

**IMPLICATIONS OF THE RESTRUCTURING OF THE ARMY  
OCCUPATIONAL THERAPY ASSISTANT COURSE**

**by**

**Sandra Harrison-Weaver**

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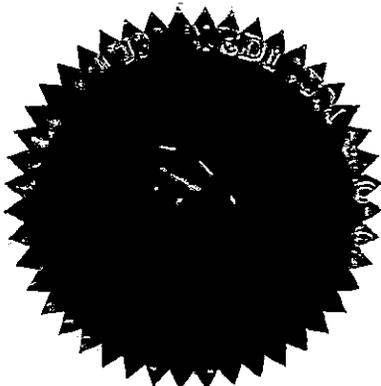
IMPLICATIONS OF THE RESTRUCTURING OF THE ARMY  
OCCUPATIONAL THERAPY ASSISTANT COURSE

This thesis is submitted by Sandra Harrison-Weaver and has been examined and approved by an appointed committee of the faculty of the School of Graduate Studies of the Medical College of Georgia.

The signatures which appear below signify the fact that all required changes have been incorporated and that the thesis has received final approval with reference to content, form and accuracy of presentation.

This thesis is therefore in partial fulfillment of the requirements for the degree of Master of Health Education.

5/23/97  
Date



[Redacted Signature]

Major Advisor

[Redacted Signature]

Department Chairperson

[Redacted Signature]

Dean, School of Graduate Studies

SANDRA HARRISON-WEAVER

Implications of the Restructuring of the Army Occupational Therapy Assistant Course  
(Under the direction of VIRGINIA R. ALLEN, Ed.D., OTR/L, FAOTA)

This retrospective study attempted to identify differences between student groups occurring before and after the restructuring of the Army occupational therapy assistant (OTA) program. Records of 168 students were reviewed (104 records of students in the pre-restructuring group, 64 in the post-restructuring group). Several areas were examined: (a) demographic data, (b) course attrition rates, (c) performance on level II fieldwork, and (d) national certification exam pass rates. Analyses of demographic data revealed that students in the post-restructuring group were significantly older ( $p < .001$ ) and of higher rank ( $p < .001$ ) than students in the pre-restructuring group. Analysis using a chi-square test revealed a significant decrease in the attrition rate ( $p < .001$ ) after the restructuring. A *t*-test revealed that students in the post-restructuring group performed significantly better on their level II fieldwork ( $p = .030$ ). National certification exam pass rates for the groups could not be determined due to the confidential nature in which scores are reported.

INDEX WORDS: Occupational Therapy Assistant, Education.

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## Chapter I

### Introduction

“Occupational therapy provides service to those individuals whose abilities to cope with the tasks of daily living are threatened or impaired by developmental deficits, the aging process, poverty and cultural differences, physical injury or illness, or psychological and social disability” (The American Occupational Therapy Association, Inc. [AOTA], 1991). Personnel that are authorized to provide occupational therapy include registered occupational therapists (OTRs), certified occupational therapy assistants (COTAs) and occupational therapy aides.

The United States Army employs and trains both occupational therapists (OTs) and occupational therapy assistants (OTAs). The use of occupational therapy (OT) personnel in the Army began during World War I and has continued to progress and change with the times. The Army began formally training OTAs (also referred to as technicians) in the 1950s at Valley Forge General Hospital in Phoenixville, Pennsylvania. By the early 1970s, the program was moved to its current home in San Antonio, Texas and received accreditation from the Committee on Allied Health Education and Accreditation of the American Medical Association (Trujillo, 1994).

There are currently 101 accredited educational programs for OTs with over 20 new programs developing and 112 accredited educational programs for OTAs with 33

programs in developmental stages (AOTA, 1996). The Army's OTA educational program is somewhat different from its civilian counterparts in that it is an intense 29-week program that awards a certificate in occupational therapy as opposed to a two-year associate degree program. Like other programs, the Army's program includes a didactic phase and a 12-week "hands-on" phase referred to as level II fieldwork (Joe, 1993). Students are required to successfully pass both of these phases before they can sit for the national certification examination.

### Statement of the Problem

The Army's OTA educational program has undergone various changes over the years to include the training of Navy and Air Force personnel as well as Army reservists and National Guard members. The most recent significant change occurred in 1994. Due to military downsizing and consolidation of personnel, requirements for entering the assistant program were restructured. The program is now conducted as an Additional Skill Identifier (ASI). This means that all students entering the program first must have another military job (referred to as an MOS). The MOS that students must have is that of 91B Medical Specialist or equivalent (Trujillo, 1994). Active duty Army students must also have completed 18 months time in service (TIS) as a 91B before they can enter the OTA educational program. Reservists and National Guard students may go directly from 91B training to the OTA program without serving 18 months in order to expedite their return to the civilian community. Air Force and Navy students have similar requirements. There are no other academic prerequisites. Graduates of the program are now classified as 91BN3s. This distinguishes them as medical specialists with specialty

training in occupational therapy. The Army's physical therapy assistant program and other related health care specialist programs also have made similar changes.

