaks down the hypothesis testing procedures into five components: (1) Data, (2) assumptions, (3) hypothesis, (4) test statistic, and (5) decision rule.¹ Thus, for a given test, one can quickly surmise what the relevant data are and how they apply to the hypothesis being tested.

In compiling the test results, individual tests were evaluated against task standards and numeric values assigned, indicating the percentage of task tests answered correctly. Sample population mean scores and standard deviations were calculated using descriptive statistics. A summary of the survey test results are shown in Figure 3.

Results of Survey Test			
TO&E		TDA	
Subject	Score	Subject	Score
1	93	1	80
2	73	2	67
3	89	3	71
4	76	4	67
5	80	5	67
6	80	6	78
7	93	7	91
8	87	8	78
9	76	9	84
10	64	10	73
11	84	11	87
12	91	12	91
13	64	13	82
14	96	14	84
15	82	15	73
16	76	16	76
17	67	17	71
18	71	18	71
19	73	19	82
20	67	20	77
21	76		
22	84		
23	73		
24	84		
25	84		
26	80		
27	76		
28	89		
29	73		
Sample Mean	$(\bar{x}_1) = 79.34$		$(\bar{x}_2) = 77.50$
Sample Std Dev	$(s_1) = 8.84$		$(s_2) = 7.56$

Figure 3. Data Showing Results of Survey Test Administered to Study Populations.

T-test

Hypothesis testing involving the difference in population means frequently employs the use of the t-statistic. Application of this test is demonstrated below:

1. Data. The data consist of test scores obtained from 29 medical specialists categorized as TO&E medics and 20 categorized as TDA (hospital) medics. The sample means (\bar{x}) and standard deviations (s) are $\bar{x}_1 = 79.34$; $s_1 = 8.84$ and $\bar{x}_2 = 77.50$; $s_2 = 7.56$, respectively.

2. Assumptions. The data constitute two independent random samples, each drawn from a normally distributed population. The population variances are unknown and unequal.

3. Hypothesis. $H_0: u_1 - u_2 = 0$

$H_A: u_1 - u_2 \neq 0$

4. Test Statistic.

$$t' = \frac{(\bar{x}_1 - \bar{x}_2) - (u_1 - u_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

$$t' = \frac{(79.34 - 77.50) - 0}{\sqrt{\frac{(8.84)^2}{29} + \frac{(7.56)^2}{20}}} = \frac{1.85}{2.36} = 0.785$$

5. Decision Rule. Let $\alpha = .05$. The degrees of freedom value was computed to be 46.8, making ± 2.0141 the critical interval values of t. We reject H_0 .

(null hypothesis) unless $-2.0141 < t < +2.0141$. Since t' is contained in the critical interval, we cannot reject H_0 and conclude that the population mean scores are not different. For this test $p > .10$.

The decision rule indicates that, on average, both populations scored about the same. Stated another way, the difference in mean scores ($79.34 - 77.50 = 1.84$) was not large enough to state emphatically that one group scored higher (or lower) than the other.

ANOVA

1. Data. ANOVA computations resulted in the data table depicted below.

ANOVA Table				
Source	SS	d.f.	MS	V.R.
Among groups	40.287	2-1=1	40.287	.57796
Within groups	<u>10332</u>	<u>49-2=47</u>	69.702	
Total	10372.287	48		

2. Assumptions. The data constitute two independent random samples, each drawn from a normally distributed population. The population variances are assumed to be equal.

3. Hypothesis. $H_0: u_1 - u_2 = 0$

$H_A: u_1 - u_2 \neq 0$

4. Calculations. Formulas to compute values used in the ANOVA table were obtained from Daniel's, Biostatistics: A Foundation for Analysis in the Health Sciences. Table J (p.502) provided information concerning the critical value of F.

5. Decision Rule. Let $\alpha = .05$. Entering Table J with 1 and 47 degrees of freedom, we find the critical value of $F = 4.08$. Since our computed value (.57796) is less than the critical value of 4.08 and falls within the

"acceptance" region (see Figure 4.), we cannot reject H_0 and conclude that the mean scores are different.

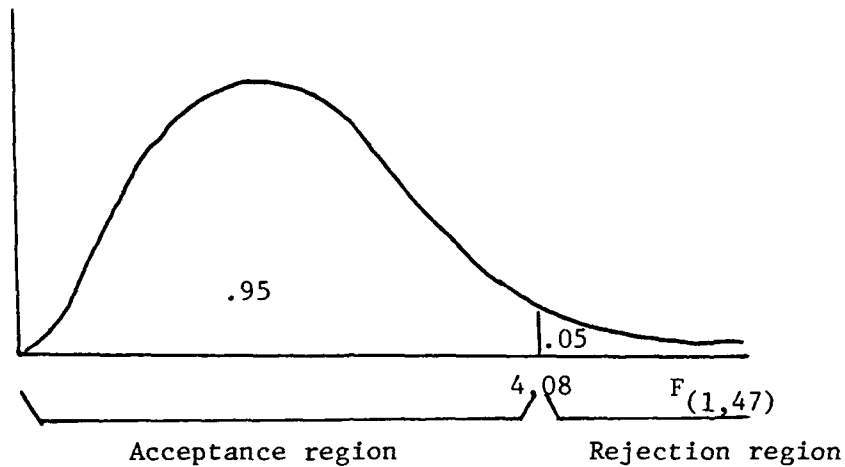


Figure 4. Critical Value of F

ANOVA also revealed no marked difference ($p > .10$) in the level of proficiency between the two populations. Although inferential procedures underlying this method of analysis are similar to the T-test, it makes use of slightly different assumptions, which may or may not be valid, and provides a check and balance to the t-statistic. The results of these two analyses were interpreted to mean that medical specialists working in the field environment display medical skills or knowledge equal to or 1.84 points better, on average, than medical specialists working in the hospital environment.

