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How to Take This Course

Please take a look at the steps below; these will help you to progress through the course material, complete the course examination and receive your certificate of completion.

1. **REVIEW THE OBJECTIVES**

   The objectives provide an overview of the entire course and identify what information will be focused on. Objectives are stated in terms of what you, the learner, will know or be able to do upon successful completion of the course. They let you know what you should expect to learn by taking a particular course and can help focus your study.

2. **STUDY EACH SECTION IN ORDER**

   Keep your learning "programmed" by reviewing the materials in order. This will help you understand the sections that follow.

3. **COMPLETE THE COURSE EXAM**

   After studying the course, click on the "Course Exam" option located on the course navigation toolbar. Answer each question by clicking on the button corresponding to the correct answer. All questions must be answered before the test can be graded; there is only one correct answer per question. You may refer back to the course material by minimizing the course exam window.

4. **GRADE THE TEST**

   Next, click on "Submit Test." You will know immediately whether you passed or failed. If you do not successfully complete the exam on the first attempt, you may take the exam again. If you do not pass the exam on your second attempt, you will need to purchase the course again.

5. **FILL OUT THE EVALUATION FORM**

   Upon passing the course exam you will be prompted to complete a course evaluation. You will have access to the certificate of completion **after you complete the evaluation**. At this point, you should print the certificate and keep it for your records.

About the Author

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Cindy Gurney received a master's in Nursing from the University of Washington and a PhD and MBA from the University of Illinois at Chicago. In 1999 she retired at the rank of Colonel following 28 years service in the Army Nurse Corps. While an Army nurse she worked in critical care nursing and served as the Army Nurse Corps Historian. She conducted this research study while assigned to the Nursing Research Service of Walter Reed Army Medical Center in Washington DC. She is a co-founder of the Tri-Service Nursing Research Program. Her field nursing experiences include serving as Chief Nurse of the Medical Element, Joint Task Force Bravo, Honduras and Chief Nurse of the 85th General Hospital and the 41st Combat Support Hospital.

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Course Objectives

At the completion of this learning activity the learner will be able to:

1. State the purpose of this study.
2. Discuss the relevance of Roy's Adaptation Model as applied to this study.
3. Discuss the assumptions and limitations applied to this study.
4. Describe the instrument utilized in this study, the published scales on which it is based and specific variables addressed.
5. Identify how the sample was obtained.
6. Describe how the data were analyzed.
7. Discuss the findings of this study.
8. Identify recommendations for further study.

Course Overview

Context —One of the reasons soldiers are willing to expose themselves to enemy fire is that they know excellent medical resources are available if they become injured. Those medical resources can be rendered ineffective if medical personnel are paralyzed by fear or stress.

Purpose —The purpose of this study was to isolate individual characteristics and organizational policies that enable Army Medical Department (AMEDD) soldiers to adapt more quickly and effectively to deployment.

Design —The study consisted of a survey of a stratified random sample of Army Medical Department personnel deployed to Southwest Asia for operation Desert Shield/Storm. Major study variables included social support, stress, education/training, experience, attitude about deployment, and biodemographic characteristics. Of 5,000 soldiers selected, 1,310 usable surveys were returned. Data analysis performed included frequencies, principal components factor analysis of scales, psychometric evaluation of scales and multiple regression analysis to determine relationships among variables.

Main Outcome Measures —The primary outcome measures were adaptation to combat and significantly related factors.

Results —The social support, stress and stress subscales, and well-being scales demonstrated internal consistency reliabilities between 0.71 and 0.88. The model tested explained 35% of the variance in adaptation. Environmental stress and symptom distress profoundly negatively ($p \leq .001$) contributed. Social support ($p \leq .05$), satisfaction with their deployed role, age and a positive attitude about being deployed were positively associated with adaptation ($p \leq .001$).

Conclusion —Of the variables studied, six significantly contributed to explain individual adaptation to the combat role. Future study should better define the roles of field experience and training in adaptation.

Course Introduction

The combat soldier's assurance of expert medical treatment if injured is meaningless if the caretaker is paralyzed by fear, or rendered ineffective by the stress of the new demands placed on them. One of the most potent reasons soldiers are willing to expose themselves to enemy fire is that they know their chances of survival are heightened by the quality and sophistication of the Army's field treatment facilities. Desert Storm offered a critical test of that system. It had the potential to teach us a great deal about how we can prepare our Army Medical Department (AMEDD) soldiers for the next contingency.

Significance of the Problem

In the post Cold-War world, the mission of the military services has turned more and more toward rapid deployment and small unit intervention in support of peacekeeping and humanitarian assistance operations throughout the world. This capability requires rapidly deployable medical support that can hit the ground running with comprehensive medical services in support of ill and injured civilians as well as soldiers. The purpose of this study was to isolate individual characteristics and organizational policies that would enable Army Medical Department (AMEDD) soldiers to adapt more quickly and effectively to deployment and duty in a deployed environment.