Due to its intense nature and rigorous training requirements, the Army's OTA program has experienced attrition rates as high as 20% in the past (Joe, 1993). Students may be dismissed from the program for academic or non-academic reasons, e.g., behavioral problems, failure to comply with military standards, etc. Although information is available on attrition rates and national certification examination pass rates, information has not been compiled and studied regarding the effects of the restructuring of the Army's OTA educational program.

With the change in requirements for entrance into the Army's OTA program, one would expect changes in student demographics. Due to the requirements for 18 months time in service and training as a medical specialist (91B), one would expect that these students would be older and perhaps more knowledgeable than those in previous groups. They would also have more military experience. These changes lead this researcher to ask several questions:

- (1) What, if any, significant changes in student demographics took place?
- (2) Did the restructuring of the Army's OTA program affect its attrition rates?
- (3) Did the change in requirements affect students' clinical performance?
- (4) Did student's performance on the national certification examination change?
- (5) Were there any significant differences in students' academic performance?
- (6) Are any program changes necessary in response to changes in program attrition rates or students' academic or clinical performance?

These issues have been explored in some arenas but not in reference to the Army's OTA educational program. Factors affecting student retention, academic performance, and clinic performance have been studied in many of the allied health fields and will be discussed in the next section. In addition to studies in those areas, research has been conducted on selection (admission) criteria for allied health programs and how these criteria relate to predicting academic and clinical success. Much of this research has related to professional (four-year) programs, but not to technical (two-year) programs. There is a paucity of literature in the field of occupational therapy regarding what factors and student characteristics affect attrition rates, academic performance, clinical performance, and performance on national certification examinations.

The purpose of this study was to examine changes that took place in student demographics and any resultant effects on attrition rates, level II fieldwork performance, and national certification examination pass rates after the restructuring of the Army's OTA educational program. The information produced from this study provides insight as well as historical information in regards to the Army's OTA program. In addition, recommendations are made for changes to the educational program. Finally, the information found can be generalized to other OTA programs and added to the developing body of knowledge in occupational therapy assistant education.

### Review of Related Literature

Several studies have been conducted to examine attrition rates in allied health programs. Hedl (1987) studied attrition in undergraduate programs in allied health as a whole. He compared dropouts to program graduates and found that the groups were

relatively similar in age, sex, marital status, ethnicity, and prior academic achievement. In his sample, the primary cause of attrition was personal/family reasons with the next highest cause being academic reasons. The author reported that only one student was formally dismissed for academic reasons (the others dropped out voluntarily). The study showed that dropouts occurred early in the program (about 50% of the students remained for one semester or less). Hedl concluded, "...that what happens to allied health professionals after they have entered an institution may be more important in determining voluntary attrition than the attributes they bring with them to the institution" (p. 227).

In a study of nursing student attrition, Smith (1990) found that attrition primarily occurred in freshman and sophomore non-clinical students. She surveyed freshman and sophomore dropouts as well as some of the undergraduate nursing faculty. Using a Likert scale, the respondents were asked to rate 27 factors related to attrition which were either academic or financial-employment in nature. The students gave the highest ratings to the following factors: (a) dissatisfaction with class scheduling, (b) not enough money to support themselves, (c) work interfering with studies, (d) dissatisfaction with program requirements, and (e) demanding work responsibilities. Faculty members gave the highest ratings to the following factors: (a) poor study skills and habits, (b) grade point average (GPA) too low to progress to clinical phase, and (c) demanding work responsibilities. The researcher recommended that student retention programs should begin during the preadmission advising process.

In a similar study, Lopez (1992) used 22 variables when comparing graduates, dropouts, and current students in a nursing program in California. Results showed that

several variables discriminated between the groups. Grades in nursing courses, support from family, support from academia, and years of high school chemistry discriminated currently enrolled students from dropouts. Nursing and non-nursing course grades, support from academia, high school biology grades, and overall high school grades discriminated between current students and graduates. Nursing course grades and family support distinguished dropouts from graduates. Thus, the only variable that distinguished between all three groups was nursing course grades. Lopez concluded that support and advisement throughout the course of study is important for nursing student retention.

In 1984, Douce and Coates studied the causes of attrition in respiratory therapy education and their relationships to admission criteria. The attrition rate in their sample of 25 two-year programs was 28%. For those programs, they found that the top three causes of attrition were academic problems, unknown causes, and changes in career interest. They reported that 75% of two-year programs did not use “knowledge of the profession” as an admission criterion. Finally, Douce and Coates suggested that attrition can be minimized by having a weighted admission policy which emphasizes knowledge of the profession and previous academic performance.

Thus, within the studies cited above, it appears that a wide variety of factors affect program attrition rates including personal/family reasons, academic factors, changes in career interests, etc. No one factor proved to be the main cause of attrition. This study examined the attrition rates of the Army’s OTA educational program prior to and after the restructuring of the program. It was hypothesized that the restructuring of the program resulted in a decrease in program attrition rates.