Mann-Whitney Test

1. Data. Results of the survey test (Figure 3.) were ranked ordered and a sum of the ranks was computed using appropriate statistical procedures.

(S = 761)

2. Assumptions. Data consist of two independent random samples whose measurement scale is at least ordinal.

3. Hypothesis. H_0 : The populations have identical distributions

H_A : The populations differ with respect to location

4. Test Statistic.

$$T = S - \frac{n_1(n_1+1)}{2}; \quad T = 761 - \frac{29(29+1)}{2} = 761 - 435 = 326$$

For samples sizes larger than 20, the central limits theorem applies; thus, the test statistic becomes:

$$z = \frac{T - n_1 n_2 / 2}{[n_1 n_2 (n_1 + n_2 + 1) / 12]^{1/2}}$$

Applying a correction factor to account for ties in scores between the two groups, the equation under the radical then becomes:

$$z = \frac{T - n_1 n_2 / 2}{[n_1 n_2 (n_1 + n_2 + 1) / 12 - n_1 n_2 (t^3 - t) / 12 (n_1 + n_2) (n_1 + n_2 - 1)]^{1/2}}$$

Substituting all the appropriate values, the test statistic calculates to be:

$$z = \frac{36}{16.9} = 2.139$$

5. Decision Rule. Since z_{computed} (2.139) is greater than z_{critical} ($z_{.975}=1.96$) we reject H_0 which states that populations have identical distributions in favor of the alternate hypothesis that the populations differ with respect to location. Rejecting the hypothesis about population distributions also means we can reject the hypothesis about its means.²

Results of the Mann-Whitney test show that there is a significant difference ($p=.0324$) in mean scores between the two populations. A benefit of this test is that it makes no assumptions about the population distribution, whose normality is questionable given the specific selection criteria. On the other hand, its power efficiency is diminished because it does not make use of all the information (i.e., mean, std. dev.) provided by descriptive statistic analysis. Nonetheless, the Mann-Whitney test would tend to support the hypothesis that there is a difference in medical skills and that one group scores higher than the other.

V. DISCUSSION

Results of the findings revealed that two statistical procedures supported a finding of no difference in medical proficiency between hospital and field medics, while a third procedure indicated evidence of a significant difference. Three separate statistical applications were selected to analyze the data because each made use of assumptions which were not wholly met by one particular method. For instance, ANOVA took into consideration the richness associated with the varied backgrounds of TDA/TO&E medics, but assumed the population variances were equal, which may or may have been a valid assumption. The T-test, on the other hand, assumed that the population variances were unequal as well as unknown, which may have been the true case. Yet, the T-test is restricted in its use by the limited sample sizes obtained. From a statistical viewpoint, given the results of the tests (two out of three favoring no difference), it would be safe to say that there is insufficient evidence available to support a finding that the two study populations differ with respect to medical proficiency.

In order to accept the finding of no difference in proficiency between populations, two preconditions had to have been met; (1) the criteria for segregating the populations into two study groups are valid, and (2) the locally developed survey test instrument is a valid skill measurement tool.



Satisfying the research question of whether or not there is a difference in proficiency between TDA and TO&E medical specialists required a differentiation be made between hospital and field medics. Since all medics have not worked exclusively in hospital or field assignments throughout their

careers, differentiation of study populations required the development of specific group criteria. The task of selecting the group criteria was simplified by limiting the study to medical specialists in the 91A MOS series, the largest proportion of MPT participants. This action in a sense became a limiting criterion because it focused the research on a group of junior enlisted personnel whose work experience was limited to one or two assignments. Thus, the variable work experience of population samples became less of a concern for the research effort. A final criterion of targeting medics who have worked in their assigned jobs for at least a year, was selected to provide a reasonable assurance that proficiency among population samples had leveled off.

Establishing the validity of the survey test instrument was by far the most crucial task of the research effort. Without a valid measurement tool to assess the degree of task proficiency among medics, the quality of the findings are questionable. Since an SQT (the accepted measurement of skill proficiency) was not available for use, extensive effort was devoted to constructing and evaluating a locally produced SQT. A personal visit was made to AHS to gain a familiarity with the SQT development process and to observe training specialists as they performed their work. Sufficient time was made available to interview task test developers and subject matter experts (SME) to learn their perspectives on application of SQT development procedures. These interviews were also helpful in determining what the credentials of the SME were and how similar experts could be developed or produced locally. Other than their on-the-job experience in task test development, the SMEs were senior noncommissioned officers who functioned in various TO&E and TDA

assignments, similar to our hospital NCOs. In addition, the mechanics of the various boards (peer review, expert review, etc.) were examined so that duplicate or near duplicate boards could be constructed here at Fort Polk. Once the survey test was completed using the established procedures, evaluation of its effectiveness as a measurement tool was accomplished through the use of a test tryout. Two test tryouts were performed instead of the required one, thus providing an added margin of confidence to the test instrument's value. In the absence of an approved skill measurement tool, the alternative to develop an SQT by creating a mock SQT development panel, comprised of senior noncommissioned officers with similar SMEs backgrounds, appeared to be the most viable solution. Although the conditions under which the survey test instrument was developed were not ideal, reasonable precautions were taken to ensure the development of a workable and useful test instrument was effected.

By clustering tasks into their various domains, differences in skill proficiency became more pronounced. Figure 5. highlights this comparison. Overall, the groups performed similarly on tasks relating to basic medical knowledge; both did well or both did poorly. For example, on questions relating to shock, 88% of the hospital medics responded correctly compared to 86% of the TO&E medics. On the other hand, when queried about general medical tasks, such as treatments for heat and cold injury, 61% of hospital versus 60.5% of the TO&E medics were able to respond correctly. Possible explanation for these observed differences was attributed to the severity of

 TO&E Medics
 TDA Medics

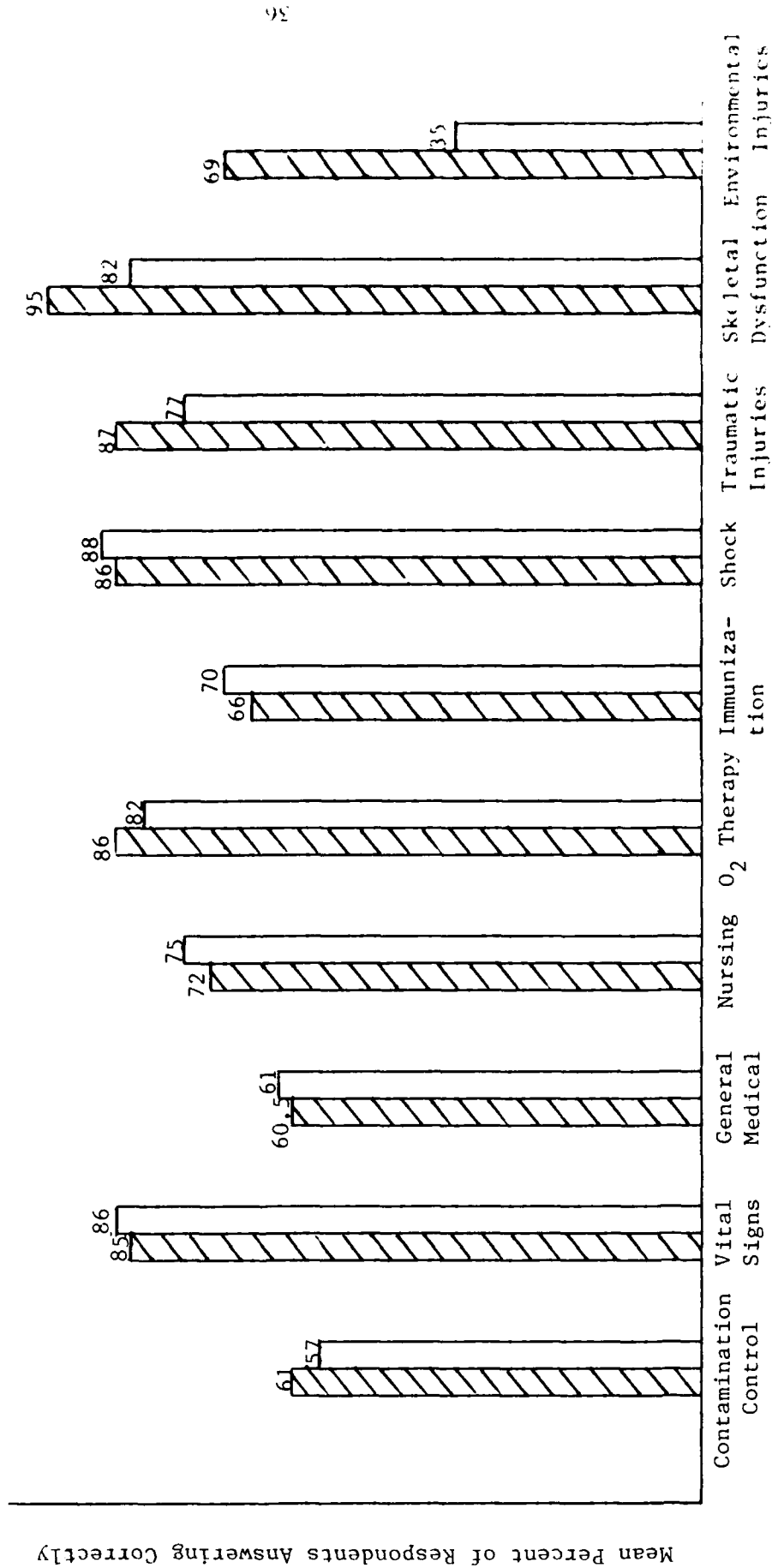


Figure 5. Comparison of Task Proficiency Within Task Domains

Mean Percent of Respondents Answering Correctly

the test questions. In other words, when structuring test questions for the more basic tasks, the selection of critical elements became more discriminatory in nature and thus, these questions in a sense became test discriminators.

Further evaluation of test scores across task domains indicated that in areas where neither population had the opportunity to perform tasks as a matter of their routine duties, TO&E medics generally out performed their counterparts in the hospital. Indications of this trend are reflected in the last three task domains of Figure 5. Supervisors who have spent any amount of time in either of these environments find this condition easy to comprehend. Proficiency among hospital medics is achieved principally through hands-on practice of SM tasks that are performed in providing routine patient care duties. Tasks that are not encountered in day to day activities are not practiced separately nor are additional measures taken to ensure proficiency in these skills is maintained. Although hospital training programs do provide opportunities for common task training, attendance is poor and not vigorously enforced. Also, hospital training is a "catch when catch can" phenomenon, with patient care duties receiving first priority. TO&E medics, on the other hand, seldom have the opportunity to utilize their medical skills in real life situations, except during emergencies or when they rotate to the hospital for annual proficiency training. Even then these situations are far and in between and do little to enhance skill proficiency. Consequently, training for them is a major event, encompassing all Soldier's Manual tasks. Furthermore, without the interruptions associated with hospital training

programs, emphasis can be placed on performing the task to optimal proficiency.

Within task domains are subgroups which, if examined individually, indicate further differences in medical proficiency between groups. Figure 6. represents tasks showing the greatest disparity in performance levels. Analyses of these data indicate that TO&E medics are consistently more adept in answering questions about tasks requiring the use of equipment (i.e., J-tube, pneumatic splint, Army leg splint, etc.). The principal reason for this difference is that most of the equipment associated with SM task testing are included in the TO&E unit's basic load of gear and supplies and are readily available during collective training exercises (i.e. ARTEP, FTX). Also, medical TO&E units can only carry a limited supply of equipment, so they take only those items that are necessary for the unit to accomplish its mission, generally those items specified in the SM. Hospitals, on the other hand, carry a wider variety of equipment and supplies which are used routinely by hospital medics. To be competent in the use of these additional equipment, their training, by necessity is broad based and not limited by a defined list of SM (MOS 91) tasks. Additionally, if hospital medics require training on equipment not routinely stocked in the hospital, i.e., Army Leg Splint, it must be borrowed from sister units willing to lend it, a practice that is not met with unrestricted enthusiasm and is thus avoided whenever possible. Further differences in skill proficiency were found in areas commonly encountered in the field environment, e.g., purification of water and triaging of patients. These tasks are rarely performed in the hospital setting, therefore, proficiency levels in TO&E medics are expected to be better.

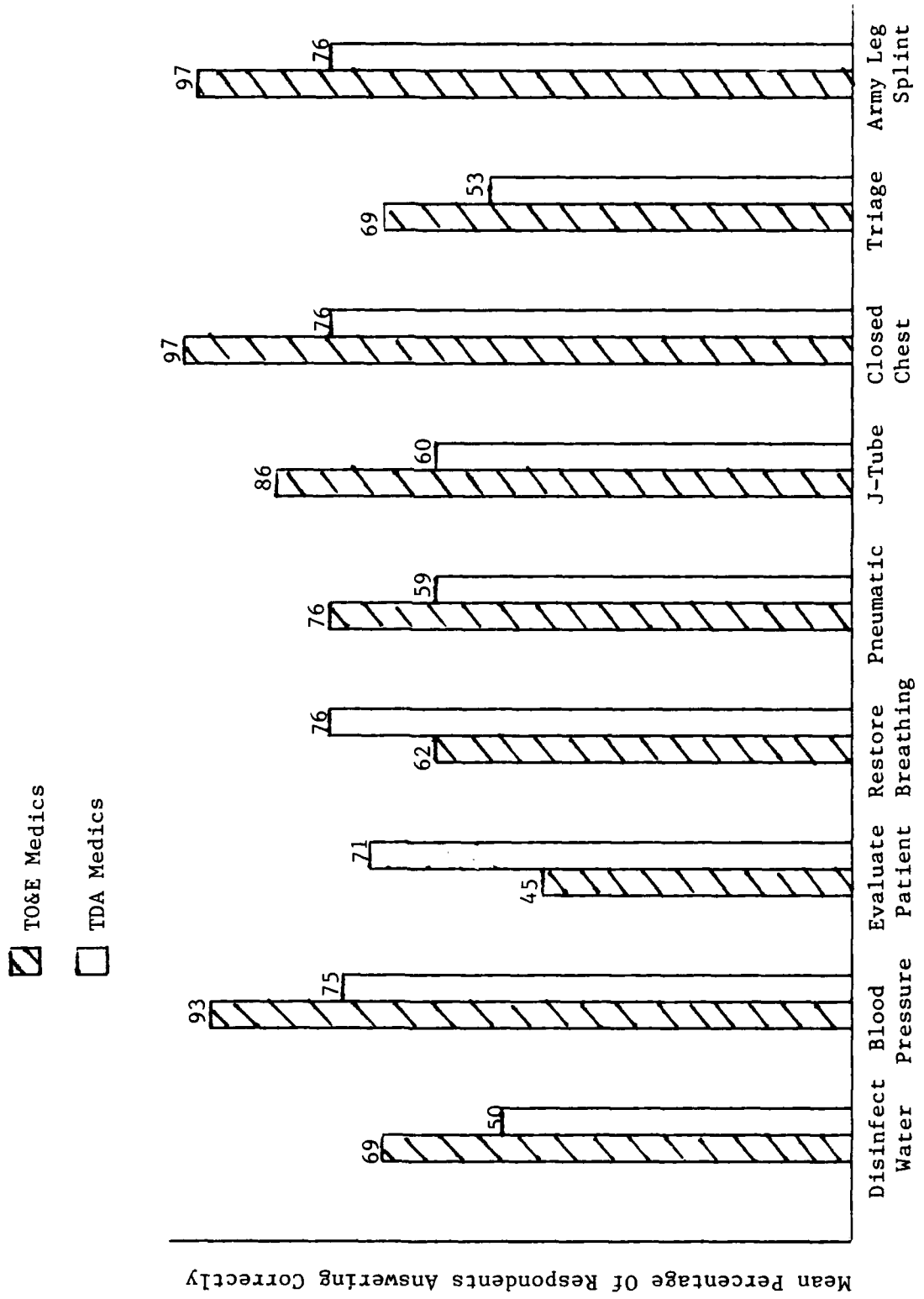


Figure 6. SM Tasks Showing Greatest Disparity in Proficiency Between Groups

Mean Percentage Of Respondents Answering Correctly

VI. CONCLUSION

In its initial inception, the purpose of this study was to see if differences existed in MOS proficiency between hospital and field medics so that inferences concerning the relevance of the hospital-sponsored MPT could be made. The study was conducted in an objective manner and the research was kept free from bias by using, as resource texts, documents that were applicable to either work environment, TDA or TO&E, to develop and assess levels of skill proficiency among medical specialists. Although the research findings did not show a significant difference in medical proficiency between groups, the fact that levels of proficiency are about equal is itself significant to the MEDDAC, who has been under the apparent misconception that hospital medics are more proficient than TO&E medics.

Given the results of these findings, could one conclude then, that MPT is not needed? Probably not. Other benefits are derived from MPT that cannot be directly measured or assessed using written objective criteria developed from the Soldier's Manual. Medical TO&E unit commanders, who adamantly oppose the mandatory requirement to provide participants to the program, frequently use MPT as an incentive to reward their good soldiers. Also, MPT does not limit the scope of its teachings to Soldier's Manual tasks as does medical TO&E unit training; other skills (nursing, primary care, etc.) are acquired during MPT that are equally valuable to the trainee's knowledge base and experience and can enhance their confidence to perform in a fixed facility setting. Further, MPT develops proficiency in application through repetitive trial and error, an advantage which written or rote training cannot readily duplicate. Other

pertinent issues, equally important to answering questions regarding MPT's viability, warrant further research and study as well. This study undertook, as its major emphasis, the goal of examining only one of the many reasons why MPT was designed and implemented, and attempted to shed new light on the on-going debate between hospital and TO&E unit personnel concerning the program's overall worth and effectiveness. Hopefully, the information gained from this research effort will provide commanders new insights into the value of MPT so that training opportunities can be maximized and soldiers will be better equipped to face the threats they will ultimately encounter on the battlefield.

APPENDIX A

SURVEY TEST (MOS 91A)

NAME/RANK _____
UNIT _____

INSTRUCTIONS: Read each question and indicate the correct response by circling the appropriate letter.

CONDITIONS: Unless otherwise indicated, assume that you are in a non-contaminated, non-NBC field environment and have the necessary equipment/supplies called for each situation/task.

1. Sterile gloves are put on and removed without contaminating self or the gloves. All of the following are considered to be important steps in the doning and removal process, except:

- a. select the proper sized gloves
- b. start by first putting on the glove that fits your dominant hand
- c. grasp the second glove by slipping the fingers of the gloved hand under the cuff

2. Decontaminating mercury thermometers requires that appropriate aseptic procedures be adhered to. In this regard, the medical specialist insures that all clean thermometer are placed in an appropriate labeled covered basin, covered completely by disinfectant and allowed to soak for at least:

- a. 15 minutes
- b. 30 minutes
- c. 45 minutes
- d. 60 minutes

3. As a member of a field sanitation team you may be required to obtain and treat water for consumption from sources other than established water points. In accordance with approved field sanitation procedures, water is considered safe to drink after the desired residual has been reached and a total disinfection time of _____ is achieved.

- a. 15
- b. 20
- c. 25
- d. 30

4. An oral temperature may be measured after the thermometer has been in place for a minimum of:

- a. 1 minute
- b. 3 minutes
- c. 5 minutes
- d. 10 minutes

5. To detect irregularities it is necessary to evaluate a patient's pulse for at least _____ full minute(s).

- a. one
- b. two
- c. three
- d. four

6. The patient's respirations are counted for one full minute. Normally this procedure is accomplished by:

- a. counting the number of times the heart beats per minute.
- b. counting the number of times the chest rises in a minute.
- c. measuring a patient's blood pressure at normal activity levels.
- d. requiring the patient to take as many deep breaths as possible in a minute's time.

7. Blood pressure is measured using a(n):

- a. otoscope
- b. stethoscope
- c. sphygomanometer
- d. all of the above
- e. b and c only

8. After the blood pressure cuff is inflated to its maximum level (about 20-30 mm above where pulse sounds were last heard) the thumbscrew on the airbulb is loosened, allowing the cuff to deflate. The technician watches the guage and remembers the reading when the first distinct sound is heard. This reading is referred to as the _____ pressure.

- a. cardiac
- b. arterial
- c. systolic
- d. diastolic

9. When evaluating an injured patient who is unresponsive, the first action you should take is check for:

- a. bleeding
- b. breathing
- c. fractures
- d. head injuries

10. Symptoms indicating a patient may be in shock include all of the following, except:

- a. rapid pulse
- b. cool, clammy skin
- c. high blood pressure
- d. increased respiration rate

11. Upon evaluating a casualty you find he is not breathing and is suffering from a spinal injury. The preferred technique of opening an airway in this situation is by using the _____ method.

- a. back blow
- b. jaw thrust
- c. head tilt-neck lift
- d. head tilt-chin lift

12. Once an airway is established in a casualty who was not breathing, the rescuer checks for breathing by placing his/her ear over the casualty's mouth and nose, looking toward the chest and stomach and:

- a. looking for the chest to rise and fall
- b. listening for air escaping during exhalation
- c. feeling for the flow of air on the side of face
- d. all of the above

13. When attempting to clear an upper airway obstruction for an unconscious casualty, _____ sharp back blows are delivered between the casualty's shoulder blades.

- a. 2
- b. 3
- c. 4
- d. 5

14. Rescue breathing, using the mouth-to-mouth method, requires the rescuer to administer four quick breaths into the casualty's mouth while watching for the chest to raise. If the chest does not rise, the next step is to:

- a. start CPR
- b. check pulse
- c. give four more quick breaths
- d. reposition head and clear airway

15. Although a pulse can be obtained from a variety of locations, the preferred site to properly check the pulse while performing adult rescue breathing is at the _____ site.

- a. radial
- b. carotid
- c. femoral
- d. brachial

16. The ventilation rate while performing rescue breathing for an adult is one breath every _____ seconds.

- a. 1 to 3
- b. 3 to 5

c. 6 to 8

d. 7 to 9

17. Two-man CPR is continued until the rescuers are relieved by other qualified persons, stopped by a physician, too tired to continue or:

a. a pulse is restored

b. stopped by EMT technicians

c. temperature reaches 98.6 degrees

d. fingernails no longer become blanched when pressed

18. The ratio of chest compressions to ventilations when performing two-man CPR is:

a. 3:1

b. 4:1

c. 5:1

d. 6:1

19. If after splinting a fracture site and symptoms of circulation and/or nerve impairment become apparent, you must _____ the cravat.

a. remove

b. loosen

c. tighten

d. reinforce

20. Over inflation is a problem when applying a pneumatic splint because too much pressure can cut off circulation to the extremity, thereby causing further damage. Proper inflation is achieved best by:

a. using an air pump to quickly inflate the splint

b. inflating by mouth until no more air can be forced into the splint

c. inflating with compressed air source that has a pressure gauge attached

d. inflating by mouth until a slight indentation is made when the splint is pressed with a finger.

21. Treatment of a casualty must be recorded using DD Form 1380 (Field Medical Card). As a minimum the information in blocks _____ is to be completed, while blocks 23 through 26 will be completed as appropriate.

- a. 1, 2, 3, 4, 5, and 14
- b. 1, 2, 3, 13, 14, and 18
- c. 1, 2, 3, 14, 20, and 27
- d. 1, 2, 3, 20, 21 and 29

1 NAME (Last, First, Middle Initial) / NOM, PRENOMS		2 SERVICE NUMBER / NUMERO MATRICULE		3 GRADE / GRADE		4 NATION / NATIONALITE (Don't Blank)	
5 FORCE, ARMEE		6 BRANCH AND TRADE / ARME (to be Indicated)		7 UNIT / UNITE		8 SERVICE (Type of Service)	
9 AGE / AGE		10 RACE / RACE		11 RELIGION / RELIGION		12 FACILITY WHERE TAGGED / LIEU D'ETABLISSEMENT DE LA TICHE	
13 DIAGNOSIS (Including injury) / DIAGNOSTIC (Cause or injury)				14 NATURE OF CASUALTY OR ILLNESS / NATURE DE LA BLESSURE OU MALADIE		15 DATE & HOUR TAGGED / DATE ET HEURE D'ETABLISSEMENT DE LA TICHE	
16 LINE OF DUTY OR RELATION A.V.T. / SERVICE				DISABILITY / INCAPACITE		16 ENEMY ACTION / DU FAIT DE L'ENNEMI	
				17 INJURY / BLESSURE		18 YES / OUI <input type="checkbox"/> NO / NON <input type="checkbox"/>	
				19 SICK / MALADIE		20 YES / OUI <input type="checkbox"/> NO / NON <input type="checkbox"/>	
19 WHAT WAS HE DOING WHEN INJURED / QUE FAISAIT-IL LORSQU'IL FUT BLESSÉ				21 TREATMENT / TRAITEMENT EFFECTUE		22 DOSE / DOSE	
23 TREATMENT (List in chronological order which and the date, time, and date) / TRAITEMENT EFFECTUE (List en ordre chronologique and the date, precision hour, minute, et date)				22 MORPHINE, 1/4		23 MORPHINE, 1/2	
				24 MORPHINE, 1/2		25 MORPHINE, 1/4	
				26 MORPHINE, 1/4		27 MORPHINE, 1/4	
28 TETANUS TOXOID / VACCIN ANTITETANIQUE				29 TETANUS TOXOID / VACCIN ANTITETANIQUE		30 R.T. SERUM / SERUM ANTITETANIQUE	
31 TOURNIQUET (Use or Do. Time & date applied) / MISE EN PLACE D'UN GARNOT (Date, et heure et date)				32 HOUR AND DATE / HEURE ET DATE		33 MEDICAL OFFICER (Signature & Grade) / SIGNATURE ET GRADE DU MEDICIN	

DD FORM 1380, 1 JUN 62

U. S. FIELD MEDICAL CARD / FICHE MEDICALE DE L'AVANT ETATS-UNIS

22. Managing a convulsive and/or seizing patient is done without allowing or causing unnecessary injury to the patient. Proper management includes all of the following performance measures, except

- a. maintaining the patient's airway
- b. managing the patient after the convulsive state of the seizure
- c. prying open the patient's mouth to insert a padded tongue blade
- d. preventing injury to the patient by removing or padding objects that might cause injuries.

23. Which of the following is not a treatment for frostbite?

- a. massage the affected area
- b. move the casualty to sheltered area
- c. apply local rewarming using body heat
- d. evacuate deep frostbite casualties as soon as possible

24. At the Troop Medical Clinic routine sick call procedures require that each sick call visit be recorded on:

- a. DA Form 2496, Disposition Form

- b. DD Form 1380, Field Medical Card
 - c. SF 88, Report of Medical Examination
 - d. SF 600, Health Record - Chronological Record of Medical Care
25. The outer _____ inch(es) of a sterile field is/are considered to be contaminated.
- a. one
 - b. two
 - c. three
 - d. four
26. After a wound is irrigated under aseptic procedures, the preferred method for drying is to:
- a. pat the wound dry with sterile sponges
 - b. allow the wound to dry naturally in the open air
 - c. aspirate excess fluid from the wound using an irrigation syringe
 - d. cover the wound with a sterile dressing and let the excess fluid dissipate through normal body heat
27. Prior to performing an operative procedure a wound should be cleansed using a(n) _____ solution.
- a. iodine
 - b. saline
 - c. betadine
 - d. sterile water
28. Proper treatment for a nose bleed requires the patient's head to be positioned slightly forward, pinch the nostrils closed for 5 to 10 minutes and apply a _____ compress to the bridge of the nose.
- a. hot
 - b. cold
 - c. warm
 - d. tepid

29. An oral pharyngeal airway (J tube) is inserted through a casualty's"
- a. mouth
 - b. nasal passage
 - c. either a or b
 - d. neither, the oral pharyngeal airway is a mask device placed over the casualty's nose and mouth
30. An oral pharyngeal airway is used for _____ casualties only:
- a. conscious
 - b. unconscious
 - c. semi-conscious
 - d. any of the above
31. A bag-valve system can be used:
- a. to ventilate an unconscious patient
 - b. in conjunction with an oxygen source
 - c. a only
 - d. either a or b
32. Ventilation of a patient using a bag-valve system should continue until:
- a. spontaneous respiration returns
 - b. directed otherwise by a physician
 - c. a normal rate and depth of respiration is achieved
 - d. any of the above
33. Because of their extreme pressure, oxygen cylinders should be handled cautiously and stored in a(n) _____ position.
- a. upright
 - b. inverted
 - c. horizontal
 - d. any of the above

34. Venipuncture is used to obtain blood specimens from:
- a. veins
 - b. arteries
 - c. capillaries
 - d. all of the above
35. A subcutaneous injection is designed to deliver medication:
- a. into the skin layer
 - b. into the fatty tissue
 - c. into the blood vessel
 - d. into the muscle tissue
36. Treatment for anaphylactic shock requires the casualty be given an injection of _____ under the supervision of a physician.
- a. compazine
 - b. phenergan
 - c. epinepherine
 - d. aminophylline
37. Proper procedures for surveying a casualty with more than one injury are:
1. check for breathing
 2. check for responsiveness
 3. look for signs of shock
 4. look for external bleeding
- a. 1, 2, 3 & 4
 - b. 1, 2, 4 & 3
 - c. 2, 1, 3 & 4
 - d. 2, 1, 4 & 3
38. Since severe bleeding or nerve damage may result from an injury with a protruding object, the preferred treatment is to:
- a. leave the object in place and apply support bandages

- b. remove the object and apply a pressure dressing over the wound
- c. remove the object and firmly pack the wound with sterile sponges and cover with a pressure dressing
- d. instruct casualty to remove the object himself or if pain is too severe, leave the object in place and lay casualty on injured side

39. A closed chest wound differs from an open chest wound in that a closed chest wound does not cause:

- a. pain at the injury site
- b. coughing up blood or blood-tinged sputum
- c. shortness of breath or difficult breathing
- d. a sucking or hissing sound when the patient inhales

40. Treatment of an open chest wound requires the injury be:

- a. covered with an air-tight seal and taped in place
- b. packed with sterile dressings and covered with a pressure bandage
- c. loosely covered with a sterile dressing and allowed to drain freely
- d. left open to the air, as covering the wound may cause the casualty's lungs to fill up with fluid

41. Once the triage of patients has been completed at the treatment site, priority of care occurs in the following sequence (beginning with the category that is treated first and ending with the category receiving treatment last):

- a. delayed, expectant, immediate, minimal
- b. immediate, minimal, expectant, delayed
- c. immediate, expectant, minimal, delayed
- d. immediate, delayed, minimal, expectant

42. Once a roller bandage has been applied to an injury, the next step should be to:

- a. check the pulse below the injury
- b. further immobilize the injury by splinting
- c. restrict patient movement by placing on a litter
- d. check first aid manuals to ensure appropriate wrap has been applied

43. Once an Army leg splint is applied, the traction should be loosened only by:

- a. a medical officer
 - b. a qualified aidman
 - c. a physical therapist
 - d. the person who applied the splint
44. Treating a casualty with a snake bite includes all of the following, except:
- a. place the patient in a prone position
 - b. cut the wound to allow the toxin to drain
 - c. instruct patient to be calm and not to move
 - d. place constricting bands above and below the bite site
45. Salt Water solution is administered to heat injured patients suffering from:
- a. heat stroke
 - b. heat cramps
 - c. heat exhaustion
 - d. all of the above

APPENDIX B

DEMOGRAPHIC SURVEY (TDA MEDICS)

(HOSPITAL)

NAME _____
RANK _____
SECTION _____

INSTRUCTIONS: Read each question and indicate your response by filling in the blank or circling the letter that is most appropriate.

1. How many months federal active service do you have? _____ months.
2. How much of this time was spent in hospital/clinic/TMC assignments? _____.
3. How long have you been assigned to the Fort Polk MEDDAC?
 - a. greater than one year.
 - b. less than one year. How long? _____
4. If less than one year, was your previous assignment:
 - a. in a field unit? How long? _____ months.
 - b. in a hospital/clinic/TMC? How long? _____ months.
 - c. in a training unit (i.e., Academy of Health Sciences)?

DEMOGRAPHIC SURVEY (TOE MEDICS)

NAME _____
RANK _____
UNIT _____

INSTRUCTIONS: Read each question and indicate your response by filling in the blank or circling the letter that is most appropriate.

1. How many months federal active service to you have? _____ months.
2. How much of this time was spent in TO&E assignments? _____ months.
3. How long have you been assigned to your present unit?
 - a. greater than one year.
 - b. less than one year. How long? _____ months.
4. If less than one year, was your previous assignment:
 - a. in a field unit? How long? _____ months.
 - b. in a hospital/clinic/TMC? How long? _____ months.
 - c. in a training unit (i.e., Academy of Health Sciences)?
5. Have you worked at a TMC within the past year?
 - a. Yes; How long? _____ months.
 - b. No.
6. Have you participated in Medical Proficiency Training at a hospital in the past year?
 - a. Yes; when did you complete the training? _____ .
(date)
 - b. No.

APPENDIX C

SELECTED BIBLIOGRAPHY

Government Documents

- Department of the Army. Army Training. AR 350-1, Headquarters, Department of the Army, Washington, D. C.:
- Department of the Army. Army Individual Training Evaluation Program. AR 350-37, Department of the Army, Washington, D.C.:
- Department of the Army. Enlisted Personnel Management System. AR 600-200
- Department of the Army. Enlisted Career Management Fields and Military Occupational Specialties. AR 611-201, Department of the Army, Washington, D.C.:
- Department of the Army. SQT Handbook for the Conduct of Skill Qualification Tests: DA Pamphlet 350-37, Department of the Army, Washington, D.C.:
- Department of the Army Forces Command. FORSCOM Reg 350-1, Headquarters, Training and Doctrine Command, Fort Monroe, VA.
- Department of the Army Forces Command. FORSCOM Reg 350-1, Headquarters, Training and Doctrine Command, Fort Monore, VA.
- Department of the Army. Medical Specialist. FM 8-230. Headquarters, Department of Army, Washington, D.C.: August 1984.
- Department of the Army. Nursing Skills for Allied Health Sciences, Volume 1 & 2. FM 8-273-1. Headquarters, Department of the Army, Washington, D.C.:
- Department of the Army. Nursing Skills for Allied Health Sciences, Volume 3. Headquarters, Department of the Army, Washington, D.C.:
- Department of the Army. Medical Specialist (MOS 91A). STP 8-91A10. Headquarters, Department of the Army, Washington, D.C.: February 1985.
- Department of the Army. Skill Qualification Tests. TRADOC Reg 351-2. Headquarters, U. S. Army Training and Doctrine Command, Fort Monroe, Virginia: February 1983.
- Department of the Army. Training Requirements Analysis System/Individual Training Plan. TRADOC Reg 351-1. Headquarters, U. S. Army Training and Doctrine Command, Fort Monroe, Virginia:
- Department of the Army. Support of Training in Units. TRADOC Reg 351-6. Headquarters, Department of the Army, Washington, D.C.:
- Department of the Army. Soldier's Report III 1984. Office of the Deputy Chief of Staff for Personnel, Washington, D.C.: November 1984.
- Department of the Army. Organizational Surveys: Development and Application. USAOECs RB 26-14. U. S. Army Organizational Effectiveness Center and School, Fort Ord, California: March 1983.

Department of the Army. Institutional Self-Study. Academy of Health Sciences, U. S. Army Health Services Command, Fort Sam Houston, Texas: April 1983.

Books

Daniel, Wayne W. Applied Nonparametric Statistic. Dallas: Houghton Mifflin Company, 1978.

Daniel, Wayne W. Biostatistics: A Foundation for Analysis in the Health Sciences. III Edition. New York: John Wiley and Sons. 1983.

Merks, Ronald G. Designing a Research Project. Belmont, CA: Wadsworth Inc. 1982.

Merriam-Webster. Webster's New Collegiate Dictionary. Merriam-Webster Inc. Springfield, MA.: 1984.

Periodicals

Beary, John F. "Strategic Planning. Military Medicine in the Eighties." Military Medicine (April 1984). pp. 181-83.

Gordon, C. Vance and Bisgard, Clay C. "Medical Readiness Planning: Identifying Critical Elements and Aggregate Requirements." Military Medicine. (February 1983). pp. 103-06.

Robertson, John T. and Glazier, Calving J. Jr. "New Methods to Improve Medical Readiness." Army Research, Development and Acquisition Magazine. (July-August 1985). pp. 17-20