During the autumn of 1990 and winter of 1991, 23,493 Army Medical Department personnel deployed to Southwest Asia (SWA) in support of Operation Desert Shield/Storm. By component, approximately 10,935 active duty, 5,746 U.S. Army Reserve (USAR), and 6,812 Army National Guard (ARNG) personnel served in the SWA theater of operations (Office of the Surgeon General, 1991). These soldiers operated 35 Deployable Medical System (DEPMEDS) hospitals and provided host nation support to an additional nine Saudi Arabian facilities. During the war, medical personnel treated 22,000 inpatients and 140,000 outpatients including more than 800 enemy prisoners of war (SOSA, 1992).

Although the military prescribes training and policy to prepare active and reserve AMEDD soldiers to function in their military role during both peace and war, anecdotal feedback and research data during and following Desert Shield/Storm told us that most still experienced great anxiety on deployment. Participants affirmed that they were just not prepared for what they would meet (SOSA, 1992; Dahl & O'Neal, 1993; Manglesdorf & Moses, 1993, American Journal of Nursing News, 1991; O'Brien & Sloan, 1992; Ryan-Wenger, 1992, Wynd & Dziedzicki, 1992; Yerkes, 1993).

Conceptual Framework/Literature Review

Previous Studies

There is a wide body of research that relates the impact of stress and the effectiveness of coping to specific psychological and physical outcomes (Folkman, et al, 1986; Fagin 1987; Lazarus & Cohen, 1977; Lazarus & Folkman, 1984; McCubbin et al, 1982). Ryan-Wenger (1992) demonstrated that even in a population of nurses activated but not deployed to the Gulf during Operation Desert Storm, these outcomes were consistent with post-traumatic stress disorder. To the military planner, it is an important next step to recognize the impact of these psychological/physical outcomes on effectiveness in the field, for the care-giver as well as the foot soldier (Wachtel, 1991). For caregivers to function effectively, they must think clearly and respond to change quickly and appropriately with enough energy remaining to assist others to do the same. They can only do that if they have effectively adapted to the situation.

Little previous research demonstrates the combination of forces that interact to maximize effective coping and adaptation of medical personnel in combat. Much of the work done following Vietnam related to stress, combat stress, and post-traumatic stress disorder was retrospective (Norman, 1988; Rahe, 1988). Although these authors demonstrated that some soldiers functioned more effectively in a combat environment than others, they lacked the advantage of concurrent research or a focus on predictive factors. AMEDD achieves the greatest gain by studying those deployed and their experiences as close to the event as possible. This would be the optimal time for AMEDD to identify immediate problems, recognize issues for further study, and develop strategies to effect change. Ryan-Wenger's (1992) study, conducted in three phases during the Gulf War, focused on a small sample of Reserve Army nurses alone. It did not compare different categories of personnel or personnel from other components of the Army. It also did not describe specific areas for attention identified by the respondents themselves. Studies with larger, more diverse samples were needed before generalizable conclusions supporting policy and training changes could be drawn.

Adaptation

Adaptation is the degree to which an individual adjusts psychologically, socially and physiologically to life events (Pollock, 1986). It is a complex concept influenced by both internal and external factors. Roy (1984) postulated that a person's level of adaptation is a result of the pooled effects of three classes of stimuli: focal, contextual and residual (Figure 1). Focal stimuli are those most directly confronting a person. Certainly the experience of being dropped precipitously into a combat theater to provide patient care to ill and injured soldiers was a focal stimulus for the AMEDD soldiers sent to the desert. Contextual stimuli include such stressors as an unfriendly climate, giving patient care under austere conditions, and the inability to practice routine daily activities or rituals in a customary manner. Contextual stimuli may also be potentially positive forces such as the social support a person gets within their unit or through their circle of friends. Lurking in the background are those residual forces the individual brings to the situation. These may include their age and background, level of experience, and level of military training. Another residual stimulus may be the person's general attitude toward deployment to Southwest Asia.

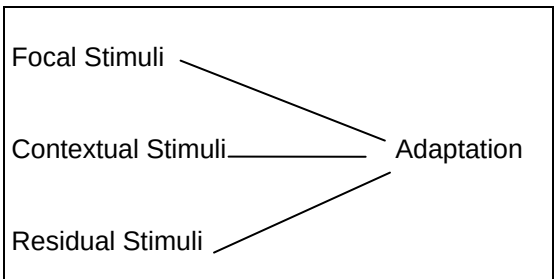

Figure 1. Roy's classes of stimuli

Roy's Adaptation Model suggests that multiple factors contribute to the individual's ability to adapt and function effectively in combat. To test this, I undertook a comprehensive study of factors related to adaptation to combat. This study measured multiple biodemographic characteristics, experience, education, environmental factors, and social support to test a proposed predictive model of adaptation. The findings could suggest policy strategies to more directly address the needs of the population of Active and Reserve Component soldiers who may be deployed. Another anticipated outcome was to identify strategies individuals could independently use to better prepare themselves for combat duty.