In a recent study of admission criteria in the allied health professions, Scott et al., (1995), found that the most used admission criteria were college GPA, letters of reference, personal interview, science GPA, and writing samples. Several noncognitive factors were listed as being important such as communication and interpersonal skills, problem-solving skills, creativity, and critical thinking skills. The study also reported on the changing demographics of allied health applicants which included an increase in the number of applicants, an increase in the number of older applicants, an increase in the number of second-career applicants, and more ethnically diverse applicants. Although no specific hypotheses were made in regard to changes in student demographics, this study examined the available data for significant changes which might have occurred after the restructuring of the Army's OTA educational program.

Various allied health and medical fields have investigated admission selection criteria as predictors of academic and clinical success. Gayed (1991) investigated which selection criteria would best predict the performances of foreign-born foreign medical students during their internal medicine residencies in the United States. To do this, the researcher surveyed the directors of 102 internal medicine residency programs who were asked to rate the importance of 22 selection criteria. The three criterion given the highest ratings were: (a) performance on the Foreign Medical Graduate Examination in the Medical Sciences (FMGEMS) or the National Board of Medical Examiners (NBME) examinations, (b) performance during the interview, and (c) postgraduate clinical experience in the United States. The study also cited the least useful predictors such as letters of recommendation originating from foreign countries. The author suggested that

the findings be used to establish guidelines for programs that select foreign-born foreign medical students into their internal medicine residencies.

Several studies exist that address practical nursing programs, which are usually 18 months to two-years in length. Leitsch (1988) investigated the relationship between selected academic and demographic variables with success in licensed practical nursing programs. The researcher examined age, gender, race, reading and math scores on the Test of Adult Basic Education (TABE), and highest level of educational attainment in relation to the following measures of success, (a) program completion, (b) passage of the Licensed Practical Nurse Assessment Test (LPN AT), and (c) scores on the LPN AT. The TABE reading scores were found to have a significant relationship with all of the measures of success. The level of educational attainment showed no relationship to any of the measures. Age, gender, race, and TABE math scores were all correlated to measures of success.

Lengacher and Keller (1990) examined the relationship of a variety of variables to performance on the National Council Licensure Examination for Registered Nurses (NCLEX-RN) for associate degree students. The researcher used three categories of variables as predictors: (a) admission selection variables including age, entrance GPA, exit GPA, American College Test (ACT) math subscores and English subscores, ACT composite scores, and perception of role strain; (b) seven nursing theory course grades and clinical course grades, and (c) four National League for Nursing (NLN) examination scores. Of the admission selection variables, the exit GPA and ACT composite scores were the best predictors of performance on the NCLEX-RN. Grades on two specific

nursing theory courses taught in the second year of the program were the best predictors in the second category. In the third category, scores on two of the four NLN examinations proved to be the best predictors for successful performance on the NCLEX-RN. Those two tests were the NLN Basics Two Examination and the NLN Psychiatric Nursing Examination. The authors of this study suggested that by using this type of data, educators could identify students at risk early in the program and perhaps take measures to enhance performance and avoid examination failures. They also recommended that more studies on associate degree nursing students be conducted because they are the largest student body taking the NCLEX-RN examination and because attrition is costly.

In a third study of nursing students, Nardi (1992) attempted to assess the older student's success by examining the correlation between age and selected quantitative measures of success. She found small, but positive correlations ( $r = 0.037-0.318$ ) among the variables of age, nursing course grades, NCLEX-RN score, and GPA. In another study, Booth (1992) attempted to identify subsets of variables that would predict success in practical nursing programs. The researcher studied data on several hundred students who entered one particular program. The subset of variables that was the best predictor of dropouts included age, ACT reading subtest score, ACT math subtest score, and average nursing theory score.

Thus, many studies have been conducted throughout various health care fields in an effort to find the best predictors of student success academically, clinically, and for passing national professional examinations. From the studies cited above, it appears that a variety of factors can be used to predict student success. In most of the studies, tests or

examinations such as the TABE, NLN, ACT, FMGEMS, etc. appear to have predictive value. However, no such tests exist in the field of occupational therapy. Both OT and OTA students complete all academic and clinical requirements prior to sitting for the national certification examination.

Several of the studies were able to show positive correlations between student success and various demographic data such as age, race, and gender. Other studies examined various academic scores and were able to correlate some of them such as exit GPA and theory course grades with success. This study examined the effect that the restructuring of the Army's OTA educational program had on students' performance. It was hypothesized that the restructuring would result in students performing better on level II fieldwork and having higher pass rates on the national certification examination.

The literature cited thus far contains studies conducted in fields related to OT such as nursing and allied health in general. Hence forth, the literature cited will focus specifically on the field of occupational therapy.

In a national survey of occupational therapy student demographics, Wyrick and Stern (1987) found that the majority of both OT and OTA students were white females; however, OTA educational programs had a significantly larger number of minorities. The largest proportion of OTA students was in the 19 to 20 year old age group, but there also were many students between the ages of 27 and 55. The majority of OTA students had chosen their career by the age of 21 and had submitted applications to programs by the age of 22. Many students (43.5%) had no other training/schooling, besides high school, prior to entering an OTA program and 90% of them applied only to one school.

Mann and Banasiak (1985) attempted to establish a relationship between occupational therapy academic course work and fieldwork performance using correlation analysis. The authors cited five previous studies that had been conducted in which little to no correlations had been found. Although Mann and Banasiak also found very low correlations, they did not feel that it would be correct to assume that there was no relationship. They proposed that the correlations might have been low because of typically low variances of course grades and fieldwork performance grades due to the homogeneity of OT students.

In 1990, Schmalz, Rahr, & Allen studied the use of pre-admission data to predict levels of success in allied health students. They cited a conflicting body of literature as to what, if any, variables could clearly and accurately predict success. The authors studied OT students, physical therapy (PT) students, and physician's assistant (PA) students enrolled in a school in Texas over a two-year period. Demographically, they found that students were primarily single, white, females with average ages between 23 and 25 years old. For OT students, the investigators found that four variables were predictive of successful program completion: (a) scores on the Otis Quick-Scoring Mental Ability Test, (b) the type of institution where applicants took prerequisite courses (four-year vs. two-year institutions), (c) entering cumulative GPA, and (d) scored written essays. The authors suggested that future studies be conducted to determine if admission data can identify reasons for non-academic failures.

Best (1994) had difficulty establishing relationships between various OT course work grades and the three scores given on the AOTA Fieldwork Evaluation Form for

Occupational Therapy Students. As with other researchers, Best recommended that variables other than grades be examined for their value in predicting success in level II fieldwork. Some of the variables he suggested were student motivation, learning styles, rapport with fieldwork supervisor, hospital experience, and judgment ability. Standardized tests/evaluations would have to be created to examine these variables.

Citing several of the previously mentioned studies, as well as others not mentioned, Isenburg and Heater (1994) concluded that several factors should be considered when selecting students for enrollment in OT programs. These factors include GPA particularly in required prerequisite courses, correlative scores on the Strong Vocational Interest Test, interview scores, previous college experience from four-year rather than two-year institutions, written essays, and reasons for wanting to be an occupational therapist. The authors stated that lack of information about performance predictors can lead to the acceptance of unqualified persons into the program with subsequent academic failure or premature exit from the field of OT.

Early in 1995, two reports regarding student performance on fieldwork were published. Kramer and Stern focused on how to deal with OT students having difficulty during their level II fieldwork. They stated, "It would seem logical that students who do well in their academic studies would do well in their clinical performance. However, in numerous studies, no correlation between academic and clinical performance has been found..." (p. 156). The other report (Sands, 1995) discussed preparing OTA students for level II fieldwork in terms other than academic preparation. The author reported on an evaluation form created for students to increase awareness of their performance and

assess their interpersonal skills. The form is used during a student/teacher conference at the end of the first year so that the student has time to act on any feedback prior to entering the level II fieldwork phase of the program.

One study was found that focused specifically on an OTA program. Mohler (1988) examined the relationship between academic achievement and clinical performance in OTA students at Mount Aloysius Junior College. She reviewed the records of 35 graduates and analyzed correlations between age, cumulative grade point average of academic coursework, and combined and individual level II fieldwork performance scores. Like other researchers, she found low correlations and concluded that academic achievement was not the primary predictor for success in level II fieldwork. Mohler recommended that further studies be conducted using different approaches and/or different tools to predict OTA students' success in level II fieldwork.

Two of the studies conducted within the field of occupational therapy cited written essays and previous experience at four-year institutions as predictors of success in OT programs. Otherwise, the studies each focused on different variables citing only a few others, such as entering GPA and GPA of specific courses, as predictive variables. Most of the studies confirmed that academic GPA is not or could not be correlated with success in level II fieldwork. No studies were found that attempted to correlate any variables with success on national OT certification examinations.

Another approach to the problem posed in this research may be to examine the area of cross-trained or multiskilled practitioners. With the restructuring of its OTA educational program, the Army is essentially preparing a multiskilled health care

practitioner - an OTA with basic medical skills. In its concept paper, the American Occupational Therapy's Cross-Training Task Force (1996) defined multiskilling as "... the academic preparation of a person to be credentialed at the entry level in more than one profession" (p. 3). It explained cross-training as a learning process that occurs after one has completed entry-level education. The concept paper discussed the advantages and disadvantages for both multiskilling and cross-training. However, it did not identify any research as to whether multiskilling improves a student's academic and/or clinical performance.

In recent years, several educational programs have been established for the purpose of producing multiskilled personnel. A variety of health care skills have been combined such as laboratory and radiography skills, nursing and pharmacology skills, nursing and respiratory therapy skills, etc. Multiskilling efforts have run into difficulty however, due to a lack of accreditation procedures for educational programs of this nature as well as the lack of availability of a national certification procedure for a multiskilled health care practitioner. This issue is of such importance that the National Multiskilled Health Practitioner Clearinghouse was established at the University of Alabama at Birmingham to document the movement and serve as a repository for information related to multiskilling efforts (Blayney, Wilson, Bamberg, and Vaughan, 1989).

This researcher believes that Army OTA students previously trained/educated as medical specialists (91B), will be less likely to fail out of the OTA program, will perform better on their level II fieldwork, and will have higher pass rates on their national

certification examinations than OTA students who were not previously trained as a medical specialists. While no studies have examined the Army's OTA educational program, the related literature identifies several fields that have examined and attempted to identify the best predictors of both academic and clinical performance/success. The most significant common threads in the literature were the identified need in all of the allied health fields to select the most appropriate applicants and the recommendation for further studies.

## Chapter II

### Materials and Methods

Literature alludes to what factors may be the best predictors of success in occupational therapy (OT) and similar professional educational programs. Previous college experience at four-year institutions and scores on written essays have been correlated with OT students' success (Schmalz, Rahr, & Allen, 1990). However, few studies have been conducted on what factors affect occupational therapy assistant (OTA) students' academic and/or clinical success. No studies have been conducted regarding the effect of the restructuring of the Army's OTA educational program. The restructuring requires that students desiring to enter the Army's OTA program, must first be trained as a medical specialist (91B), or the equivalent in the other services. Active duty Army students must also work for 18 months in that capacity prior to entering the OTA (91L) program. Due to those requirements, current students are more likely to be older and to have more college and military experience than previous students. This study examined the results of these new requirements for the Army's OTA program.

### Research Hypothesis

The hypothesis formulated for this study contained three parts. It was directional in nature due to the researcher's personal experience. The research hypothesis stated that the restructuring of the Army's occupational therapy assistant (OTA) educational

program resulted in (a) lower course attrition rates, (b) higher level II fieldwork performance scores, and (c) higher pass rates on the national certification examination.

### Identification of Variables

The independent variable was on a nominal scale and had two levels. There were three dependent variables. The four branches of service were the control variables.

Independent Variable:	Restructured program (present, absent)
Dependent Variables:	(a) Course attrition rates
	(b) Level II fieldwork performance scores
	(c) National certification examination pass rates
Control Variable:	Branch of service (Army, USAR, Navy, Air Force)

### Operational Definitions of Variables

Restructured program - the Army's OTA program after the change in military occupational specialty (MOS) requirements was implemented (late 1994).

Course attrition rates - the number of students who failed to complete either the academic/didactic phase or level II fieldwork/clinical phase of the program (expressed as a percentage). Occasionally, a student who failed due to extenuating circumstances was allowed to repeat the OTA course during its next offering. This was referred to as being "recycled." For this study, a student who was recycled was considered to be a failure for the class in which he failed.

Fieldwork performance scores - the scores which the student received during the level II fieldwork phase of the program. A standardized, nationally used rating form was completed rendering a score for each of the two six-week portions of the level II

fieldwork (physical disabilities and psychosocial dysfunction). Students must receive 84 of a possible 120 points in each six-week portion to successfully complete the program.

National certification pass rates - the number of students passing the national certification examination (expressed as a percentage).

Branch of service - specified as Army, United States Army Reserve (USAR), Navy, or Air Force (AF). Due to differences in branch requirements, each student's branch of service was recorded and the information was analyzed for significance.

### Description of Research Design

An ex post facto design was used because the treatment (the restructuring of the course) had already taken place and would not be implemented or manipulated by this researcher. A criterion-group design with intact groups was used. Data regarding age, rank, sex, and branch were analyzed.

### Population and Sample

The population for this study was military OTA students. The sample consisted of students entering the four classes immediately preceding the restructuring of the program and students entering the four classes immediately following the restructuring. These classes occurred between August 1993 and August 1996.

### Instrumentation and Data Collection

Data were gathered by way of record review of student files housed at the Occupational Therapy Branch of the Army Medical Department Center & School (AMEDDC&S). Follow-up calls were necessary to gather data from missing or incomplete files. Working through one primary contact person, most of the missing

pieces of data were collected. However, some pieces of data, such as students' ages or specific level II fieldwork scores were not obtained due to incomplete files.

Student attrition rates were tabulated by dividing the number of students in a class that failed out of the program, for either academic or non-academic reasons, by the total number of students entering that particular class. Scores for each students' performance on level II fieldwork were collected using the AOTA (American Occupational Therapy Association) Fieldwork Evaluation Form for Occupational Therapy Assistant Students. Data regarding pass rates for the national certification examination were obtained from the American Occupational Therapy Certification Board, Inc. (AOTCB). This organization is now known as the National Board for Certification in Occupational Therapy, Inc. (NBCOT).

### Data Analysis

All data were analyzed using the Statistical Package for the Social Sciences (1995). Results were considered to be significant at the  $p < .05$  level.

Demographic data on the total population was described and analyzed first. A two-tailed  $t$ -test was used to compare pre- and post-restructuring groups students' ages. Composition of the groups by sex, rank, and branch of service was analyzed using chi-square ( $\chi^2$ ) tests. Demographic data of only those students successfully completing the program were analyzed next. A two-tailed  $t$ -test was used to compare ages of successful students in the pre- and post-restructuring groups. Again,  $\chi^2$  tests were used to analyze the sex, rank, and branch of service of the students in each group who successfully completed the program.

Attrition rates of the pre- and post-restructuring groups were analyzed using the  $\chi^2$  test. Demographic data of the failing students from each group were also analyzed. A two-tailed *t*-test was used to compare ages and  $\chi^2$  tests were used to compare sex, rank and branch of service of the students.

Next, a one-tailed *t*-test was used to analyze the data comparing the level II fieldwork performance scores of the pre- and post-restructuring groups of students. Scores for each of the two six-week portions of the level II fieldwork as well as the combined average of the two scores were compared. A discussion of the results for national certification examination pass rates for the groups followed.

Analyses were conducted of data collected from areas other than those specified in the hypothesis. Pre- and post-restructuring group students were compared academically. For students successfully completing the program, a two-tailed *t*-test was used to compare the students' scores on each of five academic blocks of instruction conducted during the academic/didactic phase of the Army's OTA program. Total academic GPAs of successful students were also analyzed using a two-tailed *t*-test.

A final group of analyses were conducted on students within each group individually. These analyses compared students who failed to students who successfully completed the program. The students' ages were compared using a two-tailed *t*-test. Sex, rank, and branch of service of the students were compared using  $\chi^2$  tests.

#### Assumptions and Limitations

The limitations of the study were that: (a) the population was restricted to one specific program which decreases the ability to generalize about the results, (b) it was a

relatively small sample size, and (c) nonparametric statistics were used to analyze some of the data. Assumptions that were made included the following: (a) there was good interrater-reliability among occupational therapists who rated students using the AOTA Fieldwork Performance Evaluation Form for Occupational Therapy Assistants, (b) the national certification examination was relatively valid and reliable across the groups of students being studied, and (c) the data collected were reliable and analyzed accurately.

## Chapter III

### Results

This study was conducted to analyze the implications of the restructuring of the Army's occupational therapy assistant (OTA) educational program. The results include information obtained on students who entered the program during four classes prior to and four classes occurring just after the restructuring.

Demographic data is described first. The number of students per class varied between 12 and 34 with a total of 104 students in the pre-restructuring groups and 64 students in the post-restructuring groups. The composition of each class by students' age, sex, rank, and branch of service also varied (see Table I).

Table I *DEMOGRAPHIC DATA OF GROUPS*

<b>Pre-Groups</b>	<b># of Students</b>	<b># of Males</b>	<b># of Females</b>	<b>Ave. Age</b>	<b>Ave. Rank</b>	<b># in Army</b>	<b># in USAR</b>	<b># in Navy</b>	<b># in AF</b>
<b>A</b>	34	20	14	22.6	2.7	20	5	0	9
<b>B</b>	20	14	6	22.1	3.1	12	4	4	0
<b>C</b>	29	18	11	22.8	2.4	2	16	3	8
<b>D</b>	21	12	9	24.1	3.4	1	10	3	7
<b>TOTAL</b>	<b>104</b>	<b>64</b>	<b>40</b>			<b>35</b>	<b>35</b>	<b>10</b>	<b>24</b>
<b>Post-Groups</b>									
<b>E</b>	12	10	2	26.6	5.1	2	2	1	7
<b>F</b>	14	8	6	26.1	4.2	8	4	2	0
<b>G</b>	15	8	7	26.0	4.1	6	4	2	3
<b>H</b>	23	14	9	27.7	4.7	6	6	2	9
<b>TOTAL</b>	<b>64</b>	<b>40</b>	<b>24</b>			<b>22</b>	<b>16</b>	<b>7</b>	<b>19</b>

### Demographics

No hypotheses were made in regards to changes in demographic data of students. However, it was expected that students in the post-restructuring group would be older and of higher rank due to the new program entrance requirements. Analysis with a two-tailed *t*-test revealed a significant difference ( $p < .001$ ) between the mean ages of the students in the pre- and post-restructuring groups (see Table II). Analysis using a chi-square ( $\chi^2$ ) test revealed that there was also a significant difference in the composition of the groups by rank ( $p < .001$ ). The students in the pre-restructuring group were primarily of lower ranks - E1 through E5 with only three E6s and no E7s. The students in the post-restructuring group were primarily of higher ranks - E4 through E7 with only two E3s and no E1s or E2s. Further analysis using  $\chi^2$  revealed no significant difference in the number of male and female students in the groups ( $p = .901$ ) and no significant difference ( $p = .631$ ) in the number of students in each branch of service in the groups (see Table II).

Table II *DEMOGRAPHIC DATA ANALYSIS FOR ALL CASES*

CATEGORY	PRE-GROUP	POST-GROUP	DIFFERENCE	P VALUE
<b>AVERAGE AGE</b>	22.8	26.7	Significant	$p < .001$
<b>SEX</b>	64 M / 40 F	40 M / 24 F	Not significant	$p = .901$
<b>RANK</b>	E1 = 30 E2 = 17 E3 = 14 E4 = 30 E5 = 10 E6 = 3 E7 = 0	E1 = 0 E2 = 0 E3 = 2 E4 = 38 E5 = 16 E6 = 5 E7 = 3	Significant	$p < .001$
<b>BRANCH</b>	35 Army 35 USAR 10 Navy 24 Air Force	22 Army 16 USAR 7 Navy 19 Air Force	Not significant	$p = .631$

Several other demographic findings were of interest. Demographic data of students who successfully completed both phases of the Army's OTA educational program ("pass only cases") were analyzed as depicted in Table III. A two-tailed *t*-test determined that the average age of students in the post-restructuring group who successfully completed the program was significantly higher than that of their pre-restructuring group counterparts ( $p=.002$ ). Chi-square tests were used to compare the sex, rank, and branch of service of the students in both groups successfully completing the program. There was a significant difference in the distribution of rank ( $p<.001$ ) with a greater proportion of the higher ranks in the post-restructuring group. There was no significant difference between the pre- and post-restructuring groups in the number of male and female students successfully completing the program ( $p=.559$ ). Nor was there a significant difference between the groups in relation to the proportion of students in each of the branches of service who successfully completed the program ( $p=.203$ ).

Table III *DEMOGRAPHIC DATA ANALYSIS FOR PASS ONLY CASES*

<b>CATEGORY</b>	<b>PRE-GROUP</b>	<b>POST-GROUP</b>	<b>DIFFERENCE</b>	<b>P VALUE</b>
<b>AVERAGE AGE</b>	24.0	26.7	Significant	$p=.002$
<b>SEX</b>	44 M / 22 F	37 M / 23 F	Not significant	$p=.559$
<b>RANK</b>	E1 = 15 E2 = 8 E3 = 7 E4 = 25 E5 = 8 E6 = 3 E7 = 0	E1 = 0 E2 = 0 E3 = 2 E4 = 34 E5 = 16 E6 = 5 E7 = 3	Significant	$p<.001$
<b>BRANCH</b>	18 Army 26 USAR 9 Navy 13 Air Force	21 Army 14 USAR 7 Navy 18 Air Force	Not Significant	$p=.203$

### Attrition Rates

It was hypothesized that OTA student groups occurring after the restructuring of the program would have lower attrition rates than student groups occurring before the restructuring. Attrition included those students failing either the academic or the level II fieldwork phase for either academic or non-academic reasons. Of the 104 students in the pre-restructuring group, 38 students, 36.5%, failed to complete the program (33 for academic reasons and five for non-academic reasons). Only four of the 64 students in the post-restructuring group failed (6.25%). Three failed for academic reasons and one was recycled. A  $\chi^2$  test was used to compare the attrition rates of the groups. As hypothesized, the post-restructuring group had a much lower attrition rate than the pre-restructuring group ( $p < .001$ ). Demographic data of those students failing to complete the program were also analyzed (see Table IV). A two-tailed  $t$ -test was used to compare ages of the students and  $\chi^2$  tests were used to compare sex, rank, and branch of service.

Table IV *DEMOGRAPHIC DATA ANALYSIS FOR FAIL ONLY CASES*

<b>CATEGORY</b>	<b>PRE-GROUP</b>	<b>POST-GROUP</b>	<b>DIFFERENCE</b>	<b>P VALUE</b>
<b># FAILING</b>	38 of 104	4 of 64	Significant	$p < .001$
<b>AVERAGE AGE</b>	20.8	25.8	Significant	$p = .013$
<b>SEX</b>	20 M / 18 F	3 M / 1 F	Not significant	$p = .393$
<b>RANK</b>	E1 = 15 E2 = 9 E3 = 7 E4 = 5 E5 = 2 E6 = 0 E7 = 0	E1 = 0 E2 = 0 E3 = 0 E4 = 4 E5 = 0 E6 = 0 E7 = 0	Significant	$p = .003$
<b>BRANCH</b>	17 Army 9 USAR 1 Navy 11 Air Force	1 Army 2 USAR 0 Navy 1 Air Force	Not Significant	$p = .703$

### Level II Fieldwork

It was hypothesized that students in the post-restructuring group would perform better on their level II fieldwork. There are two portions of the level II fieldwork - physical disabilities (PHYS DYS) and psychosocial dysfunction (PSYCH). Each portion is six weeks in duration. Only the scores of those students successfully completing the academic phase and both portions of the level II fieldwork were analyzed. Findings in this area were mixed (see Table V). A one-tailed *t*-test was used to analyze the scores. For the physical disabilities portion of the fieldwork, a significant difference was found ( $p=.012$ ) with the students in the post-restructuring group performing slightly better. However, for the psychosocial fieldwork, no significant difference was found ( $p=.172$ ). When examining the two fieldwork scores combined (phase II GPA or level II fieldwork), a significant difference was found between the groups ( $p=.030$ ). Again, students in the post-restructuring group performed better. Thus, the data supports the hypothesis that students in the post-restructuring group would perform better on their level II fieldwork.

Table V *SUMMARY OF FIELDWORK SCORES FOR PASS ONLY CASES*

<b>CATEGORY</b>	<b>PRE-GROUP</b>	<b>POST-GROUP</b>	<b>DIFFERENCE</b>	<b>P VALUE</b>
PHYS DYS	83.7	86.7	Significant	$p=.012$
PSYCH	85.0	86.1	Not significant	$p=.172$
PHASE II GPA	84.3	86.4	Significant	$p=.030$

### National Certification Examination Pass Rates

It was hypothesized that students in the post-restructuring group would perform better than students in the pre-restructuring group on the national certification

examination. Although some information was available, examination pass rates for each class were unobtainable for several reasons. First, military students were not required to take the examination. Therefore, some of the students who successfully completed the Army's OTA program did not sit for the examination. Second, the examination is offered twice a year. Some students did not sit for the examination when they were first eligible, but sat at a later offering. Also, students from classes prior to this study sat for the examination simultaneously with students from the classes being studied. The AOTCB administered the examination two times per year - January and July. Within two months of each examination, the AOTCB sent a summary of the results to the AMEDD Center & School. Although this summary included the names of the students who passed the examination, as well as examination scores, for confidentiality reasons it did not identify which scores belonged to which students. Nor did it identify students who were taking the examination for the second time. Finally, the AOTCB, now renamed the NBCOT, recently changed the examination offerings to March and September. Therefore, no information could be obtained on pass rates for the last class of students being studied as they had not yet written the examination.

### Academics

Although no hypotheses were made regarding academic scores, several interesting findings were made upon analysis of the data. During the academic phase of the Army's OTA educational program, the students were given five blocks of instruction on which they were tested. These included: (a) human anatomy, physiology, and kinesiology; (b) OT and applied psychology; (c) OT theory; (d) OT treatment for medically related

disorders; and (e) OT media and methods. Scores for those students successfully completing the program (66 in the pre-restructuring group, 60 in the post-restructuring group) were analyzed using two-tailed *t*-tests with the results as shown in Table VI. A significant difference was found in only the OT theory scores ( $p < .001$ ) with the post-group students performing better. There were no significant differences ( $p < .05$ ) in the scores of the other four blocks of instruction. However, because some of the differences were close to being statistically significant, a significant difference was found in the overall academic GPA (scores from all five blocks of instruction combined). In this case, the difference was significant at  $p = .005$  with the students in the post-restructuring group performing better. Had a one-tailed *t*-test been used, as in the case of a directional hypothesis, all but one of the analyses of academic scores would have been significant.

Table VI *SUMMARY OF ACADEMIC SCORES FOR PASS ONLY CASES*

<b>CATEGORY</b>	<b>PRE-GROUP</b>	<b>POST-GROUP</b>	<b>DIFFERENCE</b>	<b>P VALUE</b>
<b>ANATOMY</b>	83.2	85.3	Not significant	$p = .098$
<b>PSYCHOLOGY</b>	83.8	86.2	Not significant	$p = .058$
<b>OT THEORY</b>	81.6	89.9	Significant	$p < .001$
<b>OT TREATMENT</b>	87.5	85.5	Not significant	$p = .065$
<b>OT METHODS</b>	86.4	88.1	Not significant	$p = .125$
<b>ACADEMIC GPA</b>	84.5	87.0	Significant	$p = .005$

#### Pass/Fail Analysis of Individual Groups

One final group of analyses provided interesting findings. Demographic data of students in each of the groups were analyzed for differences between students who failed and students who successfully completed the Army's OTA educational program. A total of 104 students entered the four classes in the pre-restructuring group. Of those students,

66 successfully completed the program and 38 failed either the academic or the level II fieldwork portion of the program. A two-tailed *t*-test revealed a significant difference ( $p < .001$ ) between the mean ages of the students. Students in this group who successfully completed the program were, on average, about three years older than those who failed. Analyses using  $\chi^2$  tests revealed significant differences in both the rank and branch of service of the students,  $p = .020$  and  $p = .048$  respectively. There were equal numbers of students ranked E1 to E3 who passed or failed. However, there were more students ranked E4 to E6, who passed than who failed. