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Review of Interventions for Reducing Enlisted Attrition in the U.S. Military: An Update

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14. ABSTRACT

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has been conducting research on first-term enlisted attrition as part of a broader research project entitled “STAY: Strategies to Enhance Retention.” In support of the larger project, this report reviews past and ongoing interventions that support, either directly or indirectly, attrition interventions that assist Army recruits, trainees, and Soldiers in completing training and their first-term enlistment. This report provides a review of attrition interventions that deal primarily with social and behavioral factors affecting first-term attrition since 1973, the time of the transition to the all-volunteer force. The review is based on a number of sources, including published articles, papers, technical reports, previous reviews, and briefings. In addition, Subject Matter Experts were contacted to supplement the published information with anecdotal reports and feedback about interventions. Based on these reviews, recommendations are provided to guide research on and development of future enlisted attrition interventions.

15. SUBJECT TERMS

Project STAY; Army enlisted retention; attrition

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Research Requirement

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has been conducting research on first-term enlisted attrition. This effort is part of a broader research program entitled "STAY: Strategies to Enhance Retention." Part of this initiative is to investigate specific attrition interventions to assist recruits, trainees, and Soldiers in completing training and performing at a high level during their first-term enlistment. The objective of the current effort is to support ARI as it develops plans for future attrition intervention research. In 2005, ARI's contractor, Personnel Decisions Research Institutes, Inc. (PDRI), reviewed attrition interventions that dealt primarily with social and behavioral factors affecting first-term attrition since 1973, the time of the transition to the all-volunteer force (Kubisiak, Lentz, Connell, Tuttle, Horgen, Borman, Young, & Morath, 2005). In 2007, PDRI conducted a more focused review with the goal of supplementing the original technical report with more recent information. This report documents the second, more focused review of attrition interventions. Based on these reviews, recommendations are provided to guide research on and development of future interventions.

Procedure

This review began in 2005 with a literature search that included published articles, papers, technical reports, previous reviews, and briefings made available to PDRI by ARI and other contacts. In addition to searching the literature, PDRI contacted Subject Matter Experts to supplement the published information with anecdotal reports and feedback about interventions. The information about attrition interventions was consolidated into a database, and results were summarized into a technical report (Kubisiak, et al., 2005). Additionally, based on the findings, PDRI provided conclusions about what makes interventions effective as well as recommendations for future research efforts. In 2007, the literature was re-examined to determine whether additional interventions had been implemented and subsequent evaluation research had been conducted. The information uncovered in the secondary review was incorporated into the original technical report.

Results

Results of this review suggest that there have been considerable successes in affecting attrition. Screening of applicants, when feasible, continues to provide a viable approach for recruits at risk for attrition. Helping recruits make the transition to military life by assisting them with resolving issues that hinder their progress remains the most viable approach to conducting post-enlistment interventions. Although individual needs and situations determine the most

effective approach, many successful programs are currently in place and can be utilized more broadly. Finally, there is a need to deploy resources more

systematically and strategically throughout the Army in counteracting attrition, and the lessons learned must be disseminated to key stakeholders more efficiently.

Utilization and Dissemination of Findings

The findings uncovered in this research were used to help guide the selection of candidate career continuance interventions for the Enlisted STAY project. This report will serve as a useful resource for the planning, development, and evaluation of future attrition interventions and policies.

REVIEW OF INTERVENTIONS FOR REDUCING ENLISTED ATTRITION IN THE U.S. MILITARY: AN UPDATE

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INTRODUCTION

From the late 1990s to the present, the U.S. Army has faced considerable challenges meeting accession goals. A major thrust toward meeting these goals involves recruiting efforts (White, Young & Rumsey, 2001). The U.S. Army Recruiting Command and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) continue to focus on such issues as recruiter selection and training (Horgen, Kubisiak, Bruk-Lee, Connell, Penney, Borman, Pace, Lentz, White, Young, & Bowles, 2005), Future Soldier Program (formerly the delayed entry program; Kubisiak, Miller, Lentz, Pace, & Borman, 2004), deployment of recruiters and recruiting stations, and marketing statistics, all designed to bring more qualified youth into the Army.

A complementary approach to building and maintaining the Force is to reduce the numbers of Soldiers leaving the Army. In fact, during the past several years, ARI has conducted a research program investigating causes of first-term enlisted attrition. First-term attrition refers to a Soldier leaving the Army before completion of his or her initial service contract. A substantial body of literature on attrition has been generated, and many reports have been written summarizing this work (e.g., Buddin, 2005; Knapik, Jones, Hauret, Darakjy, and Piskator, 2004). Currently, ARI is not only modeling the causes of attrition, but also focusing on how to reduce attrition in ways that will benefit the Army. In support of this objective, ARI initiated a three-year research program entitled, "STAY: Strategies to Enhance Retention." The purposes of the STAY initiative are to develop and test a model of Soldier career continuance and to identify and implement interventions to increase retention among Soldiers. In doing so, there is a specific focus on Soldier attrition and reenlistment decisions.

The objective of this report is to support ARI as it develops plans for attrition intervention research in the future. To that end, this project consists of a review of interventions that deal primarily with social and behavioral factors affecting first-term attrition since 1973, the time of the transition to the all-volunteer force. Based on this review, recommendations are provided to guide research on and development of future attrition interventions.

The review consists of a literature search that included published articles, papers, technical reports, previous reviews, and briefings made available to us by ARI and other contacts. In addition to searching the literature, we contacted Subject Matter Experts (SMEs) to supplement the published information with anecdotal reports and feedback about interventions that may not otherwise have been reported. A list of the SMEs is presented in Appendix A. Although the majority of the information was collected in 2005, a focused literature search was conducted in 2007, with the goal of updating the original Kubisiak, et al. (2005) report. This report summarizes information collected in both reviews.

A few additional general comments are in order regarding our research and the scope of this report. Because there is so much literature on attrition, we agreed with ARI that the breadth of the report had to be somewhat limited. Accordingly, our focus was on three overarching themes. First, we focused on U.S. Army attempts to reduce attrition, although interventions undertaken in other U.S. Services or foreign military were included when they seemed especially relevant. Second, projects and research based on psychological, social, and behaviorally-based approaches. Many of the Army's attempts at reducing attrition have involved health-oriented strategies, such as medical screening, nutritional programs, and physical conditioning (e.g., Knapik, Canham-Chervak, Hauret, Hoedebecke, Laurin & Cuthie, 2001; Larson, Booth-Kewley, & Ryan, 2002). However, because these areas are better addressed by the Army's medical community, we concentrated on interventions more aligned with ARI's traditional areas of expertise. Finally, per ARI's request, the scope of the current effort was limited to attrition interventions involving enlisted service members during their first-term of service.

In addition, we caution that many attrition intervention efforts are not well documented. This is especially true in situations where the attempted interventions were discontinued because of funding issues or leadership changes. As a result, it was difficult to evaluate effectiveness for some of the interventions. Finally, in conducting our review, we came across several previous reviews of the attrition literature (e.g., Buddin, 2005; Laurence, Naughton, & Harris, 1996). The most recent and arguably, most comprehensive, was Knapik, Jones, Hauret, Darakjy, and Piskator (2004). Their review covered risk factors that predispose recruits and Soldiers to attrit, as well as interventions that have been attempted to reduce attrition. Their objective was "to review the published literature on attrition emphasizing demographic, cognitive/psychosocial, medical and fitness-related factors" (p. 3). Our objective was to compile a review of attrition interventions that included, but also went beyond, the published literature. Further, whereas Knapik, Jones, Hauret, et al.'s (2004) goal was to provide a thorough review of literature, our goal was to provide ARI with recommendations, or a road map, for future research.

A variety of different approaches have been employed to address first-term attrition. These range from screening incoming recruits for medical problems to providing counseling to Soldiers who are having problems adjusting to military life. As noted above, this review focuses on social and behavioral aspects of attrition and retention because these are aligned with areas where ARI, and others, can have the most impact.

As we conducted our review, we organized the interventions into a category system or taxonomy to provide structure. The goal of the taxonomy was to maximize the utility of the information, highlighting the applicability of past efforts to future interventions and to guide broad directions for future research. Further, the taxonomy was designed to facilitate comparisons of the relative effectiveness of the interventions. After the interventions were organized into the

taxonomy, we summarized what was found and developed recommendations to assist ARI as they plan for additional attrition research.

This report is organized into four sections. Following these introductory comments, the next section of the report describes the procedure and approach employed in compiling and summarizing information about the interventions. The third section consists of summaries of the interventions, organized by the framework developed. Finally, the last section provides conclusions drawn from the review and recommendations for future research efforts.

Procedure and Approach

We began the review by searching available literature, including technical reports, journal articles, professional publications, and any additional relevant documentation. However, we anticipated that this approach would yield somewhat limited information because many attrition intervention efforts are not well documented. Therefore, with the assistance of ARI, we identified additional information sources, subject matter experts (SMEs), and other avenues for investigating attrition intervention efforts. We also used briefings, presentations, interviews, and personal communications with knowledgeable sources to obtain information about interventions. The more informal information gathering enabled us to obtain unpublished and even anecdotal information about interventions, as well as leads pertaining to sources for more information. Further, we were able to learn of interventions that had not been fully implemented, or were unsuccessful, and had not been formally reported.

Next, we reviewed and summarized the materials gathered. Brief summaries of each reference or intervention were consolidated into a master table. The table also includes information on the origin of each source/article, the type of source (i.e., report, briefing, personal communication), relevance to the current effort, significant findings, and a brief description of the methodology, if applicable. Additionally, where possible, we reported on the effectiveness of the interventions and summarized what has been done with recommendations for potential future directions. We also reported the reasons why programs were discontinued, whenever that information was available.

As the review was compiled, we grouped the interventions into an organizational framework. At the highest level, the interventions were divided into pre-enlistment screening and post-enlistment training interventions. Within each of those overarching categories, they were sorted into more specific groups of similar interventions, based on the type of intervention and how it was applied. These specific types of interventions are listed and described in the next section.

Attrition Interventions

This section presents summaries of attrition reduction interventions and strategies identified during our literature reviews and interviews with SMEs in 2005 and 2007. The interventions fall into two primary categories. The first category, labeled Screening Interventions, refers to prescreening strategies that are employed prior to entry into the service. Four dimensions comprise the Screening Intervention category, including: 1) Biodata and Temperament Surveys; 2) Psychiatric Screening; 3) Health Screening; and 4) Composite Screening. The second category, Training Interventions, refers to strategies implemented during the first-term of service. This category covers a broader spectrum of attrition management strategies, consisting of nine dimensions. These dimensions include: 1) Counseling; 2) Realistic Job Previews; 3) Social Support Programs; 4) Leadership Strategies and Policies; 5) Physical Fitness Interventions; 6) Academic Interventions/Remedial Programs; 7) Incentive Programs; 8) Administrative Policies; and 9) Other Interventions. Where data and information were available, we noted the evaluation and effectiveness of the specific intervention in the review. A complete framework of the attrition reduction interventions and strategies is presented in Tables 1 and 2. In a few cases, highly related interventions used by a particular service are presented together in the same bullet.

Table 1. Attrition Intervention Framework – Screening Interventions (Pre-Enlistment)

Dimension 1: Biodata and Temperament Surveys
• Army Military Applicant Profile (MAP) • Department of Defense (DoD) Educational and Biographical Information Survey • History Opinion Inventory, Military Service Inventory, Recruiting Background Questionnaire, and Success Chances for Recruits Entering the Navy • Navy Armed Services Applicant Profile • Air Force Biographical Evaluation and Screening of Troops (BEST) • Sailor Health Inventory Program (SHIP) • Attrition from Training: Navy Aviation Selection Test Battery and Biographical Inventory • Army Assessment of Background and Life Experiences (ABLE) and Assessment of Individual Motivation (AIM)
Dimension 2: Psychiatric Screening
Dimension 3: Health Screening
• Army Assessment of Recruit Motivation and Strength (ARMS) • Navy Non-Instrumental Drug Testing (NIDT)
Dimension 4: Composite Screening
• Army Tier Two Attrition Screen (TTAS) • Odds for Effectiveness (OFE) and Success Chances for Recruits Entering the Navy (SCREEN) • SubMarine Attrition Test (SMART)/SUBSCREEN/NAVSCREEN • Army and Navy Compensatory Screening Models (CSM)

Table 2. Attrition Intervention Framework – Training Interventions (Post-Enlistment)

Dimension 1: Counseling
• Army One-on-One Counseling Intervention • Air Force Group Stress Management Course • Air Force Cognitive Behavioral Therapy • Army See-It-Through Program • Army Think-It-Over Program • Navy Personal Applied Skills Streaming Course (PASS) • Army Attrition Reduction Management Program (ARM) • Army Commander's Attrition Reduction and Rehabilitation Program (CARR) • Army Deserter Policy • Boot Camp Survival Training for Navy Recruits-A Prescription (BOOTSTRAP)
Dimension 2: Realistic Job Previews
• Stress and Coping Videos in the Marine Corps. • Army National Guard's Recruit Sustainment Program • GoArmy.com Website • Enhancement and Reduction RJPs in the Army
Dimension 3: Social Support Programs
• Navy Recruit Division Sponsorship Program • Navy Peer Mentor Program • Army Battle Buddies • Army Buddy Team Assignment Program • Coast Guard Company Mentor Program • Coast Guard Unit Sponsor Program
Dimension 4: Leadership Strategies and Policies
• Army AURA • Army Drill Sergeant Interventions
Dimension 5: Physical Fitness Interventions
• Army Fitness Assessment Program (FAP) • Army Physical Fitness Test Enhancement Program (APFTEP) • Navy PT-O Program & Physical Training Unit • Navy Improvements in Physical Fitness Training • Navy Rigor in PT/Reverse Height Line Program • Army Physical Readiness Training (PRT) • Navy New Combat Boot
Dimension 6: Academic Interventions/Remedial Programs
• Navy Fundamental Applied Skills Training Course (FAST) • Navy Academic Capacity Enhancement (ACE) Program • Navy Cooperative Learning • Army Prepare to Train (PTT) • Army Basic Rifle Marksmanship Enhancement Program (BRMEP)
Dimension 7: Incentive Programs
• Army Continuing Education System (ACES) • Navy DEP Intervention Initiative • Enlistment Bonus Programs (EBP)

Table 2. Attrition Intervention Framework – Training Interventions (cont'd)

Dimension 8: Administrative Policies
• Navy PG-13 • Army Memos
Dimension 9: Other
• Navy Civilian Clothes Initiative • Navy Reduction of Dead Time • Navy Revised Setback • Navy First Watch • Navy Online Learning • Army Battlemind Training

Note: Highly related interventions are presented together

Screening Interventions

Dimension 1: Biodata and Temperament Surveys

Dimension 1 refers to intervention strategies that are based upon information received from self-reported instruments or questionnaires. The primary focus of this type of strategy is to screen individuals based upon attained scores on the instrument. Applicant screening is one viable strategy for reducing attrition. The information obtained from this strategy may include demographics, personal history, attitudes, and behaviors. Our review identified several such strategies that have been implemented across military branches.

The first approach to reducing attrition via screening involves gathering information on Soldiers' background experiences and self-report measures of temperament to identify those who are likely to attrit. This has typically been done using measures such as biodata instruments and personality or temperament assessments.

Biodata instruments are based on inferring empirical relationships between self-reported past life experiences and predicted behavior, in this case attrition. The Army has attempted to use this approach in a number of ways, and many of these studies predate the scope of the present review. Some more recent efforts are described here. Note that, except where noted, all of the screens discussed were used to predict attrition from Basic Training.

Graduation Status

The most ubiquitous use of past experience to predict attrition is the on-going evaluation of graduation status of high school students (e.g., Zook, 1996). This research and related studies indicated that recruits who failed to complete high school were less likely to complete their enlistment term, despite equivalence of

recruit general intelligence. Zook (1996) also cited the use of arrest records, but graduation status remained the most supported indicator of attrition risk.

Army Military Applicant Profile (MAP)

The Army Military Applicant Profile (MAP) was developed by ARI, and evaluated by the Army from 1979 to 1984 for predicting attrition from training (Hicks & Nogami, 1984; Knapik, Jones, Hauret, et al., 2004). It was administered at Military Enlistment Processing Stations (MEPS). The questionnaire asked about family relationships, educational and work related experiences, physical and athletic competence, and social adjustment. Although preliminary validation results for attrition suggested that the MAP had potential, further evaluations were not as supportive, largely because of the measure's susceptibility to faking.

Department of Defense (DOD) Educational and Biographical Information Survey

The Department of Defense (DoD) Educational and Biographical Information Survey measured educational credentials and achievement, adjustment to academics, criminal records, alcohol and drug use, employment history, and demographic data (Steinhaus & Waters, 1991). Evaluation information on this measure was not available. Preliminary results indicated that items that predict attrition differed between high school graduates and non-graduates, but no further evaluation information was available (Laurence & Means, 1985).

History Opinion Inventory, Military Service Inventory, Recruiting Background Questionnaire, and Success Chances for Recruits Entering the Navy

Other branches of the military have employed biodata measures to predict attrition, as well. The Air Force History Opinion Inventory (HOI) measured a variety of constructs covering school, family, and emotional stability; response to authority; social orientation; physical conditioning; motivation; and achievement orientation. The HOI later evolved into the shorter Military Service Inventory (MSI), also a useful predictor of attrition (Knapik, Jones, Hauret, et al., 2004). Similarly, the Navy Recruiting Background Questionnaire (RBQ) questioned Sailors about past work, school, and family experiences and correlated responses with attrition (Atwater & Abrahams, 1983). RBQ scores correlated most highly with attrition rates for male high school graduates, although significant correlations were also found for male non-high school graduates and for females. A composite of RBQ scores and Success Chances for Recruits Entering the Navy (SCREEN) table scores yielded higher correlations with attrition than did either instrument alone (Atwater & Abrahams, 1983). The RBQ was later combined with SCREEN, and use of the combined instrument resulted in reduced attrition. The SCREEN table calculates the chance of new recruits completing the first year of service as a function of education level, mental group, age, and dependency status (Lockman, 1978; Lockman & Lurie, 1980). Lockman (1978) validated

SCREEN tables to predict selection rates and one-and two-year loss rates at various SCREEN cutting scores.

Navy's Armed Services Applicant Profile

The HOI, RBQ, and MAP were eventually consolidated into a new measure, the Armed Services Applicant Profile (ASAP; Knapik, Jones, Hauret, et al., 2004). The ASAP asked about recruits' educational achievement, moral character, social adjustment, and work history. Although scores on the ASAP correlated as high as .29 with attrition, the DoD elected not to implement it operationally due to concerns with faking. For a detailed description of this measure, see Trent (1993).

Air Force's Biographical Evaluation and Screening of Troops (BEST)

In addition to the HOI, the Air Force investigated the Biographical Evaluation and Screening of Troops (BEST) as a predictor of attrition (Talcott, Haddock, Klesges, Lando, & Fiedler, 1999). The BEST Program involved screening of basic trainees to identify those who need substance abuse or mental health treatment. This was done in three phases (U. S. Air Force Medical Command, 1997). Phase one consisted of a biographical questionnaire that assessed social and emotional adjustment. Recruits identified as higher than average risk for separation proceeded to phase two, which involved written expansions of answers to the phase one survey, a personality inventory, and a Structured Report Interview by a mental health technician. Phase three consisted of a referral by a mental health provider to either process the recruit for separation or proceed with inprocessing. Talcott and colleagues (1999) identified a host of risk factors identified by the BEST that predicted attrition, including demographic factors such as age, gender, and ethnicity, as well as lower physical activity, and rebelliousness.

Sailor Health Inventory Program (SHIP)

Finally, the Navy's current Sailor Health Inventory Program (SHIP) has been related to attrition, as well (Booth-Kewley, Larson & Ryan, 2002). The SHIP was administered to incoming recruits at the Great Lakes Recruit Training Command. Booth-Kewley and colleagues (2002) investigated whether it could be used to predict attrition. They found a correlation of .32 between attrition and a composite score that consisted primarily of items related to medical history, such as asthma symptoms, tobacco use, headaches, and broken bones. The only behavioral items in the composite asked about misconduct and depression/anxiety.

Attrition from Training: Navy Aviation Selection Test Battery and Biographical Inventory

Although not directly related to first-term attrition, the military has also evaluated biodata instruments in the context of predicting attrition from

advanced training programs. Two examples are cited here because the measures used could potentially be explored as attrition screens.

The U.S. Navy uses the Aviation Selection Test Battery (ASTB) to select pilots and naval flight officer candidates prior to their entry into basic flight training (Biggerstaff, 1998). Developed and validated jointly by the Naval Aerospace and Operational Medical Institute and the Educational Testing Service and operational in 1992, the ASTB consists of six paper-and-pencil subtests used to predict both training performance and attrition. The overall attrition rate in U.S. Navy pilot training fluctuates annually, but is about 15-20% of the student population. The subtests of the ASTB include the Math/Verbal Test, the Mechanical Comprehension Test, the Spatial Apperception Test, the Aviation and Nautical Information Test, the Biographical Inventory (BI) Test, and the Aviation Interest Test. The BI asks 71 questions about an individual's background and life experiences and was originally validated to predict early flight training attritions. Biggerstaff (1998) found that items related to Rebelliousness/Activism were predictive of successful completion of flight training.

Additionally, the Biographical Inventory, the Navy's aviation selection battery, has been used in the selection of students for naval aviation training since World War II and its validity in predicting retention in this training has been well established. Stricker (2005) investigated the constructs underlying the inventory and their relations to student retention criteria. The sample consisted of student naval aviators (N=1819) who applied for aviation training from 1986-1988. A factor analysis of the items on the inventory for student pilots identified five factors – Being a Commissioned Officer (ROTC or service academy graduate), Science and Engineering Interests, Flight Experience, Masculine Activities, and School Athletics. Of the five, Commissioned Officer appeared to account for the inventory's validity and predicted retention not only at the end of ground school but also at the end of flight school.

Personality and temperament have been used to predict attrition in military settings, as well. The underlying premise here is that such variables as adaptability, dependability, and predisposition toward physical fitness can be used as predictors of attrition (White, Young, and Rumsey, 2001). We briefly review the Army's efforts in this area here.

Army's Assessment of Background and Life Experiences (ABLE) and Assessment of Individual Motivation (AIM)

Perhaps the clearest example of this is the research that grew out of Project A, on the Assessment of Background and Life Experiences (ABLE) and, subsequently, the Assessment of Individual Motivation (AIM; White, Young, and Rumsey, 2001). The ABLE consisted of a variety of scales, including Dominance, Self Esteem, Work Orientation, Emotional Stability, Cooperativeness, Conscientiousness, Traditional Values, Nondelinquency, Energy Level, Internal

Control, and Physical Condition, as well as scales to indicate the quality of the responses.

In order to address issues with faking on the ABLE, ARI developed the Assessment of Individual Motivation (AIM; White, Young, & Rumsey, 2001; White & Young, 2001; Young, McCloy, Waters, & White, 2004). The AIM has been used in a number of selection applications, including attrition reduction. For example, the AIM was implemented to February 2000 to support the Army's GED Plus market expansion pilot program as a predictor of possible attrition (Knapp, Heggestad & Young, 2004). Under GED Plus, non-high school graduates were given an opportunity to enlist provided that they scored sufficiently high on the AIM while meeting other program requirements. In that preliminary examination, the AIM showed promise, and additional research was conducted. In April 2005, the AIM was implemented as part of the Tier Two Attrition Screen (see below) that has been given to over 25,000 enlisted accessions.

AIM selection research efforts involving post-enlistment applications has also been highly encouraging. These include predicting the success of Army recruiters and drill sergeants, maturity screening for correctional specialists, and predicting the completion of Explosive Ordnance Disposal (EOD) training (Horgen et al., 2006; Kubisiak et al, 2005; White & Young, 2001).

Interestingly, Mael and Schwartz (1991) attempted to develop a biodata instrument that assessed the same constructs as the ABLE. Although this research was conducted at West Point, and is not directly related to first-term attrition, the methodology of creating biodata measures of temperament constructs could prove useful in the development of future attrition predictors that are more resistant to socially desirable responding. Results of their work suggest that such an approach is viable, but did not definitively address applications to predicting first-term attrition.

Biodata instruments, although promising, are limited by their emphasis on strictly empirical relationships with the behavior of interest. Because there is not necessarily a theoretical rationale for the predictive relationship, they add little to understanding what causes attrition. Further, applying the instruments to new samples over time can be problematic. Validities may change as the characteristics of new samples change from the original groups. Finally, as the predictor becomes known and understood by the target population, faking of responses and coaching test takers becomes more likely. Despite these limitations, however, there has been sufficient success with these measures to support their continued use.

Dimension 2: Psychiatric Screening

An additional screening methodology involves psychiatric interviews of recruits to screen them for characteristics that might impact their ability to adjust to military life. Knapik, Jones, Hauret, et al. (2004) cite Navy initiatives in the post-World War II era (Raines, Wittson, Hunt, & Herrmann, 1954) and in the 1960s

(Plag & Arthur, 1965; Ransom, 1971), however these predate the scope of the current review. Based on our search, psychiatric interviews, although successful in earlier eras, is no longer researched as a screen for entry into military service.

Dimension 3: Health Screening

Health Screening interventions refer to strategies that focus on the physical condition and readiness of applicants prior to arrival for training. These interventions posit that screening for factors related to an applicant's health would reduce subsequent levels of basic training attrition. As stated previously, interventions that focused exclusively on medical screening strategies were outside of the project scope. Our review identified two health-related intervention screens that appear to be promising.

Army Assessment of Recruit Motivation and Strength (ARMS)

The Assessment of Recruit Motivation and Strength (ARMS) is a screening initiative geared towards reducing injuries, attrition, and other risks to unfit individuals entering recruit training programs. A major goal of the ARMS program is to allow highly motivated Soldiers into the Army who would not otherwise meet the weight/fat standards for enlistment. This is based upon evidence that such individual can be successful in spite of not meeting the usual weight/fat standards at the time of application. This strategy focuses on utilizing simple performance tests at the MEPS to predict attrition rates. The Accession Medical Standards Analysis & Research Activity (AMSARA) proposed the ARMS program with three goals in mind: (1) to evaluate the fitness of applicants; (2) to collect more detailed medical data; and (3) to evaluate the usefulness of a simple fitness test as a tool to screen some individuals into service.

The ARMS program tested more than 11,000 applicants between May 2004 and February 2005 across six MEPS prior to their entering the Army. The study included three performance tests: the step test, push-ups, and incremental dynamic lift. The data suggest completion of the step test is the key to receiving a passing score on the ARMS (i.e., more than 95% passed the push-ups and lift test compared to only 73% of females and 84% of males completing the step test). Additionally, preliminary findings based on 2,696 valid step tests indicate the risk of early discharge is significantly higher for men who do not finish the step test (7.5%, 43 out of 574) compared to men who do complete the step test (3.2%, 67 out of 2122). The data also suggest the ARMS is successful in identifying physical problems (i.e. joint pain) that are related to attrition and associated with difficulty in completing the step test. This initiative has also provided evidence that individuals who exceed the upper body fat requirements, but pass the ARMS, are not experiencing early failure at basic training. Taken together, these results support the use of performance testing to predict attrition and suggest

that individuals who are considered overweight, but can still meet ARMS requirements, can be successful during training (Millikan & Krauss, 2005).

The ARMS Phase III study was conducted from February 2005 to September 2006 across six MEPS. Preliminary attrition results through July 2007 showed no increased risk of attrition for males and females who are over body fat and pass the ARMS test, compared to those within the weight and body fat standard. At 180 days into training, men and women who were over body fat standards but passed the ARMS did not experience increased risk of attrition compared to fully qualified men and women, after adjusting for known risk factors (Niebuhr, Scott, Li, Bedno, Powers, & Han, 2008). The ARMS has been used operationally at all 65 MEPS since October 2006.

Navy's Non-Instrumental Drug Testing (NIDT)

Non-Instrumental Drug Testing (NIDT) was designed to test all Navy recruits for drug use upon arrival to boot camp. The program is a Commander, Navy Recruiting Command (CNRC) initiative that tests all recruits in the Delayed Entry Program (DEP) for marijuana and cocaine use. If a recruit does test positive, he/she is not sent to boot camp but is a given a new time window to join or access the Navy. During this window, he/she is involved in a drug abuse prevention program that includes instruction on the Navy's Zero Tolerance policy for drug abuse. If a recruit fails the NIDT testing again, he/she is not allowed to enter the Navy. The primary purpose of this initial screen is to reinforce the drug policy at the front end of enlistment by emphasizing the culture and policy of the Navy. Moreover, the NIDT program reduces costs associated with drug-related attrition by preventing the recruit, who will later test positive for drug use, from shipping to boot camp.

The NIDT test program began in July 2000 on a voluntary basis. The program required DEP personnel to be tested within 72 hours prior to entry into active duty. After initial results of the strategy indicated the program was effective, the NIDT program became mandatory in November 2000.

The Navy reports that drug testing attrition from boot camp was reduced by 30% from FY00 to FY01. Additionally, the intervention is credited with saving approximating $2.9 million in resources as a result of fewer drug-related attrition costs during boot camp. In 2005, Navy drug attrition was at a low of 1-2% (J. Noble, personal communication, July 14, 2005; Recruiting Initiatives Report).

Dimension 4: Composite Screening

Composite Screening interventions refer to strategies that examine several characteristics related to attrition and retention simultaneously. The idea is that attrition is a complex phenomenon that is likely influenced by multiple predictors. Thus, these interventions typically include some type of attrition mathematical model that suggests screening for multiple characteristics provides

incremental validity beyond single characteristics alone. Five composite screening interventions were identified and are reviewed.

Army's Tier Two Attrition Screen (TTAS)

The Tier Two Attrition Screen (TTAS) is an attrition-screening composite that was developed for Army non-high school diploma graduate applicants. The TTAS composite consists of four predictors, including a gender-normed Body Mass Index, ASVAB Math Knowledge subtest score, ASVAB Word Knowledge subtest score, and an empirically keyed Assessment of Individual Motivation score (AIM, discussed previously).

Results of a predictive validation study indicate the screening composite is a useful strategy for reducing attrition among non-high school diploma graduate Soldiers (White, Young, Heggestad, Stark, Drasgow, & Piskator, 2004). The researchers randomly assigned non-high school diploma graduates who completed the AIM at the MEPS, in addition to having scores on the other three predictors, to a developmental sample (N=10,658) and a cross-validation sample (N=10,774). Findings suggest the composite screen increased the prediction of 6-month attrition beyond individual predictors (R=.14, p<.01) in the cross-validation sample. A similar relationship was also found using 12-month attrition as the criterion (R=.13, p<.01). Additionally, the authors note no evidence of adverse impact for minority groups when using the TTAS for applicant screening.

The TTAS is being used operationally as one component of an ongoing Army non-high school diploma graduate (NHSDG) recruiting market expansion pilot program that began in FY05. Applicants who score high on this composite screen were categorized as low-attrition risk and offered enlistment incentives similar to high school diploma graduate applicants. Applicants who scored low on the TTAS might still have been able to enlist but were not offered the incentives. Since April 2005, the TTAS has been given to over 25,000 enlisted accessions. Results to date have shown the TTAS is a significant predictor for 6- and 18-month attrition (Young & White, 2006; Hunter, White, & Young, 2008) . Use of the TTAS has allowed the Army to expand the pool of qualified NHSDG candidates by identifying those with a high probability of completing their first term of enlistment and better performance in training (White, Hunter, & Young, 2008).

Odds for Effectiveness (OFE) and Success Chances for Recruits Entering the Navy (SCREEN)

The Navy's use of composite screening models began with John Plag's studies of attrition (Laurence & Waters, 1993). Plag's research was used to develop actuarial tables that determined a recruit's odds of success. The first model, the Odds for Effectiveness (OFE), was implemented by the Navy in 1973. The OFE composite examined a recruit's education level, level of aptitude, number of

suspensions/expulsions from high school, and arrests for non-traffic offenses. The Navy later replaced this model with the Success Chances for Recruits Entering the Navy (SCREEN). The SCREEN composite consisted of three variables to predict attrition: aptitude category, education, and age (Laurence & Waters, 1993). This model was subsequently replaced by the SUBSCREEN, which is discussed in detail below.

SubMarine Attrition Test (SMART)/SUBSCREEN/NAVSCREEN

The SUBSCREEN intervention evolved from the Navy SCREEN test, with a specific focus on reducing attrition levels. The rationale for developing SUBSCREEN was to fully utilize the predictive capabilities of the Navy's screening tool to identify at-risk Sailors. SUBSCREEN is a mandatory standardized psychological test that is administered by the Naval Submarine Medical Research Laboratory on a student's first day of indoctrination to anyone who is interested in being a submariner. The SUBSCREEN is a 240 item self-report questionnaire that examines mental health functioning, motivation, and environmental adaptability. About 3% of students are disqualified from the marine force before attending the Naval Submarine School (Daniel, 2006). The SubMarine Attrition Test (SMART), formerly known as the Submarine Attrition Risk Scale (SARS), is a subset of the SUBSCREEN test that provides the probability of a Basic Enlisted Submarine School (BESS) student to attrit during his first enlistment. SMART is essentially a logistic regression score based on the SUBSCREEN linear composite. Based upon these scores, students are flagged as being at risk for attrition (Bing, Horn, Crisman, & Gudewicz, 2005).

The initial SUBSCREEN intervention strategy involved matching a recommended intervention to the specific problem identified by the test. The rationale for this approach was to be proactive rather than reactive to specific problems. Two major difficulties were cited with this strategy. First, the interventions were either not being implemented or only implemented sporadically. Second, new leadership feared highlighting a mental health component may be viewed as an easy way to separate from the Navy. Thus, this strategy was replaced by a broader approach. Rather than matching interventions with specific problems, all flagged students are provided with information on available resources to contact for help (i.e., a card with phone numbers they could call for a variety of problems). This approach is a bit more passive but does allow for control over what resources are distributed to at-risk students. Additionally, it is argued that students who seek help voluntarily are less resistant and easier to work with (J. Whanger, personal communication, November 7, 2005).

The test and evaluation of this intervention strategy is a two-year effort that began in 2004. Researchers are using an experimental design to evaluate the effectiveness of SMART's predictive capability. Developmental research on the SMART does cite impressive hit rates for predicting early fleet attrition (Bing, et al., 2005).

NAVSCREEN, based on the SUBSCREEN test, is being evaluated for use as an early screening tool for incoming Navy Sailors. NAVSCREEN data was collected at Recruit Training Command (RTC) in 2005 and 2006, and Sailors were being tracked through RTC and A School (Daniel, 2006).

Army and Navy Compensatory Screening Models (CSM)

In an effort to use biodata to select quality non-high school diploma graduate applicants, the Army and Navy developed a series of Compensatory Screening Models (CSM). Knapik, Jones, Hauret, et al. (2004) identified several CSMs that included Armed Services Applicant Profile (ASAP) scores, educational credentials, Armed Forces Qualification Test (AFQT) percentile, age group, service, and number of dependents as predictors of 2-year attrition. Although the regression models did appear to predict attrition (R = .24), faking concerns eventually resulted in the exclusion of ASAP scores from the model. Consequently, the validity of the models decreased.

Additional research examined an alternative Navy CSM that consisted of seven predictor measures, including number of years of education, type of education credential attained, age at application, AFQT category, employment status, military youth program participation, and moral waiver status. The operational test and evaluation of the Navy CSM began in July 1992. The model was developed using archival data from FY85, FY88, and FY89 (Folchi, Devlin, & Trent, 1993). Completion of the first 24 months of enlistment was used as the criterion measure. A CSM formula was computed based upon scores from a logistic regression equation. Based on responses to individual predictors on the non-high school diploma graduate application form, recruiters selected corresponding scores for each response. Applicants who did not meet or exceed the CSM cut score were screened out. Results suggest the CSM had significant increases in predictive validity beyond the previously used AFQT percentile and SCREEN program. Moreover, the authors highlight the benefits of using a CSM strategy, suggesting how easily the score can be computed by recruiting personnel based upon a one-page application form.

Subsequent research has modified the Navy CSM in efforts to further improve upon the effectiveness of predicting attrition among non-high school diploma graduates (Knapik, Jones, Hauret, et al., 2004). The High Performance Predictor Profile (HP3) replaced the Navy CSM in February 1999. This change was intended to address concern regarding the Navy's decision to raise the percentage of non-high school diploma graduates as a response to continuing recruiting difficulties in the 1990s. The HP3 was designed to be a more effective screening tool in determining eligibility of non-high school diploma graduates. However, early evaluative research suggests the CSM and HP3 are comparable with regard to screening out high-risk non-high school diploma graduates (Golfin & Houck, 2002).

Utilizing similar procedures, an Army CSM was also developed (Young & White, 1993). The predictors of the Army CSM included years of education, type

of education credential, age at application, AFQT category, and military youth program participation. The model was similar to the Navy CSM with the exception of two variables - the moral waiver status was not predictive of the criterion measure and employment status information was not available for the Army sample. Completion of an 18-month first-term enlistment was used as a criterion in the validation study based on archival data. Results indicate age and years of education are the strongest predictors of non-high school diploma graduate attrition. Overall, first-term completion was higher for non-high school diploma graduates who were older, had more years of education, higher AFQT scores, and at least one year of participation in youth military programs (Young & White, 1993). Based on archival data from the Army's Project A, it was projected that CSM screening of non-graduates (with a selection ratio near 50%) would result in performance gains of about 23%. This would bring their duty performance up to the level of higher aptitude high school diploma graduates.

An operational test and evaluation of the Army CSM began nationwide in June 1993 for FY04 accessions. The cut score was set so that approximately 25% of non-graduate applicants would qualify. However, due to recruiting difficulties, not confined to the non-graduate market, the CSM standard was lowered and later suspended – within only a few months of its implementation.

Training Interventions

Dimension 1: Counseling

Recruits may face a number of psychological challenges upon arrival to basic training. Similarly, Soldiers may have a difficult time adjusting to their unit of assignment. Psychological counseling interventions refer to strategies that include some type of counseling initiative to assist the individual in adapting to military life. Once a recruit/Soldier has been sent (i.e., shipped) to his/her initial training location or unit of assignment, it is possible that he/she may have trouble adjusting to military culture, rules, and regulations. Counseling interventions focus on strategies that attempt to address this maladjustment and subsequently reduce attrition.

Army's One-on-One Counseling Intervention (for Basic Training)

The impact of an early counseling intervention in basic combat training was examined to address concerns of a rising first-term military attrition rate following the termination of the draft. The counseling intervention included one-on-one counseling sessions between a trainee and a member of the Community Mental Health Activity (CMHA) staff at Fort Knox.

Georgoulakis, Bank, and Jenkins (1981) investigated the effects of one-on-one counseling using an experimental design. The night before trainees were transferred to their respective trainee companies, they were asked to complete

the CMHA Basic Combat Training Inventory (BCTI). Of the 965 trainees who completed the inventory, 269 were categorized as "vulnerable to attrition" based upon positive responses to two or more questions. The authors randomly assigned these vulnerable trainees to two groups, a Vulnerable Experimental group (N=119) and a Vulnerable Control group (N=150). The experimental group was assigned to the CMHA Early Intervention program and was required to report to CMHA during their first day of arrival to the unit. The control group was not assigned to this program but did have the option to receive counseling from the CMHA through normal command procedures if necessary. Results did not show a difference in completion levels between the two groups. The authors speculate this may be attributed to a large percentage of the control group (N=38%) receiving counseling through normal command procedures. Post hoc analyses, with that 38% included in the Vulnerable Experimental group, did suggest a positive relationship between counseling of vulnerable trainees and completion of basic training.

Although the evaluation of this strategy was examined with a small group of Army recruits at Fort Knox, the results do highlight the positive impact mental health counseling can have on reducing attrition among troubled trainees. Referral of trainees to mental health professionals is an ongoing counseling strategy in the Army.

Air Force Group Stress Management Course (for Basic Training)

The Stress Management intervention consisted of providing stress management information and strategies to Air Force recruits in a structured group environment. Cigrang, Todd, and Carbone (2000) designed two 90-minute classes that focused on coping efforts in basic training. The stress management classes encouraged recruits to identify and share coping resources that they found to be helpful, as well as discuss stressful situations that had occurred during training. Additionally, the stress management course provided education and training in relaxation techniques, problem solving, and self-instruction skills.

Cigrang and colleagues (2000) examined the effectiveness of this intervention for Air Force entry-level trainees in an experimental study. The sample consisted of 178 trainees who had been referred for a psychological evaluation from basic training and subsequently recommended for a return to duty. The researchers randomly assigned the participants to either a control (N=84) or treatment (N=94) condition before returning them to their training squadron. Participants in the control condition received the standard care following a mental health evaluation (i.e., brief problem-oriented advice, verbal encouragement from the psychologist, and coping advice as needed). Participants in the treatment condition were asked to attend the two stress management classes. Findings indicate basic training graduate rates did not differ significantly between the control group (58%) and treatment group (52%). The authors conclude the intervention may not have been successful based upon the short duration of the treatment or the disposition of the recruits themselves (e.g., pessimistic, low

motivation). Thus, this type of group intervention is likely to have a low probability of success.

The Stress Management intervention was tested in Lackland during the late 1990s. To our knowledge, the Air Force has not implemented or tested this group stress management strategy further.

Air Force's Cognitive Behavioral Therapy (for Basic Training)

The Air Force became interested in a Brief Cognitive Oriented Group Intervention as a short and efficient psychological method to reduce attrition of qualified enlistees (Gerwell, Fiedler & Hall, 1990). This strategy was developed with an emphasis on keeping costs to a minimum.

Gerwell and colleagues (1990) investigated the effectiveness of this program on successful completion of training. Four hundred and thirty six basic trainees, who were previously evaluated at a mental health facility and recommended for a return to duty, attended group sessions near the training area at Lackland Air Force Base. The group sessions were two 1-hour sessions each week that consisted of brief inputs from each participant, limited problem solving techniques, and a combination of pyschoeducational and cognitive coping inputs from group leaders. Of the 249 trainees who attended the sessions, 177 graduated (71%), 65 did not graduate (26%), and 7 were unaccounted for (3%). Of the 187 trainees who did not attend the sessions, 68 graduated (36%), 110 did not graduate (59%), and 9 were unaccounted for (5%). Chi-square results indicate attendance in the program was related to graduation. A limitation of these findings is that reasons for non-graduation or discharge were not differentiated (e.g., administrative vs. medical).

Although these results appear promising for the cognitive behavioral therapy intervention, subsequent research has examined if the Air Force benefits in the long run from retaining these individuals. For example, Freeman, Fiedler, & Gerwell (1994) highlight the need for a thorough cost-benefit analysis and additional research focusing on psychological adjustments during basic training.

In 2005, the Air Force expressed interest in developing a Cognitive Structuring Session. To our knowledge, this initiative is still in a preliminary phase with no solid or specific details available at the time of our reviews. In a broad sense, the session will likely consist of trainees viewing a 1-hour video presentation that identifies problems trainees may encounter. The presentation will also offer advice and recommendations to the trainees based upon these specific problems encountered (H. Garb, personal communication, July 11, 2005).

Army's See-It-Through Program (for Basic Training)

The See-It-Through program was an initiative that worked with troubled recruits on the verge of separation from the Army. The two-week instructional program was geared towards helping recruits that did possess the ability, desire, and potential to succeed in the service. More specifically, the Bravo Company was

responsible for rehabilitating the self-esteem, confidence, values, and teamwork of Soldiers who were flagged as having trouble with motivation and discipline. The training schedule was comprised of a variety of topics, tasks, and initiatives, including teamwork development, confidence obstacle course, chaplain seminars, personal anger seminars, stress management seminars, an ethical decision-making class, foot marches, values training, drill and ceremony training, barracks and in-rank inspections, museum visits, physical fitness training, drill sergeant counseling sessions, and weapon training. Soldiers who successfully completed the instructional program attended a transition ceremony where he/she received a certificate of performance and was recognized and praised for "Seeing It Through".

The See-It-Through program was implemented at Fort Jackson during the late 1990s (See It Through Program, powerpoint presentation). As of March 1999, 389 Soldiers were involved in the program. Of those, 213 Soldiers (55%) completed the program and 139 Soldiers (36%) separated from the Army. Within the group of Soldiers who completed the program, 154 Soldiers (72%) graduated from basic training and 22 Soldiers (10%) did not graduate (18% of the Soldiers were still in training at the time of this evaluation). These findings do appear to be favorable with regard to utilizing this strategy to reduce levels of attrition during basic combat training.

Army's Think It Over Program (for Basic Training)

The Army implemented the Think It Over Program for recruits who were having second thoughts about basic training during the first week in which they arrived to training (General Accounting Office Report, 2000). This remedial program was implemented as a response to increasing attrition rates during the 1990s. Army officials believed performance-related attrition could be reduced with the proper programs and implemented this program at the basic training site in Fort Jackson.

This program was implemented concurrently with several other remedial programs (i.e., Prepare to Train) with a goal of retaining recruits who may otherwise drop out of the Army due to performance problems. The Army reported that 7,612 enlistees were placed in these remedial programs in FY99 (22% of recruits trained at Fort Jackson during FY99). Of the enlistees in the remedial programs, 68% successfully completed the particular program(s) and were returned to their basic training units (General Accounting Office Report, 2000; General Accounting Office Testimony, 2000).

Navy's Personal Applied Skills Streaming Course (PASS) (for Basic Training)

The Personal Applied Skills Streaming (PASS) program is designed for Navy recruits that have anger-management issues, negative attitudes, and behavioral problems. The PASS program is a one-week program that trains and mentors recruits that are demonstrating these negative behaviors. The program teaches a

variety of coping strategies and provides recruits with the tools to manage low self-esteem, anger, and stress. Additionally, this initiative attempts to enhance the recruit's understanding of racial, gender, and cultural diversity (Wallach, 2002).

The PASS program was implemented at Great Lakes Naval Training Center (NTC) in an effort to improve a recruit's chance of success during training. The initiative grew from response to rising attrition rates during FY96 thru FY99. The Navy speculates the attrition rates would have risen higher if the PASS program, along with five other intervention programs, were not in place (General Accounting Office Testimony, 2000). To our knowledge, the PASS program is still ongoing and appears to be an effective attrition intervention program for the Navy.

Army Attrition Reduction Management Program (ARM)

The Army Attrition Reduction Management Program (ARM) was designed to identify at-risk Soldiers in attempts to counsel and rehabilitate them. The ARM program is comprised of three phases: prevention, identification, and rehabilitation. The prevention phase includes integrating (i.e., the manner in which a Soldier is integrated into his/her unit), mentoring (i.e., creating an effective bond between Soldier and leader), and counseling Soldiers by Chaplains. During the identification phase, Soldiers are identified as being either "untrainable", "unsuitable", or "at-risk" based upon several attrition indicators (e.g., late to formations, abuses of sick call). Once identified, the rehabilitation phase includes corrective training, counseling, and enrollment in the CARR program (discussed below). Overall, the idea behind this program is to identify at-risk Soldiers early and attempt to redirect them.

In 2005, we conducted an interview with an SME that indicated the ARM Program appears to be promising, although no formal evaluation had been conducted (A. Taylor, personal communication, July 12, 2005; Attrition Management presentation). To the best of our knowledge, this strategy has not, to date, been implemented Army-wide.

Army Commander's Attrition Reduction and Rehabilitation Program (CARR)

The Commander's Attrition Reduction and Rehabilitation Program (CARR) was developed as a rehabilitative tool, rather than a punitive action. A company level commander must approve enrollment in the CARR Program. The program is intended to put Soldiers on notice that they are not candidates for continued service, although successful rehabilitation may result in their being allowed to remain in the Army. The CARR Program is comprised of three steps: review, removal, and separation. First, the company level commander is responsible for ensuring the Soldier is being counseled on a monthly basis; the commander must personally counsel a minimum of every three months. Second, a Soldier may be removed from the CARR program based upon the commander's determination

that the Soldier was successfully rehabilitated. Finally, if a Soldier is identified as failing rehabilitation efforts, the unit commanders may initiate separation proceedings.

Army personnel identify the CARR Program as a rehabilitative tool that can be used to develop Soldiers. Similar to the ARM Program status, our understanding is that the CARR has not been implemented across the Army at the time of this review (A. Taylor, personal communication, July 12, 2005; Attrition Management presentation).

Army Deserter Policy

The Deserter Policy is an Army intervention that focuses on rehabilitating deserters. Prior to this policy, a Soldier would report to a Personnel Control Facility (PCF) and would subsequently be discharged. With the new policy, the unit is responsible for attempting to rehabilitate the Soldier and return him/her to the original unit. The focus is on rehabilitation rather than discharging a Soldier from his/her unit.

The Deserter Policy was implemented in the Army in 2001. Attrition trends since this implementation are favorable, with the data suggesting a significant decline in the number of deserters (A. Taylor, personal communication, July 12, 2005).

Boot Camp Survival Training for Navy Recruits-A Prescription (BOOTSTRAP) (for Basic Training)

Another approach to counseling recruits through Basic Combat Training (BCT) is the Boot Camp Survival Training for Navy Recruits-A Prescription (BOOTSTRAP; Williams, Hagerty, Yousha, & Horrocks, 2004). In this program, recruits who are considered at-risk, usually based on a screen for depression, receive special attention to help them cope with the stresses of adjusting to military life. They leave BCT once a week to meet, as a group, for 45 minutes. During this time, they read a specialized manual and discuss strategies for stress management, combating thought distortions, increasing their sense of belonging, and building camaraderie with fellow participants. A clinical psychologist facilitates the discussions and ensures consistency across the sessions.

Williams and colleagues (2004) examined the effects of the BOOTSTRAP intervention on stress and depression in a sample of 801 recruits during nine weeks of training. They found that in addition to reducing attrition, it improves recruit functioning and performance, and decreases stress and depression.

Dimension 2: Realistic Job Previews

Another approach to decreasing attrition is to help recruits cope with the adjustments that a transition to life in the Army requires by providing realistic job previews (RJP). Effective RJPs illustrate both the positive and negative aspects of a job, so that individuals will have a better idea of the situations they

will encounter (Spector, 2005). As used in the military, RJPs typically consist of a film or video that provides a portrayal of what recruits can expect to experience during their training. Viewing these prior to entering military service attempts to establish realistic expectations in the recruits. Further, the RJP can demonstrate that many of the emotions and experiences they will encounter are not unique to them, reducing the sense of isolation and stress. In some cases, RJPs even provide specific information on how recruits should react in particular situations (Brose, 1999).

Theoretically, an RJP can reduce attrition by providing more realistic expectations, although this comes at a price. In the private sector, as Premack and Wanous (1985) illustrated in a meta-analysis, RJPs tend to reduce the number of applicants for a position, but those who stay are less likely to leave. This functions differently in military organizations, as recruits typically only see the RJP after they arrive at their training installation. But the benefits in terms of attrition reduction are still possible. In our review, we found several examples of RJPs used in the Marine Corps and in the Army. These are summarized below.

Stress and Coping Videos in the Marine Corps (for Basic Training)

Three studies cited by Knapik, Jones, Hauret, et al. (2004) deal with attrition in the Marine Corps. Two of the studies, Mobley, Youngblood, and Meglino (1982) and Horner, Mobley, and Meglino (1979), found positive effects for reducing attrition by showing videos that illustrated what BCT would be like. The videos illustrated situations previous recruits indicated that they wished they had known more about. In some cases, they even offered advice on how to react to specific, commonly encountered situations. Both studies found that attrition was reduced among recruits who viewed the films. A third evaluation, by Githens and Zalinski (1983) found no statistically significant reduction in attrition after showing the same videos.

Army National Guard's Recruit Sustainment Program (for transitioning to Initial Active Duty for Training and the first unit)

The National Guard's Recruit Sustainment Program (RSP) aims to decrease training pipeline losses by introducing non-prior service enlistees to the physical and mental challenges of Initial Active Duty for Training (IADT; e.g., California Army National Guard (2005) and Louisiana National Guard (2006)). The program is divided into phases, focusing on the development of enlistees' commitment, Soldier skills, character, and warrior spirit. The Recruits' first drill weekend with the RSP is referred to as the Red Phase, during which Warriors are introduced to basic Army information such as chain of command, Army values, and physical fitness training. During the second phase, the White Phase, Warriors are provided with more in-depth training of the Soldierization process and how the military operates. Sample lessons include: "What Every Trainee Wants to Know about BCT," which addresses frequently asked questions about BCT; "Why Am I Here," in which the benefits of the National Guard are

discussed; and "The National Guard And Your Financial Readiness," which introduces Warriors to how pay, benefits, and bonuses work in the National Guard. This phase varies in length, lasting from the Warrior's first drill weekend to the drill weekend before shipping to IADT. The final phase before shipping to training is called the Blue Phase, in which specific details are provided regarding what to expect before, during, and after BCT.

Two additional phases, Green Phase and Gold Phase, are also provided to some Trainees. Warriors in the Split Training Option may participate in the Green Phase after the completion of BCT and prior to AIT. This phase provides Trainees with instruction in leadership and physical readiness, with such lessons as "How to Manage Your Career" and "Advanced Physical Readiness Training". Finally, the Gold Phase is for Warriors who have completed AIT and offers information regarding what to expect when joining the unit.

By providing National Guard enlistees with a realistic preview of IADT and the first unit of assignment, as well as assisting with the socialization into Army life, the Recruit Sustainment Program aims to decrease attrition, particularly during the training phase.

Army's GoArmy.com Website (for Initial Entry Training and the unit of assignment)

A great deal of information regarding Army life is available on the Internet, but one particularly noteworthy site is GoArmy.com. This website provides detailed information about what to expect during Initial Entry Training (IET; "Becoming a Soldier"), at the unit of assignment ("Being a Soldier"), and from an Army career ("A Soldier's Future"). For example, the website offers a week-by-week "journey" of the Basic Combat Training process, as well as an overview of the various Advanced Individual Training (AIT) schools. As part of the "Being a Soldier" link, information is provided regarding a Soldier's day, ongoing training, life on post, and living the Army values. Further, the website allows visitors to "get inside an Army mission" through a video module and an interactive experience. The website offers a realistic preview of what to expect from IET, the unit of assignment, and an Army career, which may ease the adjustment into Army life. We are not aware of any formal evaluations of the web-site's effectiveness at the time of this review.

Enhancement and Reduction RJPs in the Army (for Basic Training)

Meglino, DeNisi, Youngblood, and Williams (1988) evaluated the effects of the combination of two types of RJPs on attrition: enhancement previews that counter overly pessimistic expectations and reduction previews that counter overly optimistic expectations. Participants included 533 male and female recruits in four groups that received no RJP, one of the two videos, or both videos. Results of the study suggest that overall the RJPs did reduce attrition. Further, the RJPs resulted in recruits seeing the Army as more caring,

trustworthy, and honest, and they experienced increased satisfaction and decreased role ambiguity.

In addition to the work cited above, SMEs have alluded to additional RJPs currently being used. For example, Dr. Dan Stanczak (personal communication, September 7, 2005) brought to our attention a training video used at Fort Knox. However, we were unable to locate information about this intervention.

Overall, RJPs offer promise for reducing attrition in the Army and merit further consideration. As noted above, a consistent finding in the literature on RJPs is that they tend to result in fewer applicants accepting positions in an organization but decrease overall turnover. This can be leveraged by showing recruits the RJPs while in the Future Soldier Program. With this approach, individuals who choose to opt out of the Army would do so before substantial time and money has been invested in them. Finally, the expenses in implementing RJPs are largely concentrated in the development of the video, and their subsequent use is minimally intrusive, with regard to both recruits' time and cost to the Army. Therefore, they offer a good balance of costs and benefits, and constitute a worthwhile avenue for further research.

Dimension 3: Social Support Programs

Social support interventions consist of programs that provide assistance, mentoring, or other means of support outside of the scope of psychological counseling. These interventions do not have a mental health component. Rather, they tend to focus on interpersonal relationships recruits and Soldiers share with others.

As previously mentioned, the scope of this review was limited to attrition interventions involving enlisted service members during their first-term of service. For the most part, we contend there is a need to make a distinction between enlisted service members and officers. However, with regard to social support interventions, we believe the focus on adjustment to military life is similar across individuals beginning training, regardless of rank. For this reason, two social support programs implemented at the U.S. Naval Academy that focused on overall adjustment to military life were included.

Naval Academy's Recruit Division Sponsorship Program (for Training)

The Recruit Division Sponsorship Program is a social support strategy at the U.S. Naval Academy that assigns "Command Sponsors" to recruit divisions during nine weeks of recruit training. The command group is generally comprised of 2 – 10 people, and purposely includes a mix of rank (e.g., officers, commanders, master chiefs, and junior sailors), with the higher ranking officers becoming more influential during the later stages of training. The program recommends the command group visit the recruit division a total of four times during this nine week training: once at the beginning (e.g., the first official day of training after inprocessing), once during the middle, and twice at the end (e.g., during

Battle Stations and Graduation). Each visit typically includes a period of three days. The goal of the Recruit Division Sponsorship Program is to provide social support to Sailors during training and help Sailors make an easier transition to being stationed on a ship.

Social support includes two types of support strategies. First, group sessions can be facilitated with the entire recruit division. These sessions tend to be question-answer format discussions that are aimed at reducing stress associated with basic training. Additionally, these sessions are believed to motivate individual recruits during this time. Second, the command group may also provide one-on-one counseling to the recruits. Recruits may approach the command group for support if they are having difficulties during training. In a related vein, the command group may identify at-risk recruits and assign them to a member of the command group to receive support.

The Recruit Division Sponsorship Program was implemented in the early 2000s at RTC and is still ongoing. We were unable to locate a formal evaluation of the program, but, in general, the response has been positive. The downside appears to be that there are more recruit divisions than there are commands willing to sponsor. Thus, not every recruit division is assigned a sponsor (B. Quibilan, personal communication, September 12, 2005).

Naval Academy's Peer Mentor Program (for Training)

Mentoring relationships can generally be defined as an interpersonal experience between a senior and junior level person, in which the senior person supports, guides, and orients the junior person to the various tasks, functions, and culture within the organization (Kram, 1985). In this case, the Naval Academy established a formal peer-mentoring program that assigned upperclassmen (mentors) to freshmen (mentees) in efforts to provide peer support to these new recruits. The peer mentoring program establishes and works to maintain these relationships for one year. After this time, the relationships are then recycled to focus on the next incoming class of freshmen.

In 2005, an interview with an SME indicated this support program has been positively received. However, there has been no formal evaluation of the Peer Mentor Program (B. Quibilan, personal communication, September 12, 2005).

Army's Battle Buddies (for Basic and Unit Training)

The U.S. Army Training and Doctrine Command (TRADOC) recognizes the importance of social support as a means to help individuals adjust and transition to military life. For this reason, TRADOC requires all recruits in basic and advanced individual training be paired with a Battle Buddy (Ramsberger, Legree, & Mills, 2002). During basic training, Drill Sergeants will assign each recruit a Battle Buddy to work closely with; this person is most likely of a different race, ethnicity, and age. A recruit is responsible for how their Battle Buddy looks, behaves, and performs, and vice versa (Volkin, 2005). This program

differs from a traditional mentoring program in that the battle buddy pair consists of two recruits, rather than a junior level and senior level pair.

TRADOC believes the Battle Buddy program has many important benefits for a recruit and the Army. Specifically, the program is credited with providing Soldiers with sources of mutual support and assistance, developing teamwork, developing a sense of responsibility and accountability among Soldiers, improving safety during training, and reducing the likelihood and opportunity for misconduct, sexual harassment, and suicide attempts (Ramsberger, et al., 2002). This program is regarded very positively and still ongoing at the time of this review.

Army Buddy Team Assignment Program (BTAP) (for Operational Unit)

Transitioning from training to a Soldier's first operational unit can also be a difficult period of adjustment. For new Soldiers, the operational unit can represent the unknown and fears of military life. The Buddy Team Assignment Program (BTAP) concept takes the Battle Buddy program one step farther by assigning training battle buddies together to their first operational unit. Thus, each Soldier has a source of familiar support and assistance at the operational unit. The goal of this program is to reduce attrition by having Soldiers serve with someone they already know and trust (Ramsberger, et al., 2002).

The pilot test of the BTAP began in the third quarter of FY00 for Soldiers in a single Military Occupational Specialty. Training unit First Sergeants assigned Soldiers to the BTAP or to a control group primarily on a convenience basis. Upon graduation from training, BTAP Soldiers were assigned to their first operational unit with their battle buddies. Ramsberger and colleagues evaluated the effectiveness of the BTAP program by surveying Soldiers at the end of their training and Soldiers already in their first operational units (2002). A total of 964 Soldiers completed the training survey; a total of 214 BTAP participants (50% response rate) and 207 control participants (53% response rate) completed and returned the unit survey. Findings suggest that buddies have more influence during training compared to in the operational unit. For example, at the end of training, more than half of the Soldiers indicated their buddy had a positive impact on all factors. However, the operational unit surveys suggest half of the Soldiers felt the buddy had a positive impact for only their confidence level. Although the remaining factors still had moderate positive impact percentages (ranging from 26-44%), these percentages were somewhat lower than responses given on the training survey. Additionally, 68% of the participants either agreed or strongly agreed on the training survey that the BTAP is a good Army program to have in place. On the unit survey, 60% of the BTAP participants, compared to 34% of the control participants, felt positive about the BTAP.

Taken together, these results provide support for the Army's Battle Buddy Program and mixed support for the BTAP. The authors note the mixed support for the BTAP may be a function of confusion surrounding the early stages of the

BTAP rather than program effectiveness and do recommend continuation of the BTAP.

Coast Guard Company Mentor Program (for Basic Recruit Training)

The U.S. Coast Guard Training Center at Cape May also utilizes a mentoring program to support recruits. The program consists of selecting and assigning senior members as mentors to recruit companies. The formal mentoring program provides materials to the company mentor upon selection. The guide highlights the primary responsibilities of the mentor and emphasizes active involvement as the key to success. The program recommends several visits to recruit trainees, including an initial visit around Day 10 of training, a visit around Week 5 (once the recruits have received their orders), and a visit during graduation. During each of these visits, mentors are encouraged to prepare different types of presentations pertaining to, for example, the decision to join the Coast Guard, a lecture regarding success in the Coast Guard, and even a graduation speech that is delivered with the mentor serving as a special guest speaker. Company mentors are encouraged to maintain contact with the recruits after graduation as well.

The Company Mentor Program has not been formally evaluated, but responses to the program have been generally supportive.

Coast Guard Unit Sponsor Program (for transitioning to the First Unit)

The Coast Guard has developed the Unit Sponsor Program to provide support to recruits who need to relocate to another Command. Relying on the new command community for support, the program involves assigning a sponsor to all incoming personnel. The sponsor provides the recruit with a variety of information as needed, including information on housing, medical facilities, public transportation, location of dependents' schools, general information on recreational facilities, special clothing requirements, and spousal employment opportunities. The goal of the sponsor program is to provide support to ease the adjustment associated with relocation.

It is our understanding that the Unit Sponsor Program is an ongoing intervention within the Coast Guard. Specific information regarding the effectiveness of this program was unavailable.

Dimension 4: Leadership Strategies and Policies

Leadership strategies and policies refer to initiatives by officers and NCOs that may impact attrition rates. These strategies include new lingo, slogans, or strategies regarding how to retain a recruit. As commands change, so might the leadership initiatives. Although we contend all leaders would consider attrition to be a negative occurrence, each leader is likely to deal with attrition differently. We have included two examples in our review to highlight these types of initiatives.

Army AURA (for Initial Entry Training)

Current Army leadership has introduced AURA in an effort to increase BCT retention. This leadership initiative is based upon four core elements, including Acceptance, Understanding, Recognition, and Appreciation (AURA). Leadership posits that if a Soldier feels significant, he/she is less likely to attrit during BCT. As a result, leadership efforts are focused on making recruits feel accepted, understood, recognized, and appreciated.

The effectiveness of this leadership strategy was highlighted during an opening address at the USAAC Accessions Research Consortium (October 2005). During this address, the AURA initiative was cited as a significant contributor to attrition reduction in BCT (18% to 13.9%). We were unable to find additional information regarding the implementation of the Army's AURA strategy, but it is our understanding that Army leadership is working towards transitioning the AURA concept to the unit of assignment, as well.

Army Drill Sergeant Interventions (for Initial Entry Training)

Drill Sergeants have tremendous influence over Soldiers during training. Besides daily interaction and instruction, Drill Sergeants can indirectly impact attrition by deciding to mentor or dismiss a troubled Soldier. Accordingly, Drill Sergeants play a significant role in deciding if a Soldier is going to leave the Army.

Critical incidents from 41 Drill Sergeants and Senior Drill Sergeants were collected during a series of workshops in January 2004. Specifically, information was collected regarding the different techniques Drill Sergeants may use to turn around at-risk Soldiers. The incidents were reviewed and categorized into 14 interventions. These Drill Sergeant interventions and examples include counseling, individual punishment (e.g., reprimand), mass punishment (e.g., group punishment), formal Army punishment (e.g., discharge), discussion or "hat off" time with a private (e.g., get the private to open up), rewards/privileges (e.g., allow private call time for good behaviors), physical training (e.g., training for private with behavior problems), removal/transfer of private (e.g., transfer to another company), battle buddy changes (e.g., match battle buddies to specific problems), assigning a leadership role (e.g., leadership tasks to help build confidence in weaker private), seeking family support (e.g., have family talk to private considering leaving), active assistance by the Drill Sergeant (e.g., refer private to chaplain), assigning other responsibilities (e.g., keep private busy), and breaking them down (e.g., question their values). Results of a follow-up workshop in February 2004 suggest counseling, physical training, and individual punishment were among the most frequent Drill Sergeant initiatives. Similarly, counseling, individual punishment, physical training, and formal Army punishment were rated as the most effective interventions by Drill Sergeants (Keenan, Strickland, Waugh, Hoenisch, & Shultz, 2004).

Although many of these interventions are addressed separately in this review, we contend it is important to also consider these as unique initiatives

implemented by leadership. Drill Sergeants often intervene by trial and error; the specific intervention utilized is an individual decision based upon the discretion and preference of the Drill Sergeant (Keenan, et al., 2004).

Dimension 5: Physical Fitness Interventions

Dimension 5 refers to intervention strategies that are related to physical fitness training. The primary focus of these interventions is on the policies, procedures, and requirements associated with basic training. The relationship between physical fitness and BCT attrition was reported in a review of the physical fitness literature (Knapik, Jones, Sharp, Darakjy, Jones, Hauret, & Piskator, 2004). The authors briefly summarized eleven Army and Air Force studies. Most of the research reported found strong relationships between low aerobic fitness or low muscular endurance and attrition. A few studies failed to find a relationship between physical fitness and attrition, but the reviewers suggested that these studies used inappropriate statistical techniques or inappropriate fitness measures.

Accordingly, we have highlighted seven strategies related to physical fitness training that have been implemented across military services.

Army Fitness Assessment Program (FAP) (for Basic Training)

The Fitness Assessment Program (FAP) begins with an entry-level physical fitness test administered to all recruits when they arrive at the Reception Station. The Reception Stations are the locations where new recruits arrive for processing for a few days just prior to beginning their Basic Combat Training (BCT). Recruits who pass the test go on to BCT; those who fail enter a special physical training unit to complete additional physical training before entering BCT. Recruits are given three weeks to train and pass the entry-level physical fitness test and enter BCT. The entry-level physical fitness test consists of the following minimum requirements for men and women, respectively (push-ups - 13, 3; sit-ups - 17, 17; one-mile run – 8.5 minutes, 10.5 minutes). Recruits who do not pass the test within three weeks are discharged from the Army.

Knapik, Darakjy, Hauret, Jones, Sharp, and Piskator (2004) investigated the relationship between effects of an entry-level physical fitness test on attrition in BCT. The authors compared two cohorts of recruits, a no pre-conditioning group (NPC) that failed the entry-level fitness test and entered BCT without training in the FAP (N=105), and a pre-conditioning group (PC) that failed the entry-level fitness test and trained in the FAP before entering BCT (N=158). Two types of attrition were calculated: peer-group attrition and estimated attrition, in both BCT and FAP. If a recruit dropped out during BCT or FAP (for any reason), the individual was considered a peer-group attrit. Estimated attrition was calculated based on historical information because BCT attrition information was not available for recruits who were recycled in BCT.

Results indicated that peer-group attrition in BCT for both men and women in the NPC group was significantly higher than peer-group attrition for their cohorts in the PC group. Estimated attrition in BCT was also significantly higher for men in the NPC group compared to men in the PC group. There were no significant differences for women, although the trend was similar to the results for men. The authors recommended a physical fitness screen for recruits so those with low levels of fitness can receive additional training before entering BCT.

Army Physical Fitness Test Enhancement Program (APFTEP) (for Basic Training)

The Army Physical Fitness Test Enhancement Program (APFTEP) offers additional military and physical training to recruits who are unable to pass the final Army physical fitness test (APFT) at the end of Basic Combat Training (BCT). APFTEP is a four- to five-week program that offers recruits weekly opportunities to take and pass the APFT, and thus graduate from BCT and proceed to their next duty assignment. In the military training portion of APFTEP, recruits review the general knowledge and skills learned in BCT, including drill and ceremony, military justice, and common Soldier skills and tasks. In addition, recruits are taught goal-setting, self-control, stress control, and relaxation techniques. In the physical training portion of APFTEP, recruits are split into groups to work on specific problem areas. Recruits run three times a week and perform muscular strength and endurance training three times per week.

Results of a research study indicate that APFTEP may be a useful tool to retrain recruits who would have otherwise attrited from BCT (Knapik, Hauret, Lange, & Jovag, 2003). Researchers compared 637 male and 746 female recruits in the APFTEP from January 1999 to June 2001 with a matched group of BCT graduates. Recruits were matched on age, gender, Army entry date (+/- 30 days), BCT location, and active Army status. The majority of recruits who entered APFTEP completed the program and graduated from BCT (85.3% of men and 80.0% of women). However, these percentages are lower than graduation rates for all recruits (93% mean and 87% women). Additionally, significantly fewer APFTEP male and female recruits remained in service at the end of a one-year period compared to their BCT counterparts (74% vs. 92% for males, and 63% vs. 84% for females, respectively). Despite these lower rates, the researchers suggest APFTEP is a useful program to assist in retaining recruits who otherwise would be discharged and lost to the Army.

In 2001, APFTEPs were in place at Forts Jackson, Knox, and Sill. No information was available on the current status of these programs.

Navy Physical Training Zero (PT-0) Program & Physical Training Unit (for Basic Training)

The PT-0 Program is a Navy remedial program for recruits that have initial physical fitness problems when they enter basic training. The Great Lakes Naval

Training Center developed this one-to-three week program to assist recruits prior to the start of the boot camp curriculum (Wallach, 2002). The Physical Training Unit is a Navy remedial program to assist recruits who cannot pass their final physical fitness test in basic training. The Navy has not collected information on the effectiveness of these and other remedial programs, but has reported that stress fracture rates declined from 3.5/1000 recruits to 0.5/1000 recruits during FY98-FY99 (Knapik, Jones, Hauret, et al., 2004).

Navy's Improvements in Physical Fitness Training (for Basic Training)

Multiple strategies have been implemented by the Navy to improve physical fitness-related attrition at the training base (J. Noble, personal communication, July, 14, 2005). First, the Navy designed and implemented an improved three-phase, remedial physical training course that was tailored toward individual training needs. The strategy was implemented in December 2003 with initial reports of Fitness Initial Test (FIT) attrition dropping from 30% to less than 2%. Second, the Navy implemented a strategy that improved recruit familiarization with physical training standards and practices prior to being tested for the first time. This initiative was implemented in July 2004. Preliminary data from a two-month time span suggested a 15% reduction in Physical Fitness Assessment (PFA) failures.

The Navy does report a positive impact on attrition rates as a result of these improvements. Because these strategies were implemented concurrently, the relative contribution of the individual component interventions is not known.

Navy's Rigor in Physical Training/Reverse Height Line Program (for Basic Training)

The Navy's Rigor in Physical Training/Reverse Height Line Program was aimed at reducing attrition in training. This strategy was the first physical training program that focused on improving aerobic capabilities while reducing associated running injuries (J. Noble, personal communication, July, 14, 2005).

This intervention strategy was implemented in FY04. Preliminary data were supportive of the strategy, with trends suggesting a decrease in the attrition rate. Due to the multiple strategies being introduced concurrently, we were unable to evaluate the individual effectiveness of this intervention.

Army Physical Readiness Training (PRT) (for Basic Training)

The Army's Physical Readiness Training (PRT) is a physical fitness program developed out of the U.S. Army Physical Fitness School's (USAPFS) modifications to Army physical fitness training and development. PRT de-emphasizes running, and incorporates a greater variety of physical exercise in a context designed to reduce injuries and increase functional fitness during BCT.

Knapik, Hauret, Arnold and colleagues (2003) conducted a research study comparing medical injuries and training outcome data in two BCT battalions. The experimental group participated in the PRT program (N=1284), and the control group participated in the traditional physical training program (N=1296). They found that men and women in the PRT program had significantly fewer overuse injuries (e.g., stress fractures, strains, tendonitis), and a significantly higher first time pass rate than those in the traditional program. There were no differences between the groups in traumatic injury rates (e.g., fractures, dislocations, contusions). Although attrition from BCT was not directly measured in this study, recruits must pass the APFT in BCT to graduate, and later, to be retained in the Army. The authors recommended that the Army PRT program be employed in all BCT units.

Navy New Combat Boot (for Basic Training)

Numerous interventions involving clothing and equipment changes have been introduced to reduce injuries and increase comfort for service members across military branches. One example of this type of initiative is the Navy's new combat boot program. In the early 2000s, the Navy recognized that Navy recruits were actually marching more than Army recruits when considering travel to the mess hall, housing, exercise stations, and other relevant places during training. As a result, there was a great deal of stress fractures and injuries related to the boots Navy recruits were wearing. Thus, the Navy issued new combat boots that were more conducive to the training environment. These new safety boots had 32% greater shock absorption and enhanced orthopedic support.

The Navy's new combat boot intervention was introduced in June 2003. Although this intervention was introduced concurrently with other intervention programs, the Navy credits this strategy with a reduced number of lower extremity injuries (decrease of 53%) and stress fractures (decrease of 33%) during bootcamp (J. Noble, personal communication, July, 14, 2005).

Dimension 6: Academic Interventions/Remedial Programs

Dimension 6 refers to strategies that rely on an academic or remedial component to reduce levels of attrition. These initiatives are two-fold: interventions that focus on improving the performance of recruits who may face academic challenges, as well as interventions that seek to improve the quality of instruction. We identified five interventions that fall under this dimension.

Navy Fundamental Applied Skills Training Course (FAST) (for Basic Training)

The Fundamental Applied Skills Training Course (FAST) is a Navy initiative designed to improve academic skills of recruits. Recruits who have low evaluation test scores, poor study habits, academic performance problems, or English language difficulties are assigned to FAST. In general, the program lasts between one-to-five weeks and focuses on improving the recruit's academic

background to a level conducive of success for the eight-week recruit training cycle (Wallach, 2002).

FAST was pilot tested in 1989 and later implemented as a strategy to assist recruits with limited literacy or verbal skills. To our knowledge, the program is still ongoing. Hickox (1998) evaluated the FAST program by examining student retention rates during the first four years of enlistment. The author collected FAST data from FY93 and FY94 at the Recruit Training Command Great Lakes. Total attrition was calculated as the mean number of recruits separated at yearly intervals. A comparison of FAST participants and a lower mental group (control group) indicated FAST participants attrit at lower levels than the control group. Moreover, the FAST participants generally attrit at levels similar to the upper mental group. Overall, these findings are positive, suggesting FAST participants are less likely to attrit compared to similar counterparts not participating in FAST (Hickox, 1998).

Navy Academic Capacity Enhancement (ACE) Program (for Basic Training)

The Academic Capacity Enhancement (ACE) Program was developed to reduce attrition among Navy recruits that did not have a high school diploma. The strategy included grouping together "academically challenged" recruits that were non-high school diploma graduates. As a group, the recruits were sent to training companies to work and perform tasks together. Additionally, intervention courses (e.g., English speaking skills course) were available to these recruits during this time to promote achievement. This program added one week of additional time to Basic Military Training (BMT) for participants.

The program was disbanded in June 2001 because the "academically challenged" groups performed worse when completing tasks together compared to performing tasks when combined with other recruits throughout the command. The ACE Program was well-intentioned, but was an unsuccessful strategy for the Navy (J. Noble, personal communication, July, 14, 2005).

Navy's Cooperative Learning Method

The cooperative learning method was designed to reduce attrition, as well as improve other training outcomes, from Naval Air Traffic Controller Training. The cooperative instruction technique involved both informal (e.g., class discussions) and formal activities (e.g., group assignments, class presentations, study groups) to encourage class members to work together to learn class materials. Class members were given team goals and incentives to ensure each team member learned the materials and passed the exams.

The cooperative learning method was compared to a traditional lecture learning method in two small-scale research studies (Holubec, Johnson, & Johnson, 1993; Vasquez, Johnson, & Johnson, 1993). Both studies compared the impact of the two methods on attrition from training. The attrition rate was defined as the number of trainees who failed two examinations at the end of 4 ½ days training.

In one study, none of the 12 students in the cooperative condition failed the exams, whereas 18% of the students in the 50 traditional comparison classes failed (Holubec, et al., 1993). In the second study, none of the 13 students in the cooperative learning treatment group failed the exams, compared to 18% in the 50 traditional classes (Vasquez, et al., 1993). Both research studies are limited by small sample sizes and several confounding factors (e.g., incentives offered in the cooperative condition were not offered to the traditional condition). No additional information was available regarding the implementation of cooperative learning in Naval Air Traffic Controller Training.

Army's Prepare to Train Program (PTT) (for Basic Training)

The Army's Prepare to Train Program (PTT) is a remedial program for recruits whose scores on the DoD entrance aptitude test indicate they may have difficulty completing the academic portion of training (General Accounting Office Report, 2000). The program primarily consists of classes and a computer program to help trainees adapt and complete training. The PTT program was implemented at Fort Jackson's basic training site in response to rising attrition rates in the 1990s.

The Army implemented this program concurrently with other remedial programs at Fort Jackson. Although we do not have information on the evaluation of the individual effectiveness of the PTT program, the Army reports 68% of enlistees in remedial programs during FY99 did successfully complete the program(s) and return to their basic training units (see Army's Think It Over Program summary) (General Accounting Office Report, 2000; General Accounting Office Testimony, 2000).

Army Basic Rifle Marksmanship Enhancement Program (BRMEP) (for Basic Training)

The Army's Basic Rifle Marksmanship Enhancement Program (BRMEP) provides additional one-on-one training to recruits who have not qualified with the M-16 rifle by the end of basic training. No research was available on the relationship between this program and attrition.

Dimension 7: Incentive Programs

Incentive programs have been employed as a means to entice, encourage, and later, retain individuals to serve in the military. Although, these programs cover a broad spectrum of incentives, each program is similar with regard to the desire to appeal to the service member in hopes of recruiting and retaining his/her service. Due to the scope of our review, we only included incentive programs that were designed to retain service members during their first-term of enlistment.

Army Continuing Education System (ACES)

The Army Continuing Education System (ACES) is a series of programs that provides educational assistance, services, and opportunities to Soldiers. Utilizing the Army's resources, individuals are able to achieve an education and possibly a college degree that he/she may not otherwise have had the resources to attain. In fact, education is a primary incentive that recruiters and the Army use to attract applicants.

The evaluation of the ACES program was a two-part effort. First, Sticha, DiFazio, Dall, Handy, and Heggestad (2003) completed a literature review, with a focus on research that examined the empirical relationship between educational incentives and attrition. This review highlighted the limited empirical coverage of this relationship in both military and civilian populations. Additionally, the authors developed a systematic plan for evaluating the ACES program.

Second, as part of a larger evaluation study, Sticha and colleagues investigated the relationship between first-term attrition and two ACES programs, Tuition Assistance (TA) and Functional Academic Skills Training (FAST) (Sticha, Dall, Handy, Espinosa, Hogan, & Young, 2003). The sample consisted of 28,516 Soldiers who completed the first six months of their enlistment. Of those, approximately 1% participated in TA and 1% participated in FAST during this time. Using a random utility framework, results indicate participation in the TA and FAST programs increases the likelihood of first-term completion (Sticha, Dall, et al., 2003).

The evaluation of the ACES program occurred from FY00 through FY03. This type of incentive program continues to be an effective strategy for reducing attrition. Thus, the ACES program is a current and ongoing Army initiative.

Navy Delayed Entry Program (DEP) Intervention Initiative (before Basic Training)

The DEP Intervention initiative is an incentive program employed by the Navy that targets recruits in the Delayed Entry Program (DEP). The initiative focuses on the recruiter maintaining contact with individuals in the DEP. Additionally, recruits are encouraged to complete the DEP Personal Qualification Standards (PQS). The PQS offers rudimentary training and an incentive to advance a pay grade upon completion (e.g., E1 to E2).

This intervention is unlike other strategies in the Navy in that it is a DEP initiative rather than a boot camp initiative. Although this intervention does not have evaluation information available, the Navy does believe this program is a positive reinforcement for individuals who want to become more involved with the DEP and Navy. Moreover, the incentive program reinforces the work and effort of the recruit in the DEP (J. Noble, personal communication, July 14, 2005).

Enlistment Bonus Programs (EBP) (during Enlistment)

Enlistment Bonus Programs (EBP) have been offered across all military services as incentives designed to encourage potential recruits to enter a specific MOS (Knapik, Jones, Hauret, et al., 2004). Typically, these programs are implemented to help the military services meet recruiting goals. For example, after missing recruiting goals in 1998 and 1999, the Army, Navy, and Air Force increased their enlistment bonuses in order to attract more individuals to the military (General Accounting Office Report, 2000).

Although incentive programs may be successful in attracting applicants, research on the effectiveness of enlistment bonuses in reducing attrition is mixed. Buddin (2005) examined the effects of recruiting practices on Soldiers' first-term success. His findings suggest that bonus recipients are more likely to stay in the Army compared to recruits who do not receive an enlistment bonus. Contrary to this research, Knapik, Jones, Hauret, et al. (2004) reviewed a study that examined the relationship between enlistment bonuses and attrition from Army training. Findings indicated Army recruits receiving enlistment bonuses were approximately 18% less likely to complete basic and advanced training compared to individuals not receiving a bonus. Despite conflicting research with regard to first-term attrition, enlistment bonuses continue to be offered to applicants across military services.

Dimension 8: Administrative Policies

Dimension 8 refers to intervention strategies that focus on administrative initiatives to reduce attrition. The intervention includes a type of "paper drill" or managerial approach to reducing attrition. Although it is possible that several interventions of this nature have been implemented across all military services, our review identified only two interventions.

Navy Page-13 (for Basic Training)

The Page 13 intervention is a strategy implemented by the Navy to address failures in basic training. A recruit is issued a form (i.e., a Page 13 form) for the first failure in a physical training test. The form states that he/she may be separated for failure on subsequent physical training tests. Primarily, the form serves as a warning to the recruit. Moreover, the Navy believes the Page 13 serves as a reinforcement and reminder that the recruit needs to get in better shape and pass all physical training tests if he/she does not want to be separated from the Navy.

This intervention strategy was implemented near the beginning of FY05. Trends in the attrition data do suggest a decrease in the attrition average. However, we are unable to evaluate the individual effectiveness of this intervention due to multiple Navy initiatives being implemented concurrently (J. Noble, personal communication, July, 14, 2005).

Army Memos

The Army sent out memos regarding the problems associated with attrition and requests for input to address this issue. The memos were signed by The Department of the Army, G-1 and sent to unit and training company commanders in March 2005. This correspondence appeared to spark a great deal of interest and initiate conversations regarding intervention strategies. Army personnel believe this was a positive step in getting leadership involved in the attrition problem. The specific responses and feedback were not available for review (A. Taylor, personal communication, July 12, 2005).

Dimension 9: Other

Dimension 9 intervention strategies include programs and initiatives that we were unable to group with the previously reviewed interventions. Each of the Dimensions reviewed thus far has consisted of at least two attrition management interventions. Rather than give each program below a unique dimension, we combined these interventions into an "Other" dimension.

Navy's Civilian Clothes Initiative (for Basic Training)

The Navy implemented the Civilian Clothes Initiative to make it more difficult for recruits to leave basic training undetected. This initiative involved the recruit having his/her civilian clothes taken away upon arrival to training. Thus, if the recruit decides to quit, and subsequently leave training, he/she is forced to do so in full uniform. Navy personnel believe this initiative makes it easier to track recruits who leave during training. Moreover, it is believed that recruits are somewhat discouraged from leaving since they do not have non-military clothing to leave in (J. Noble, personal communication, July 14, 2005).

This intervention strategy was implemented in December 2003 and is represented in the Navy attrition reduction average. Although results appear positive, we recommend an individual, unconfounded evaluation of this initiative.

Navy's Reduction of Dead Time (for Basic Training)

The Navy implemented initiatives to reduce dead time in basic training by re-arranging and combining events in the training schedule. More specifically, the 3-Day Basic Military Training (BMT) Cut Initiative eliminated service week, combined complementary evolutions/training events, and reduced Recruit Division Commander (RDC) time. Another initiative, the 2-Day Holiday Routine Cut, shortened training by reducing recruit personal time and creating a schedule with selected lessons being taught during the weekend.

The focus of these strategies is to keep recruits busy rather than having additional time to, potentially, contemplate leaving the Navy. These strategies were implemented in FY04. The Navy reports positive results, citing reduced

levels of attrition as well as annual savings in resources (J. Noble, personal communication, July 14, 2005).

Navy's Revised Setback Program (for Basic Training)

The Revised Setback program was initiated by the Navy to monitor recruits that were being recycled through training. If a recruit fails a training section, there is an option for the recruit to go into another training program (i.e., recycle the recruit). The Revised Setback program is strictly a monitoring system that keeps track of the number of times a recruit is recycled through these various training programs (J. Noble, personal communication, July 14, 2005).

The Revised Setback program was implemented in December 2002. The Navy attrition trend data does suggest a positive impact on attrition. However, this intervention was implemented concurrently with other interventions; thus, we are unable to evaluate the individual effectiveness of this intervention.

Navy's First Watch Program (during first-term enlistment cycle)

The First Watch Program (1st Watch) is a Navy Personnel Research, Studies, and Technology (NPRST) initiative focusing on the career-long development of Sailors. The 1st Watch program attempts to better understand Sailors' career progress throughout their first-term of enlistment and uses this information to develop high quality Sailors (Mottern, White, & Alderton, 2002). Expanding upon civilian research examining the relationship between person-organization (P-O) fit and organizational outcomes, the underlying focus of this program is the assessment of fit between the values and expectations of Sailors and the Navy. The 1st Watch program assesses fit by comparing a derived Navy desired profile with individuals' self-perceptions and preferences. This assessment of fit is subsequently used to predict retention and attrition levels during training (Mottern, et al., 2002).

The program was pilot tested with recruits who began training in 2002 through 2003. Questionnaires were sent to recruits at pivotal points during the first-term of enlistment, including the first day of in-processing, RTC graduation, A-school graduation, and various transition points. Preliminary results suggest the program was successful in documenting the "Sailorization" process and identifying problems and individuals at risk. Moreover, the research exposes the complexity of fit and interaction between individuals' abilities, attitudes, and opinions and experiences with the Navy (Navy Personnel Research, Studies, & Technology, 2005).

In response to the promising initial results, the 1st Watch program has continued beyond the pilot stages. Currently, NPRST is collecting longitudinal data by tracking new recruits through their first term of enlistment in the Navy (Marshall-Mies, Lupton, Hirose, White, Mottern, & Eshwar, 2007). The results from the first year of data collection provide insight into the differences between RTC graduates and attrits, in terms of the reasons they joined the Navy, their

levels of stress and morale, and the stress coping styles they utilized. By identifying factors associated with retention, the 1st Watch program appears to be a promising strategy for the Navy.

Navy Online Learning (for the Delayed Entry Program)

In 2005, the Navy proposed two initiatives that involved efforts to utilize online resources to reduce attrition levels (J. Noble, personal communication, July 14, 2005). The Internet can be a valuable tool for communication and information acquisition. Thus, a website would give recruits the opportunity to learn important information about the Navy, and if needed, test material.

First, the Navy is interested in automating the Delayed Entry Program Personal Qualification Standards (DEP PQS). The DEP PQS consists of basic information that Navy recruits must know, such as the general orders of a sentry, the sailor's creed, rank and recognition, and so on. To automate theaccomplish this task learning of Qualification Standards while the recruits were in the DEP, the Navy developed a Cyber DEP website with an added focus on reducing DEP attrition. An online PQS curriculum would not only save recruiter time, but would also give individuals in the DEP an opportunity to complete the PQS according to his/her schedule or convenience.

The online PQS was pilot tested during November 2000 and July 2001. A Cyber DEP experiment compared DEP attrition among three levels of website users, including individuals who have ever logged on, logged on more than once but did not take a test on the website, and took at least one PQS test online (N=629). The authors do acknowledge these are not mutually exclusive categories, however they contend the intensity of web use is likely related to the number of times a user has logged on and participated in taking a test. The results of this experiment suggest the website had a significant impact on reducing DEP attrition in all three levels. Additionally, the results indicate the more intensive the participation, the larger the reduction in attrition (Golfin & Shuford, 2002).

To our knowledge, the online PQS is still currently a proposed initiative for reducing DEP attrition in the Navy. Results of the pilot test are promising and do indicate this initiative would be a cost-effective strategy for the Navy. However, it should be noted that the experiment included a small number of recruits and participation was voluntary (see Golfin & Shuford, 2002, for additional information on the experiment).

The second initiative involves creating online training programs on the Navy Knowledge Online website (NKO). The website would allow recruits in the DEP to enter the site with their social security numbers. From there, a recruit can complete online training coursework based upon his/her position or job after completion of basic training. This would give individuals an earlier start on completing required training, and this online initiative may foster early commitment to the Navy.

Army's Battlemind Training (for the unit of assignment)

In order to help Soldiers manage the transitions associated with deployments, the Walter Reed Army Institute of Research developed a series of Battlemind training modules (https://www.battlemind.army.mil). Battlemind refers to "a Soldier's inner strength to face adversity, fear, and hardship during combat with confidence and resolution. It is the will to persevere and win." Thus, the two key components associated with Battlemind are self-confidence and mental toughness. Additionally, Battlemind training focuses on ten specific skills, including: **B**uddies (cohesion) vs. Withdrawal; **A**ccountability vs. Controlling; **T**argeted Aggression vs. Inappropriate Aggression; **T**actical Awareness vs. Hypervigilance; **L**ethally Armed vs. "Locked and Loaded" at Home; **E**motional Control vs. Anger/Detachment; **M**ission Operational Security (OPSEC) vs. Secretiveness; **I**ndividual Responsibility vs. Guilt; **N**on-Defensive (combat) Driving vs. Aggressive Driving; and **D**iscipline and Ordering vs. Conflict.

The training uses these ten skills to emphasize how Soldiers can successfully transition between the battlefield and the home front, avoiding typical problems that occur. Training materials include brochures, power point presentations, and video scenarios. Soldiers are encouraged to think about the difficulties associated with the transitions and question how they have responded to the challenges. Moreover, the training includes a series of checks so that Soldiers can identify specific symptoms in themselves and their buddies that require professional help.

Training modules exist for Soldiers at various stages of the deployment cycle, including Battlemind Transition Training I, which is geared toward Soldiers immediately after returning from deployment; and Battlemind Transition Training II, which is designed for use three to six months post-deployment. Additionally, a Battlemind Pre-Deployment presentation is currently being developed. Training modules also exist for leaders and professionals. One module, entitled "21 Professional Concepts for Army Helping Professionals," provides insight into 12 facts/concerns and how professionals can respond to them. For example, fact number two states that Soldiers are reluctant to admit they have a mental health problem, and professionals are provided with suggestions for dealing with this issue. Similarly, "10 Tough Facts about Combat and What Leaders Can Do to Mitigate Risk and Build Resilience" is also available. At the unit level, Battlemind Unit Needs Assessment; Unit Behavioral Health Needs Assessment Survey (UBHNAS) is a tool that can be used to diagnose the need for Battlemind training, by gathering information on deployment experiences, concerns, and trauma exposure; morale, cohesion, and unit confidence; alcohol/drug misuse; and mental health status and aggressive behaviors.

In recognition that deployments are hard on the Soldier's Family, the Army also developed Battlemind training modules that target military spouses. Spouse Battlemind is defined as "the Spouse's ability to face deployments with resilience and strength, allowing easier separations and smoother reunions." Similar to

those provided to Soldiers, Spouse Battlemind training is available both pre- and post-deployment. The spouse training modules discuss the benefits and difficulties associated with Army life and the ten Soldier Battlemind skills. However, the majority of the training focuses on ten Battlemind skills specifically geared toward spouses: **B**onds (Social Support); **A**dding/Subtracting Family Roles; **T**aking Control; **T**alking it Out; **L**oyalty and Commitment**; E**motional Balance; **M**ental Health and Readiness; **I**ndependence; **N**avigating the Army System; and **D**enial of Self (Self-Sacrifice).

Spouses are also provided with a list of cues that signalize that they and/or their children may need help, as well as a set of resources that are available to Army families. By providing Soldiers, Army spouses, and leadership with the skills and resources to successfully manage the deployment cycle, Battlemind training has the potential to minimize the shocks associated with deployments, therefore enhancing retention.

In support of this proposition, data does support the effectiveness of certain components of Battlemind Training. In a study conducted by the Walter Reed Army Institute of Research, 1,146 Soldiers were randomly assigned to three conditions after returning from deployment: post-deployment Stress Education, large Battlemind training (characterized by large group sessions), and small Battlemind training (characterized by small group sessions; Castro, Hoge, Milliken, McGurk, Adler, Cox, & Bliese, 2006). The results indicated that both types of Battlemind training were perceived by Soldiers as more useful than the Standard Stress Education training. Additionally, among Soldiers who experienced increased combat exposure, Soldiers in the Battlemind Training groups experienced fewer post-traumatic stress disorder symptoms, sleep problems, and alcohol problems, as compared to those assigned to the Standard Stress Education training.

Summary of Attrition Interventions and Conclusions

As the review above indicates, military organizations are approaching the challenge of attrition reduction in a variety of ways, some more effectively than others. In this section of the report, we attempt to summarize what distinguishes the effective from the ineffective interventions.

A number of features characterize the best interventions. They are sufficiently funded, but achieve a balance of costs and benefits. Generally, there is sufficient support for at least a minimal program evaluation to determine that the program did, in fact, have the desired effect. Additionally, these programs appeal to the relevant Command in several ways: (1) they do not create unreasonable burdens on Drill Sergeants, trainers, or facilitators; (2) they do not require recruits/Soldiers to spend excessive time away from their required training or their units; and (3) the best programs do not involve lowering standards, either in training or in the selection of recruits.

Screening Interventions Summary

The screening of recruits with the intention of identifying those likely to attrit has been a popular and generally promising approach. There is considerable promise in several of the efforts reviewed here. As noted in the review, the biodata approach is quite useful, and even adds to the theoretical understanding of attrition to a limited extent. However, given that a number of biodata instruments are already in operational use, their continued updating and refinement are worthwhile.

Use of Temperatment Measures

Screening on temperament offers greater promise for understanding the aspects of personality related to attrition. The research program built around the Assessment of Individual Motivation (AIM) shows potential for effective prediction of attrition in addition to its other applications as an operational predictor of Soldier performance. However, the current challenging recruiting environment limits the present appeal of screening approaches. Because the number of individuals that can potentially be brought into the Army is already so constrained, the Accessions Command will likely be reluctant to eliminate potential recruits unless there is very compelling evidence that they will attrit.

Expanding the Recruiting Market

Another effective approach is to expand the potential market for recruits. The Army Tier Two Attrition Screen (TTAS) constitutes an efficient, effective intervention to retain non-high school diploma graduates who could be successful in the Army. Increasing the pool of available recruits may reinvigorate the screening approach to dealing with attrition, despite the difficult recruiting market.

Use of Realistic Job Previews

Still another potentially useful strategy to reduce attrition is realistic job previews. RJPs show considerable promise because of their cost-effectiveness, minimal intrusiveness on recruits' time commitments, and positive empirical evaluations. By effectively anticipating recruits' concerns and addressing them proactively, before the recruit is 'at-risk', RJPs provide a highly effective means for reducing first-term attrition. Further, their efficiency is even greater when they are presented to recruits in the Future Soldier Program (formerly referred to as the Delayed Entry Program). If recruits are unwilling to stay in the Army, it is in everyone's best interest that they make that decision before resources are invested in training them.

Combining Evaluation and Treatment into One Program

Programs such the Air Force's Biographical Evaluation and Screening of Troops (BEST) combine the screening of recruits with follow-up, in-depth evaluations and treatment for depression and adjustment disorders. This combination of evaluation and treatment into one systematic program has been demonstrated to be effective, although the costs, in terms of financial cost to the Air Force and recruit time, are considerable. Similarly, the Army Attrition Reduction Management (ARM) program, although more of a counseling intervention and not yet widely implemented, contains a screening component that identifies at-risk Soldiers early on with the intention of providing them with counseling.

Training Interventions Summary

Addressing Recruits Concerns and Issues

For the training and counseling programs, the most effective appear to be those that directly address recruits' concerns and issues, such as making the adjustment to military life, homesickness, and understanding what is expected of them. One of the promising features of these programs is that they are rehabilitative, rather than punitive. For example, the Army Commander's Attrition Reduction and Rehabilitation (CARR) program and the Deserter policy emphasize counseling by the Commander before the initiation of separation proceedings. The See-It-Through program took this a step further and put the at-risk recruits through more elaborate training and counseling, and was quite successful. In all cases, these programs identify Soldiers that can have successful careers, and provide them with the extra support or assistance to make that happen. Putting this extra step in place before letting them leave the Army has been shown to reduce attrition, and does so by retaining Soldiers in whom a great deal of time and money has already been invested.

Making Recruits Feel Appreciated and Valued

Other approaches that involve support from the leadership or trainers are promising, as well. Making recruits feel appreciated and valued represents a shift from the old model of "breaking them down and building them up", but is far more effective at socializing today's youth into the Army (VanAntwerp, 2005). Similarly, anecdotal information suggests that modifications to the way Drill Sergeants treat recruits have been effective, as well (Kubisiak, Horgen, Connell, Lentz, Xu, & Borman, 2005). The shift to an emphasis on training, counseling, and mentorship, has changed what was once perceived as an antagonistic relationship between the Drill Sergeant and the recruit. This new paradigm appears to have reduced attrition and enhanced the role of the Drill Sergeants. Although this increases the Drill Sergeants' responsibilities, anecdotal information suggests that their morale is up and they find the new emphasis to be very rewarding.

Developing Recruits' Interpersonal Relationships with Peers

Another way to provide support to recruits is by developing their interpersonal relationships with peers. Essentially, these social support initiatives, such as the Navy's Peer Mentor Program, the Army's Battle Buddies, and the Coast Guard's Unit Sponsor Program, formalize the role that colleagues play in helping the recruits adapt to their environment. This is beneficial in terms of building morale and unit cohesiveness, as well as easing the burden on the Command for helping newly enlisted individuals. These programs have demonstrated effectiveness, and they are especially promising in the Army, as opposed to private sector organizations, given the strong emphasis on esprit de corps in the military. However, they are also less structured and more de-centralized, than some of the other interventions, and are therefore more difficult to implement effectively.

Administrative Policy Changes

Taking a different approach, administrative policy, scheduling, and other simple changes have shown some positive, cost-effective results, as well. Policies such as the Civilian Clothes initiative and the reduction of dead-time illustrate how simple changes to policies and procedures can impact recruits experiences and diminish attrition with no significant impact on training effectiveness.

Reducing Attrition Among Deployed Soldiers: Battlemind Training

Another promising initiative, Battlemind Training, focuses on reducing attrition among deploying Soldiers. Given the current OPTEMPO, this intervention is particularly relevant to Soldiers and their families as they encounter hardships associated with deployments.

Addressing Recruit Health and Fitness

Note that screens and interventions conducted to improve the health and fitness of recruits have positively impacted attrition, but were largely beyond the scope of the present review. We documented a few that had behavioral components, and believe strongly that fitness-related interventions have tremendous potential for fitness and injury-related attrition.

Overall Positive Results from Intervention Program Evaluations

Very few of the interventions on which we were able to find evaluative information were reported to be unsuccessful. Again, to some extent, this is because less effective initiatives are rarely reported. However, we did find a few programs with mixed results, as noted in the review, but there are no particular areas of research that appeared to be without merit, or where further effort should be avoided.

Suggestions for Future Attrition Interventions

Finally, there are a host of prospective informal attrition interventions that have been suggested, but not yet been attempted, as far as we could discern. We've heard many different ideas, some of which would probably be at least moderately effective. For example, one suggestion was to use weekly sessions with chaplains as a form of counseling or therapy and to act as an early detection system for predicting attrition. This would obviously necessitate the training of chaplains in this capacity and issues of role conflict and privileged information would have to be addressed, but it constitutes an effective and efficient tool, in that the chaplains are already in close contact with many of the recruits/Soldiers.

Another, more unusual, idea was to establish connections to local communities where training bases are located and taking recruits to local events, such as a high school football game, and getting them public recognition and thanks for their commitment to the military. This method of boosting morale allows recruits to see that they have the support of the American public and is intended to reinforce the significance of their commitment to the Army. It is unclear how feasible or effective this would be.

A less ambitious, but related idea was to take recruits to a Basic Combat Training (BCT) graduation ceremony and allow them to see the pride and honor inherent in becoming a Soldier. These ideas represent a different approach to dealing with first-term attrition than the interventions reviewed above, and there is considerable uncertainty regarding how effective they would be. However, they do indicate that stakeholders in the Army are open to new and creative ideas, and this openness is an encouraging sign that innovative and effective contributions will likely be well received.

Recommendations

In this section, we offer recommendations for improving how the Army addresses attrition and provide suggestions for future research directions. First, we discuss the broader organizational context of the attrition interventions, and the need for a more systematic approach to dealing with attrition. Next, we address some practical and administrative concerns. Finally, we offer suggestions for specific research areas to build on the previous work done with military attrition.

A More Systematic Approach to Attrition Intervention Research

The first recommendation is that the Army should adopt a more systematic approach to conducting research dealing with attrition. As the review above indicates, there is a broad variety of research and practical initiatives being pursued. However, there appears to be little oversight or direction as to how, when, or where these programs are implemented, and no consistent scientifically-based approach to their evaluation. Regarding evaluation, for example, assigning responsibility to a central authority for designing evaluation strategies and then conducting evaluation analyses would enable the Army to have a better perspective on both the causes, and effectiveness of different interventions targeting attrition. This could be accomplished by assigning the program evaluation responsibility to someone or some entity to monitor it long term and Army-wide.

Further, because attrition is a complex phenomenon that can occur at several stages in a Soldier's career, there are benefits to taking a broader, accessions-wide perspective. For example, reducing attrition at one stage in the accessions process can increase the rate of attrition at other stages. An illustrative example is that reducing attrition during BCT by instituting an aggressive assistance program may potentially cause increased separations during the first duty assignment. Merely convincing the Soldier to stay with the training only to have them leave at a later time does not solve the problem. In fact, it results in greater costs to the Army, regarding time and money invested in departing Soldiers, than had they left during BCT.

Taking a broad systematic approach to dealing with attrition would also allow the Army to better analyze these relationships. The Army could allocate resources in a strategic, optimal manner, rather than trying to deal with attrition in several areas at once. That is, decisions could be made about where in a Soldier's career interventions are maximally effective, and resources directed to interventions might be targeted at these points (e.g., during initial entry training, and the transition to the Soldier's first unit of assignment) . This would, of course, require a deeper understanding of how attrition interventions are working, and some of the recommendations that follow address this further.

A related concern is defining positive and negative attrition. The Army benefits from positive attrition—the departure of individuals who will never become successful Soldiers. But this must be balanced with the need to minimize negative attrition, the departure of individuals who may ultimately be successful. Therefore, the goal of the post-enlistment attrition interventions is to reduce negative attrition but still allow for positive attrition. This balance is complicated in that anecdotal information suggests that different commands have different perspectives on these decisions (Hayden, 2005). Some commanders believe the Army should have high standards for admission and accept only those individuals who will be effective Soldiers. Others argue that the goal of BCT is to mold anyone with at least minimal potential into a fully functional Soldier. These views conflict, and can result in attrition interventions

that work toward opposite ends. A more systematic organizational approach could yield guidelines that allow commanders to select interventions consistent with their perspective. That is, instead of forcing a particular strategy, guidelines could be developed that ensure that the Army is making a conscious decision about an intervention that fits with their perspective. For example, if the Army wants to bring in only the highest quality recruits, it would benefit more from a screening approach, whereas if the Army believes virtually all Soldiers can be trained, it would be more apt to employ counseling and retention interventions.

Having a more systematic strategy for studying attrition interventions also argues for developing a plan for targeting specific, promising interventions, and determining how resources can best be allocated to conduct that research. In this way, participants can be sampled Army-wide instead of relying on convenience samples in limited locations. Multiple studies addressing different attrition-related issues of theoretical interest could be laid out in advance, and an appropriate research program developed over time.

An Interim Strategy for Transitioning to a Systematic Attrition Intervention Approach

We recognize that the current accessions climate often requires quick solutions and immediate actions to address specific attrition challenges, and setting up a fully developed research program to oversee attrition research may be difficult. However, a more modest, near-term proposal is to initiate a reporting system whereby anyone, whether they are a commander, researcher, or contractor, can easily feed attrition intervention information back to a central entity. In this way, the information can be retained and consolidated so that the Army will have at least some record of what is and is not effective. The information and anecdotes recorded in this way do not need to be formal program evaluations. Records of successes and failures would provide a very useful database. Even testimonial information such as perceptions and feedback from participants in the programs would be useful and would exceed the information that is currently available. Currently, interventions that fail are often not even reported. Eventually, this database can expand to contain lessons learned, what went right and wrong, and why programs were discontinued.

The next step would be to make this information available, perhaps on an internal Army website, so that others attempting to deal with attrition can access it. This ensures that good ideas can be distributed throughout Accessions Command, and less successful efforts are not needlessly duplicated elsewhere.

Overall, based on what we have learned about attrition and previously attempted interventions, a hypothetical program that combines existing interventions and capitalizes on lessons learned could potentially have a strong impact on attrition. Such a program will not solve the attrition problem, of course. However, it would likely enable the Army to retain the majority of at-risk Soldiers who could go on to have a successful career. Our hypothetical program might operate as follows:

First, the Army should establish an on-line database of available interventions, programs, and recommendations for referring at-risk individuals to the proper intervention. This should be accessible by anyone in a leadership position who may have to deal with recruits or Soldiers who are contemplating leaving the

Army. This same database could be used to consolidate information about the effectiveness of attrition interventions.

Upon arriving at the Military Enlistment Processing Stations (MEPS), recruits would be evaluated for risk factors for attrition. This could involve the (Noncommissioned Officer Leadership Skills Inventory (NLSI) or one of the other operational screening instruments described in this review. These data would be used to identify recruits who might require intervention to prevent them from leaving the Army. Further, the factor that they were identified as being at risk could be made available to counselors and, potentially, Drill Sergeants and other leaders/trainers who have to deal with recruits who indicate a desire to attrit. Of course, great care would have to be taken to ensure that this process does not create self-fulfilling prophecies among the Soldiers, or create situations where they could potentially incriminate themselves. Next, recruits, either while they are in the Future Soldier Program or when they first arrive at the reception battalion, should see an RJP video geared toward Initial Entry Training (IET) and general life in the Army. This should help them develop realistic expectations, and provide them with a frame of reference to ask questions and seek further information they may need as they prepare themselves for the adjustment to military life.

The next step would be to provide Drill Sergeants with training to assist them in either helping at-risk recruits or directing them to seek assistance. Accordingly, at each post, there should be individual and group counseling available to the recruits/Soldiers. That is, individual counselors who are currently in place should be prepared to deal with Soldiers who show a desire to attrit, and group counseling programs, such as the Air Force Group Stress Management course described in the Attrition Interventions section, should be available at posts where IET is conducted.

A system such as this could be developed primarily to help reduce IET attrition. However, the same resources could be made available to leaders who deal with Soldiers at their first unit of assignment. That is, although training attrition and first unit attrition may have different causes, both can be addressed through similar resources put in place to help both the Soldiers and their leaders. Because unit attrition is largely addressed through other training and leadership initiatives, it may be inefficient to develop attrition interventions specifically targeting first unit attrition. Therefore, a more efficient near term approach may be to offer guidance for utilizingthe IET attrition resources, instead.

Practical and Administrative Issues

Building on our recommendations regarding broad, organizational improvements, we turn to more specific, practical considerations that impact efforts to study the effectiveness of attrition interventions. These are largely related to the systematic approach described above, but merit further discussion. Some of these are a function of the organizational realities that exist in the Army. Others reflect administrative practices that might be improved.

Limitations of Attrition Records

One problem that influences research on attrition is inaccurate records of why Soldiers leave the Army. Often, medical justifications, such as injuries sustained prior to service, are recorded as the primary reason. However, anecdotal information obtained at the Accessions Research Consortium in 2005 and other sources (Rabkin, 2000) indicate that in many cases, these justifications are not the actual reason for the attrition. Obviously, this presents a considerable challenge in studying the causes of attrition, as well as the effectiveness of interventions.

There are numerous practical and administrative reasons why reporting in this manner occurs, and a solution is not likely forthcoming (Rabkin, 2000). An ambitious plan to circumvent the problem would be to establish a separate reporting system administered by an independent entity that provides Soldiers confidentiality and exists "for research only." However, this is probably not realistic. A less ambitious possibility is to conduct interviews with the staff that record this information and empirically determine how much the data are actually distorted. With this knowledge, researchers may be able to apply corrections to existing data to more accurately evaluate true attrition levels and the potential impact of interventions. That is, if the frequency of specific distortions is known, data can be adjusted to allow more accurate assessments of reasons for attrition.

Funding Constraints

An administrative constraint directly related to implementing attrition interventions is a lack of adequate funding. The resources necessary to roll out fully developed interventions are, understandably, not always available. However, by centralizing the efforts to study attrition, as described above, redundancies can be eliminated and the available money spent more efficiently.

Consistency of Attrition Management Program Support and Implementation

A broader administrative concern is that the <u>implementation of interventions must be locally supported and conducted consistently across locations</u>. Current practices are not always successful in this regard. For example, leadership changes can cause attrition interventions to fail if support for the program is withdrawn. That is, if a change in command results in a decreased emphasis on reducing attrition or the suspension of an intervention program, that program may fail even though it is an otherwise viable intervention. Further, such a

change may negatively impact recruits' perceptions of the Command and how it values them, potentially increasing attrition, as well.

Similarly, inconsistent implementation of an attrition intervention has, at times, been a problem. That is, a lack of standardization across units or individuals can influence both the effectiveness of the interventions and conclusions drawn in program evaluations. For example, if recruits designated as likely to attrit at one post receive counseling and are given time away from training and recruits at another post receive the same counseling, but are expected to lose no time from BCT, the effectiveness of that counseling may be different. This is especially so when participants in the two groups are allowed to interact and discuss their experiences.

One last concern with the way attrition interventions are rolled out involves the simultaneous implementation of multiple initiatives with the same population. As noted above, we appreciate the need for quick solutions, and when several promising ideas are considered at the same time, the temptation is to try them all. However, careful thought should precede such a course of action. In the worst case, the multiple interventions may conflict and counteract each other's effectiveness. At best, this approach limits the evaluations that can be performed and how much can be learned about the impact of each intervention separately.

Considering Intervention Goals and Multiple Outcome Criteria

Another area to consider in researching and evaluating attrition is refinement of the intervention goals. As noted above, if the intent of an intervention is to retain recruits through BCT, that is a different problem and requires different solutions than keeping them through a first contract term. Additionally, keeping a Soldier in the Army is a separate issue from how effective that Soldier's performance is during his or her enlistment. Current research on attrition has not adequately taken these multiple criteria into account. Ideally, there would be common, agreed upon definitions of attrition, and common metrics used across the intervention evaluations. We strongly recommend that definitions be settled upon early in the planning of future research, and in conjunction with the needs of key stakeholders in the Accessions Command.

Further, in an ideal situation, formal program evaluations would assess whether an intervention actually had the desired effect. As mentioned above, the lack of formal evaluation of attrition intervention programs limits the inferences that can be drawn from the work that has been done. But often, organizational realities preclude such evaluations, especially with quickly initiated interventions. Although we maintain that quick, 'right now' interventions are not only acceptable, but in some cases desirable, feedback to a coordinating entity to inform subsequent intervention decisions is still critical to broader organizational success. In this way, over time an organizational climate more conducive to program evaluation can evolve.

Most of the administrative concerns cited here can be at least partially addressed by having some independent entity within the Army oversee the research

programs and attempted interventions that are deployed to address attrition. At a minimum, this approach would help determine what initiatives caused the programs to succeed or fail. As mentioned, over time, an organizational climate needed for evaluations to be valued could evolve, benefiting the Army in the future.

Future Directions

In this section, we make recommendations for future research projects that the Army should consider as they plan their roadmap for future attrition studies.

Pre-Enlistement Screening

With regard to the screening of applicants, there are still opportunities to improve current methodologies. First, it may be fruitful to explore additional predictors of attrition. These might include additional demographic information, educational background factors beyond high school graduate status, and new recruit quality indices. An example of this is the TTAS (White, et al., 2004; Young & White, 2006) described in the Attrition Interventions section, wherein many Non-High School Graduates (NHSGD) have been enlisted and gone on to successful Army careers. Accomplishments thus far argue for continued efforts in refining predictors.

In addition to exploring new predictors of attrition, the measures used to do the screening can be improved. Although many of the instruments described above are established and working well, newer versions will be required over time. This is especially true of biodata instruments, as the social and cultural climate of the recruiting market continues to evolve.

The application of new methodologies to attrition prediction shows promise, as well. For example, the Army is continuing to develop and refine versions of the AIM (White, Young & Rumsey, 2001; White & Young, 2001; Young, et. al, 2004), and TTAS (Hunter et al., 2008), and these efforts have resulted in improved prediction of attrition. This approach may yield even more benefit by incorporating item response theory (IRT) to address limitations of the current forced choice method. Fritz Drasgow and his associates (Drasgow, Stark, & Chernyshenko, 2006; Stark, Chernyshenko, & Drasgow, 2005) have developed an IRT-based personality measure, and this approach is being applied to measures shown to predict attrition.

Post-Enlistment Training Interventions

In the area of post-enlistment interventions, there are a number of opportunities to decrease attrition. Successes with preparing recruits, such as counseling, RJPs, peer mentoring, academic skills training and others, suggest that training interventions could work, and we argue that these are worth exploring. These programs indicate that the issues recruits face that lead them to thoughts of leaving the Army can be addressed through training and counseling. This

approach is based on the philosophy that most recruits can eventually contribute successfully to the Army. The Army needs only to address specific needs and concerns to help make that happen. This approach is consistent with the Army's way of accomplishing missions: providing its people with the tools, training and equipment to succeed.

One area we believe that can directly impact attrition during BCT, and that has received considerable attention recently, involves the construct of contextual or citizenship performance. Citizenship performance refers to behavior that supports the social and psychological fabric of the organization rather than contributing directly to the technical core (Borman, 2004; Borman & Motowidlo, 1993, 1997; Coleman & Borman, 2000). In ARI's FY03 Cohort Study, Soldiers who completed IET successfully were asked if, at any time during training, did their leaving the Army "seem likely." Thirty-six percent responded affirmatively. Those Soldiers were also asked to describe what enabled them to remain in training, and just behind "perseverance", "support of and concern for Family", and "religious faith", was the reason, "fellow Soldiers" (i.e., buddies helping them and supporting them through to completion of training). This reason was apparently more important than, for example, Drill Sergeant support. These data suggest that a useful intervention might be developing helping and supporting skills among Soldiers early in their careers.

In the context of interventions to reduce attrition, the Personal Support dimension, defined as helping peers by offering suggestions, directly performing some of their tasks to help out, providing emotional support for their personal problems, and motivating and showing confidence in them, is probably the most relevant to focus on in a training intervention. The notion would be to develop a training module that could be included in the IET Program of Instruction (POI), for example. Initial thoughts are to develop videotapes that present Soldiers exhibiting the desired supportive behaviors, perhaps followed by role-plays to practice and reinforce the behaviors.

Another suggestion is to investigate the training of adaptability. The transition to Army life requires recruits to adapt to a new lifestyle. Further, during BCT and often during their first deployment, Soldiers must adapt to a variety of circumstances, such as work conditions, performance demands, and other difficult environments that will challenge them and could lead to thoughts of leaving the Army. Boosting their resilience in the face of such challenges should help them through those experiences. White, Mueller-Hanson, Dorsey, and Pulakos (2004) developed a training program to improve adaptive performance in Army Special Operations Officers and NCOs. A similar program could be explored for recruits, preparing them for the demands placed on them during training and their first-term of enlistment.

Related to both of these training ideas is the notion of training social competence. Soldier skills related to these important interpersonal coping domains may be important for navigating successfully through problems and difficult situations that may trigger cognition in the direction of leaving the service among early

career Soldiers. Accordingly, training to include improving these skills may be a useful intervention to reduce attrition.

PDRI conducted a study funded by the Basic Research Office of ARI, to enhance understanding of the nature of socially competent performance in junior commissioned Army officers (Schneider & Johnson, 2004). The project involved: (1) determining the various dimensions of socially competent performance; (2) identifying the attributes that predict those social performance dimensions; and (3) formulating a theory of how various attributes (e.g., cognitive ability, socially-oriented personality characteristics, social intelligence, and social knowledge) relate to social performance. Measures included an innovative, video-based social knowledge test (SKT) using an open-ended response format, and a multi-source social performance measurement instrument. To evaluate our theory, we administered a test battery to 160 ROTC cadets and midshipmen. The video-based SKT was found to be predictive of 3 out of 5 social performance dimensions (e.g., Interpersonal Sensitivity and Social Presence).

We realize that the current BCT Program of Instruction (POI) leaves virtually no room for additional training. Although at least some of this training would be beneficial to all recruits, the Army could explore the concepts suggested here in conjunction with screening programs that identify those at risk. Then those Soldiers could receive the training under special circumstances as is done with the Air Force's BEST program. Because the program only involves recruits who would be likely to attrit, the overall loss of time spent in training would not be too great. And the cost of providing counseling or training to relatively small numbers of recruits is offset by the substantial gain in not losing the resources already invested in getting them recruited and into BCT.

Further, adding interventions into the current POI as a preventive measure to reduce attrition may not be practical. We do not know how much flexibility there is in modifying the POI, although interventions could be integrated with existing or on-going training requirements. An alternative approach is for the Army to be selective in who receives what training. As noted above, some interventions are effective only in certain settings, and most are more effective with some individuals than others.

Attrition Modeling

A promising area of research to assist with this is to further develop the prediction and modeling of Army attrition. A large part of the STAY research program includes the development of an enlisted career continuance model. The theoretical framework for the model is derived from research on commitment (Meyer and Allen, 1997) and work focused on retention within the Armed Forces (Weiss, MacDermid, Strauss, Kurek, Le, & Robbins, 2003). This model can be best described as a dynamic process model of attachment/separation, depicting processes and factors that result in changes in commitment and attitudes regarding separation over time (Weiss, Ilgen, & Borman, 2006). This should improve the identification of Soldiers who are at risk and offer guidance for

which interventions would be most effective in a particular circumstance. Put differently, one goal of modeling the attrition process is to improve the match of individual Soldier needs to the available interventions.

In addition to process models, research could be done using more dynamic computer modeling and simulations to test scenarios involving multiple factors that impact attrition over time. Much of traditional attrition research has employed fairly static statistical models that attempt to isolate the impact of one or more factors on attrition behavior. However, other techniques exist to test assumptions or look at "what-if" scenarios, involving multiple factors, as they unfold. Specifically, the term "computational models" has been used to capture a broad class of methods used to study phenomena such as attrition from the point of view of multiple interacting processes and components (Ilgen & Hulin, 2000). One computational model (WORKER), developed by Hanisch and colleagues, was used to address withdrawal behaviors at work (Hanisch, Hulin, & Seitz, 1996). As a practical tool for attrition research, computational modeling may be one of the few approaches that can concurrently assess the impact of multiple types of attrition interventions. Accordingly, researchers and other evaluators should be attentive to opportunities to employ this methodology.

Conclusions

This review illustrates that the Army and other military services have invested considerable time and resources into addressing first-term attrition. Given the challenging recruiting market, this emphasis is justified, and some highly successful programs have been fielded. However, there is clearly a need for more research and more innovative approaches to addressing attrition. As illustrated by the STAY project, ARI is wisely taking a strategic approach to deciding how to best proceed.

The overall message to take from this effort involves three main points. First, the use of screening instruments to identify applicants and recruits who may be at risk of attrition remains promising. Although the current challenging recruiting environment places limitations on the screening out of individuals, there is considerable utility in identifying those who may attrit before they draw or seek attention. That is, those individuals can likely benefit most from attrition interventions if the intervention is begun before the situation becomes severe enough for the Soldiers to have to seek help or before their problem adapting comes to the attention of their supervisors. And in the future, when the recruiting environment is such that screening again becomes an option, the methods and programs will be ready.

Second, the best way to address attrition is to prepare recruits for making the adjustment to military life, and assist them with resolving issues that they encounter after enlistment that could cause them to leave the Army. The specific strategies for making this happen will vary with individual needs, and the resources available in a particular context. In all likelihood the most efficient

approaches will build on the instruments and interventions that are already operational and have been demonstrated effective. But there are substantial gains to be made in better understanding the linkages between the specific risk factors of attrition, and what types of interventions work best to counteract those. Statistical modeling of these relationships, building on the work done with Project First Term (Strickland, 2005), has considerable promise for guiding the subsequent research and deployment of new strategies.

The third primary point is that the resources applied to understanding and decreasing first-term attrition should be deployed in a more strategic, systematic manner that will yield the most useful information. Rather than having many different researchers working in isolation on projects, a more coordinated, planful approach should be employed. This is in no way critical of the work that has been done up to now, and does not imply that anyone should be prevented from conducting their research or trial programs. The point is simply that the information generated should be shared and made available so successes can be replicated and failures learned from, and there should be some overarching direction in investigating promising new interventions.

The U.S. Army is clearly trying to address attrition and the climate is such that the leadership is receptive to new ideas and methodologies. There are tremendous opportunities here from both a research standpoint and with regard to genuinely helping the Army meet its manpower requirements.

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Appendix A – SME Contacts

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Mr. John L. Noble	Navy Recruiting Command
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Dr. Julie Ruddy	Naval Hospital Great Lakes
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