Research Questions/Hypotheses

Figure 2 illustrates the proposed model tested. Data analysis assessed the efficacy of this model and tested modifications to it based on the outcomes of statistical analyses. This model states that social support, biodemographic variables, the environment, education and training, and experience each contribute to personal adaptation.

The model assumes summative factors relate linearly to the dependent variable, adaptation. The research question addressed in this study was:

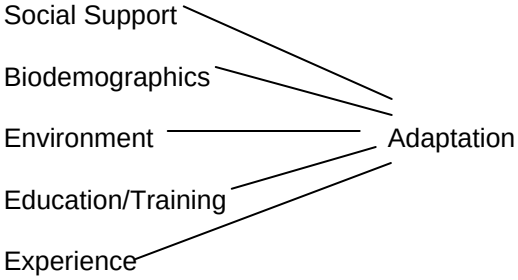

Figure 2. Proposed model of adaptation

Do biodemographic, environmental, educational, and experiential factors significantly explain AMEDD soldiers' adaptation in the combat environment?

This research is part of a larger study intended to study the interaction effects of social support on ways of coping and adaptation. It also compiled information that examined in detail the benefits and problems associated with DEPMEDS equipment. This research report consists of only a partial analysis of the data. All data are reported in the aggregate with subgroup effects planned for later study.

Assumptions

This research assumed that by the fall of 1991 the Department of the Army's database of soldiers deployed to SWA was reasonably accurate. It further assumed that inaccuracies in data such as addresses or names were distributed equally across groups, thus avoiding systematic error related to service component or occupational specialty.

This research also assumes soldiers' recall of events and attitudes 12 months after their return from the war reasonably reflected truth. The elapsed time would be sufficient to allow reappraisal, which appropriately balanced emotion and reason without sacrificing accuracy.

Limitations

The special problems of conducting research during war imposed several limitations on this study. Originally designed to be conducted during the build up to war and the war itself, delays related to organizational approval and obtaining a sample forced a mail survey design and pushed data collection to the winter and spring of 1992. Also, because the theater commander forbade research in theater, only a very select few were able to obtain permission to carry out their studies. In order to conduct the study after the troops returned from SWA, mail questionnaires were necessary. Although Department of the Army directed Total Army Personnel Command (PERSCOM) to create a central database of military personnel stationed in SWA during Desert Shield/Storm, this database was not ready to be tapped until December 1991. Errors in the database required multiple corrective strategies during data collection. These are recounted later.

To be approved, this study needed to meet organizational needs to explore issues related to equipping medical facilities and personnel readiness. This, and the fact that the Army's mark-sense form is limited to 182 items, necessarily limited the amount of space available for theory testing related to social support, stress, ways of coping and adaptation. Therefore, scales were modified and shortened to minimize the number of items per scale without sacrificing the scales' psychometric strengths. In all cases, the retained items achieved the highest inter-item/total correlations and strongest factor loading. Preset minimums were assured for these scales at all times. Scales constructed for the purposes of this study related to this deployment experience did not meet the same psychometric standards as this was their first test.

Research Methodology

Instrumentation

This study utilized multiple scales for theory testing, adapting portions of pre-existing scales that were well tested and reported in the research literature. Nurses and researchers familiar with the content area studied, and others experienced in military service under combat conditions contributed to tool construction. To obtain the support and official sanction of The Office of the Surgeon General and the Soldier Support Center of the Army Research Institute, the survey underwent exhaustive review and staffing. Between January and March the tool was piloted to AMEDD personnel who were returned to Walter Reed Army Medical Center for medical treatment. These Gulf veterans offered comments, which enhanced the physical presentation of the questions, their clarity, and helped eliminate redundancies.

The study employed a 182-item questionnaire. Items addressed the individual's military and civilian education level, experience in combat medicine, biodemographic parameters, and their deployed work environment. The format of the survey allowed respondents to use DA Form 3421-1 (a mark sense form) for their answers. Open-ended questions to be completed in the booklet enhanced data collection by allowing the respondent to provide additional information not elicited in the survey.

Listed below are the scales used to measure four major constructs.

1) Social Support Index (SSI).

Adapted from the Family Stress, Coping and Health Project, conducted at the University of Wisconsin-Madison (McCubbin & Patterson, 1982), this 17-item inventory was previously tested on a military population demonstrating acceptable reliability (Alpha=.82) and validity when correlated with the criterion of family well-being (r=.40). It addresses esteem and emotional and network support of family members and community. For purposes of this study, items related to family alone were excluded. The resulting six items provide a measure of community support. In this case, the community was defined as the soldier's deployed unit.

2) Stress Scale.

This scale was adapted from the Nursing Stress Scale developed by Gray-Toft and Anderson (1981). The original scale contained 34 items that subdivided into seven factors. These seven factors were:

1. Death and dying
2. Conflict with physicians
3. Inadequate preparation
4. Lack of support
5. Conflict with other nurses
6. Workload
7. Uncertainty concerning treatment.

In a test of 122 nurses the scale demonstrated test-retest reliability of 0.81. Spearman-Brown, Guttman split-half, coefficient Alpha, and standardized item alpha measures of reliability all fell between 0.79 and 0.89. Modification of the scale for this study shortened it by limiting each factor to four or five measures and requiring that those measures included held the highest factor loading and met preset minimum requirements (greater than 0.40) for factor loading. The resulting 26 items carried an average factor loading of 0.6. In addition, rewording items to make them applicable to any member of the health care team modified the scale. As an example, items were modified to reflect conflict with "co-workers" rather than "other nurses." Conflict with physicians may be reflected as conflict with "other persons with more authority than I." Final modifications adapted the scale to the deployed environment since it was hypothesized stresses that arose due to the field environment could be an important factor in the individual's overall stress level. Since no existing scale measured that, added items addressed uncomfortable living arrangements, inadequate rest, poor food quality, inadequate facilities for personal hygiene, lack of privacy, lack of communication with family, fear for personal safety, and inability to

continue usual religious practices.

3) Ways of Coping.

Developed originally as the Ways of Coping Index, this scale describes the coping process for a particular stressful encounter (Lazarus & Cohen, 1977). Contained in the questionnaire used for this study, it was not included in this preliminary analysis of the research data and will not be reported further.

4) Member Well-being. The member well-being scale represents a measure of adjustment and adaptation. Adapted from the Family Member Well-being scale used in the Family Stress, Coping and Health Project (McCubbin, 1987), this scale demonstrated reliability (Alpha=0.86). It was also tested on a military population and addresses adjustment in terms of concern about health, tension, energy, cheerfulness, fear, anger, sadness and general concern. The total eight-item scale was used.

Table 1 lists additional explanatory variables that combine to describe focal, residual, and contextual factors that influence perceived well-being. Where possible, multiple-item scales were constructed to describe these factors with reliabilities reported later. The service member's attitude related to their deployment was measured along a 6-point continuum, which ranged from "I was strongly against..." and tried to avoid, to "I wanted to go so much I took steps to assure I would go."

Table 1. Variable Definitions (number of items)

Biodemographic variables	
Time in service	Total years member had toward retirement at the time of deployment (1)
Corps/Specialty	Corps for officers, Military Occupational Specialty for enlisted (1)
Age	Age at last birthday (1)
Sex	Gender, male or female (1)
Military status	Active, Reserve Component, Federal Civil Service, Civilian (1)
Service	Branch of the military (1)
Rank	Military rank E-1 through O-10 (1)
Comfort in role	How well prepared they felt in their deployed role and with their military skills (2)
Family disruption	Difficulty of making arrangements for care for children and/or adult dependents at home and whether those dependents needed to be relocated to get care. (2)
Number of dependents	Number of children and/or adult dependents at home (2)
Financial hardship	Magnitude of decrease in annual income or entitlements due to activation and deployment and unreimbursable expenses (5)
Willingness to serve	Attitude of service member regarding being assigned to duty in Southwest Asia (1)
Education and training variables	
Education level	Highest civilian and military education (2)
Trauma care training	Amount of specialty training in trauma care such as the Combat Casualty Care Course (C4), Advanced Trauma Life Support (ATLS), or Emergency Medical Technician training, intensive care or battlefield medicine training (5)
Experience variables	
Experience	Experience in career field
Field training	Participation in field exercises as part of a field hospital or as a combat medic on a range from no experience to greater than 20 days (1)
Previous Deployments	Deployment for named operations such as Operation Just Cause, Lebanon, Urgent Fury, Vietnam (2)

This deployment experience	
Preparation	Service member's assessment of their preparedness in the areas of clothing and equipment, family affairs, financial affairs, and military training (4)
Problems becoming operational	The problems the unit experienced becoming operational related to transportation delays, missing or inoperable equipment, training and availability of personnel, leadership and mission orders (8)
Symptom Distress	Whether the service member experienced an increase in their physical complaints or anxiety during deployment (2)
Satisfaction with deployment job	On a continuum, whether the service member was enthusiastic about their job, liked their job better than the average worker, or were satisfied with their job while deployed (3)

Sample

The target population was AMEDD soldiers stationed in Southwest Asia during Operation Desert Shield/Storm. The sample required a minimum of 1,300 soldiers chosen by stratified randomized sampling techniques. Stratification by Corps was necessary to ensure representation of all specialties such as:

1. Medical Corps-Physician (MC)
2. Army Nurse (AN)
3. Medical Service Corps (MSC) including optometrists, administrators, human resources, finance, others
4. Army Medical Specialist Corps (AMSC) including other specialists such as physical therapy, occupational therapy, dietitians

Enlisted soldiers were sampled as one group. This minimum sample size met the assumptions to secure a power of 0.80 with 32 variables. A confidence level of 0.05 was preset. This sample size ensured the study would have the ability to identify significant direct effects of 0.02 to explain the variance (R^2) in adaptation (Cohen 1988).

Although 1,300 was the minimal acceptable sample size, the largest sample obtainable was desired due to the wealth of additional independent variables that could emerge during correlation analysis. The PERSCOM database was not available until late December 1991. Using this database, the sample was pulled according to the prescribed sampling plan which included randomization within specialties, in the numbers desired, and produced a report in the form of mailing labels. Since these labels provided the individual's unit address, the population was grossly over sampled to accommodate respondents lost to study due to wrong or inadequate addresses. A total of 5,000 were sampled.

Data Collection

Questionnaire packets included the survey, a Department of the Army Form 3421-1 scan sheet, a cover letter from the Office of The Surgeon General's Director of Personnel explaining the purpose of the study, and a postage paid return envelope. The packet also included a postage paid postcard addressed to the Principal Investigator, which could be returned separately by the respondent to request a copy of the executive summary of the study's results.

Following formal scientific and human subjects review and approval, the researcher distributed the questionnaires by mail. A postcard followed one week after the surveys went out describing the purpose of the study, urging the soldiers' support, and giving them a number to call if they did not receive, or had misplaced the questionnaire. Two weeks later a second postcard was mailed urging the subjects' support and encouraging them to contact the researcher if they needed another survey. These methods are consistent with Dillman's protocol for ensuring good response rates (Dillman, 1978).

The survey was fielded between December 1991 and March 1992. Packets returned "not deliverable" were sorted by like addresses and units originating at or near those addresses were contacted to locate the correct unit addresses for these individuals. When possible, packets were remailed to the individuals when new addresses became available. Many members of the sample called the PI to report that they had received the postcard but not the larger envelope with the questionnaire. In each case the packet was reforwarded to a better address for that individual. Over 700 questionnaires were remailed to new addresses. Despite these efforts, over 1,000 questionnaires could not be forwarded. Data collection continued through the summer of 1992 and was finally closed in October.

Description of the Sample

Table 2 illustrates the study sample. The table also reports the proportion of that characteristic in the population where known. Percentages may not add to 100 due to rounding effects.

DATA ANALYSIS PROCEDURES AND FINDINGS:

Table 2. Description of the Sample

	SAMPLE	TOTAL DEPLOYED
Military Status		
Active Duty	723 (55.2%)	10,935 (46.5%)
Reserve Component	555 (42.4%)	12,558 (53.5%)
Missing	32 (.02%)	
Total	1310	23,.493
Gender		
Male	906 (69.2%)	
Female	388 (29.6%)	
Missing	16 (1.2%)	
Marital Status		
Single/Never Married	255 (19.5%)	
Married	890 (67.9%)	
Separated/Divorced	137 (10.5%)	
Widowed	5 (.004%)	
Missing	20 (1.4%)	
Rank		
Enlisted	583 (44.5%)	18,011 (76.7%)
Warrant	15 (.01%)	182 (.007%)
Officer	707 (54%)	5,300 (22.6%)
Missing	5 (.004%)	
Total	1310	23,493

Table 3. Internal Consistency Reliabilities of Scales

Scale	Number of Items	Reliability
Social Support	6	0.80
Stress	27	0.88
Patient care	10	0.82
Environment	7	0.80
Conflict	5	0.77
Death and Dying	5	0.71
Member Well-Being (Adaptation)	8	0.75

Data Analysis Procedures and Findings

Descriptive analyses of sample characteristics are reported in Table 2. All item frequencies were analyzed to diagnose and correct problems related to coding, data entry and missing data. Each scale in its modified configuration underwent internal consistency testing using Cronbach's Alpha. Prior to that, the stress scale was factor analyzed using principal components factor analysis to detect differences from the original seven scales of the Gray-Toft and Anderson work. For this study, the modified scale with its eight additional items related to the environment in the Gulf factored into four clear subscales. These were patient care, environment, conflict, and death and dying. Five items were discarded when they did not fall into any of the defined factors. Table 3 reports the reliability data for the three modified scales and the four subscales of stress.

Additional variables listed in Table 1 constructed for the purposes of this study were also subjected to psychometric testing and are reported in Table 4. Items not listed below entered the equation as individual items.

Table 4. Internal Consistency Reliabilities of Explanatory Variables

Scale	Number of Items	Reliability
Satisfaction with job while deployed	3	.85
Problems becoming operational	8	.88
Training	7	.59
Experience	7	.53
Family disruption	4	.69
Financial hardship	5	.56
Preparation	4	.66
Symptom distress (physical and emotional complaints)	2	.52

Once the scales' psychometric stability was established, analysis focused on predicting adaptation using preliminary linear regression for causal modeling. Causal modeling allows the investigator to use multiple independent variables to infer cause. It enables the researcher to employ existing theory to construct a tentative model and then through systematic multiple regression analysis, construct a causal model for the construct. The basic requirements are that the independent variables precede the dependent variable in time, posited theory supports the notion of a causal effect, and change in the value of the independent variable(s) is accompanied by change in the value of the dependent variable (Asher, 1983).

The variables included in Figure 3 demonstrated significant direct effects on adaptation as represented by the scale for member well-being. The effects reflect the standardized Beta (β).

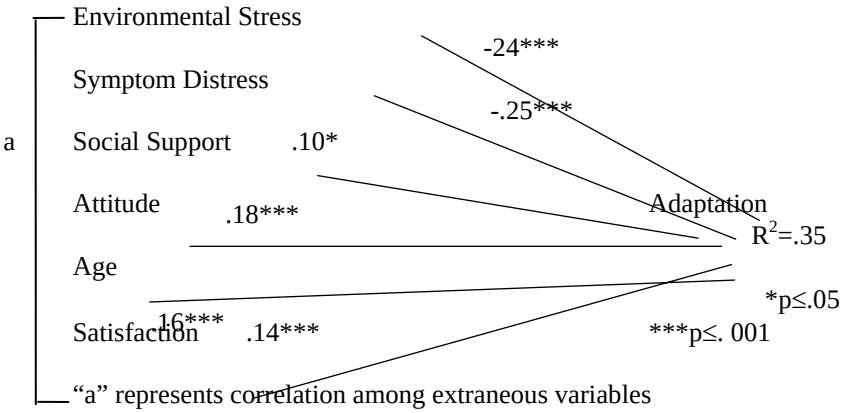

Figure 3. Significant Direct Effects on Adaptation (β)

These data indicate two variables (environmental stress and symptom distress) profoundly and negatively contributed to the explained variance in adaptation. The greater the individual's reported environmental stress and symptom distress, the less likely they were to respond to the survey in a way that reflected good adaptation to their combat situation. On the other hand, strong social support within the unit and greater satisfaction with their deployed role, were associated with greater adaptation. Age and positive feelings about being deployed to the Gulf also supported adaptation.

To examine the stress scale as a whole rather than its individual subscales necessarily sacrifices some of its explanatory value. By entering each subscale of stress independently, one is able to isolate the strongest predictor of adaptation, in this case the environment. It is also interesting to note the consistency between the findings of the regression analysis and the mean scores for stress. Examining only the descriptive data for stress indicates the greatest sources of stress for this group were in the environmental variables. "Privacy" (sample mean=2.7), "living arrangements" (2.6), "food" (2.6), "facilities for personal hygiene" (2.5), and "inadequate rest" (2.3) carried the highest mean scores for stress on a scale from 1 to 4. On the other hand, the "death of a patient I knew" (1.1), "talking with a patient about death" (1.2), "floating to other units" (1.4), "inability to continue usual religious practices" (1.4), and "the death of a patient I didn't know" (1.4) were the least stressful items to the sample. Conspicuously absent from the predictors of adaptation equation were the variables listed in Table 5:

Table 5. Factors that did not predict adaptation

military status (Active vs Reserve Component)
marital status
the other three stress factors (patient care, conflict, death and dying)
problems with DEPMEDS equipment (although these variables were significantly correlated with stress as a whole)
experience
years in service
financial hardship
gender
training
grade
family disruption.

All of these variables failed to significantly contribute to the explained variance in adaptation.

Discussion and Implications

The study's sample represents proportionally fewer enlisted and more active duty personnel than the general population deployed to SWA. This may reflect the difficulty in getting accurate addresses for individuals and units. Enlisted medics deployed with combat units were more difficult to trace. Even so, 20 percent of the sample reported they were deployed at the Medical Company, Battalion Aid Station or Tactical Unit level. Similarly, active duty personnel were easier to find since they remained accessible through their military unit address. Despite these differences, the large sample in this study warrants continued analysis. Military status, operationalized as active versus reserve component, failed to demonstrate any significant effect on the outcome variable-adaptation. There was also no significant correlation between military status and any of the stress variables.

These data support the theory of a combined effect of focal, contextual, and residual stimuli. If service in the Gulf is the focal stimulus, environmental stress, social support and symptom distress could be considered contextual stimuli. Attitudes toward deploying, age and satisfaction with their deployed role fit the model as residual stimuli.

Environmental stress was one of the predominant predictors of adaptation and it was also among the top five identified stressors in this sample. Lowest on the stressor continuum were patient care variables. This may speak to our medical personnel's functional ability or adaptation to patient care in combat. Patient care issues, conflict, death and dying are a normal part of their working agenda. They are experienced in dealing with these on a daily basis and when deployed, perceive the least amount of stress from these concerns. They have been able to generalize the mechanisms they normally employ to cope with these issues to the combat scenario. The one unknown of the stress factors for this sample was environment. Day to day practice in a fixed facility at home did not prepare them for heat, dust, or lack of privacy, and it had a negative impact. AMEDD personnel complain about the artificial situations created when they train in the field. These data demonstrate the usefulness of this training if it sensitizes the individual to the hardship of life in the field and offers them opportunities to develop strategies to adapt to it before they are precipitously dropped into it.

Symptom distress, operationalized here as an increase in physical complaints and anxiety, was associated with lower levels of adaptation. One could argue the time relationship between adaptation and symptom distress. Do increases in somatic complaints decrease adaptation? Or does poor adaptation lead to increased complaints (Figure 4.)

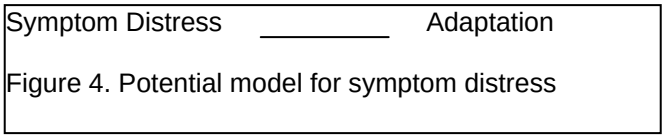

Figure 4. Potential model for symptom distress

Stress has long been linked to illness (Sutherland, 1991). Failure to cope effectively with stress and failure to adequately adapt leads to biochemical alterations which can cause disease and has sprouted a new field of study termed psychoneuroimmunology. The demonstrated association between symptom distress and adaptation emphasizes the need for medical personnel to be cognizant of this relationship and alert to the needs of their own personnel, as well as those of the casualties they receive. Future tests should address a non-recursive model; one that looks at a reciprocal relationship between symptoms and adaptation.

The fact that social support contributed to adaptation supports current efforts to deploy units as a whole. When deployed as a unit, a sense of community and mutual trust places that unit far ahead of other units assigned piecemeal. Those who served in Vietnam can testify to the fact that when units are deployed in pieces, much time is lost forging relationships and building the social support systems that will carry that unit through adversity. Many units fail entirely. Combat stress teams are also becoming a more common part of the mobilization inventory. They direct their attention jointly to combat casualties and to the units caring for them.

It is intuitively logical that the individual's initial reaction to deployment, their age, and satisfaction with their deployed work would shape their ultimate adaptation. All leaders would much rather take with them mature clinicians who want to be there, than those who don't. The mobilization scenario does not always give leaders that choice. Perhaps leaders can devise creative strategies that empower them to exercise that flexibility. Or more importantly, perhaps leaders need to learn techniques that will build not only their personnel's military and clinical skills, but also the mindset or spirit that prepares them psychologically in advance for this contingency.

One of the most disturbing findings, or rather absence of findings, is the lack of demonstrable association between training, experience, and adaptation. Intuitively, one would guess that the soldier medic who served in Vietnam, or in Grenada, or saw action during Operation Just Cause, would find that experience prepared them to adapt in yet another wartime scenario. These data do not support that. It is possible the number of subjects with that experience were too small to show a relationship. Experience was treated as a summative variable combining those with experience in Vietnam (n=107), Central America (n=106), Grenada and Just Cause (n=47), Operations Baby Lift/New Life (n=19), and Hospital Ship Mercy (n=19). It could be that the experiences in these different scenarios differed too much to combine them into a single construct defining "operational experience". Anecdotal accounts from the Gulf War indicate Vietnam veterans had a much more difficult time adjusting to war in the Gulf than expected. Their experience was 20+ years earlier in a much different war, laden with negative baggage. Recent experiences in Central America were much different, in an Army blessed by much more solid support from the American public. Future work with these data needs to examine how these variables are operationally defined and to explore alternative configurations of the data to determine if the construct can be better articulated and tested.

Likewise, training needs further examination to determine if it is the manner in which it is operationalized that is undermining it's ability to predict outcomes. At this point, it is too early to categorically deny the importance of training and experience to outcomes. Correlations involving adaptation demonstrated significant binomial relationships with officer military education ($p \leq .001$), enlisted military education ($p \leq .05$), field training ($p \leq .01$), and the individual's perception of being prepared for their deployed clinical role ($p \leq .001$) and deployed military role ($p \leq .001$). These data are rich with information; there is much work yet to be done to explore it.

Recommendations

Future analyses should examine the connection between stress and the individual's way of coping (Figure 5). It will examine the role of social support as an interaction variable, projecting that it may mediate the impact of stress on coping and adaptation. Subgroup differences by military status, gender, or occupational specialty may indicate the specific needs of different groups of individuals with implications for training.

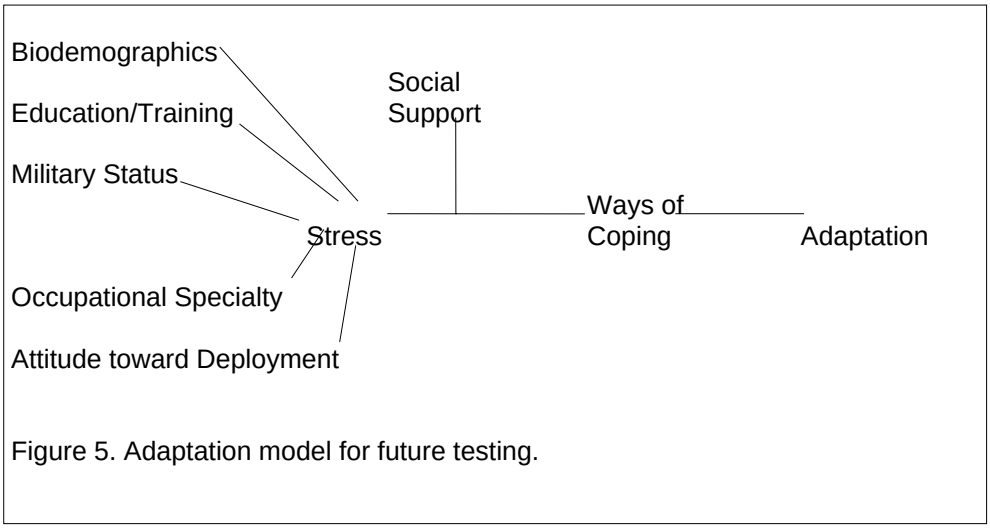

Figure 5. Adaptation model for future testing.

Conclusion

Since the Revolutionary War we've supported American soldiers in battle. Each new generation has responded and faced the challenge. Today's AMEDD will continue to be called to respond to that challenge. The current world situation suggests multiple small unit deployments for peacekeeping and humanitarian assistance operations will tap proportionally more of AMEDD for longer and more austere activities. Fewer creature comforts and more severe Third World environments will be the order of the day. AMEDD cannot risk mission failure because its personnel were not prepared for the stress of the environment. Realistic training simulations along with shared lessons learned could address this need. "Surviving deployment" in a very personal sense should be a part of every facility's annual training cycle. Those who have been through it should share tips and pitfalls, the good and the bad to sensitize the next generation of caregivers.

The role of leadership in building an effective social support system cannot be stressed too heavily. Med Force 2000 doctrine includes a system of caretaker hospitals. In this doctrine, except for a small cadre, the entire professional and enlisted staff of a deployed hospital issue from a single fixed facility. These fillers train together, work together, plan together, and occasionally socialize to assure that when deployed, they deploy into a situation which boasts a strong, well-established social support system. These data support this concept. Leadership can use this system of social support to mold positive attitudes toward deployment and confidence in the role the individual plays when deployed.

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Adaptation of Medical Personnel to Combat
Course Exam

After studying the downloaded course and completing the course exam, you need to enter your answers online. **Answers cannot be graded from this downloadable version of the course.** To enter your answers online, go to e-leaRN's Web site, www.elearnonline.net and click on the Login/My Account button. As a returning student, login using the username and password you created, click on the "Go to Course" link, and proceed to the course exam.

1. The purpose of this study was to:

    A. Isolate individual characteristics and organizational policies that enable Army Medical Department (AMEDD) soldiers to adapt more quickly and effectively to deployment.
    B. Identify interpersonal issues related to why some individuals are less likely to respond positively to combat situations.
    C. Strengthen the AMEDD forces in Southeast Asia.
    D. None of the above.

2. Roy(1984) postulated that a person's level of adaptation is a result of the pooled effects of three classes of stimuli. These 3 classes include all the following EXCEPT:

    A. Focal
    B. Contextual
    C. Regressive
    D. Residual

3. Delays encountered in achieving organizational approvals and as well as obtaining the sample limited the study by forcing a mail survey design and pushed data collection back so that soldiers' reported on their recall of attitudes and events within 12 months of the war.

    A. True.
    B. False.

4. The instrument utilized in this research is described as:

    A. It is a 182-item questionnaire that addressed the individual's military and civilian education level, experience in combat medicine, biodemographic parameters, and their deployed work environment. It also included a booklet for responses to open-ended questions.
    B. The questionnaire was based on four scales: The Social Support Index, The Nursing Stress Scale, The Ways of Coping Index and the Family Member Wellbeing Scale.
    C. Additional explanatory variables were utilized in the instrument to describe focal, residual, and contextual factors that influence perceived well-being.
    D. All of the above.

5. The target population was Army Medical Department soldiers stationed in Southwest Asia during Operation Desert Shield/Storm; the sample required a minimum of 1,300 soldiers who were stratified by Corps to ensure representation of all specialties.

    A. True.
    B. False.

6. Analysis of the data focused on predicting adaptation using preliminary linear regression for causal modeling.

    A. True.
    B. False.

7. The data indicated two variables (environmental stress and symptom distress) profoundly and negatively contribute to adaptation. The greater the individual's reported environmental stress and symptom distress, the less likely they were to respond to the survey in a way that reflected good adaptation to their combat situation.

    A. True.
    B. False.

8. The data indicated that strong social support within the unit and greater satisfaction with their deployed role were associated with greater adaptation to the combat situation. Age and positive feelings about being deployed to the Gulf also supported adaptation.

    A. True.
    B. False.

9. One of the findings was a clear positive association between training, experience, and adaptation. That is, the more training regarding combat and experience with combat, the greater was the soldier’s adaptation to combat.

    A. True.
    B. False.

10. Recommendations for future research include the connection between stress and the individual's way of coping, and the role of social support as an interaction variable projecting that it may mediate the impact of stress on coping and adaptation. Subgroup differences by military status, gender, or occupational specialty may indicate the specific needs of different groups of individuals with implications for training.

    A. True.
    B. False.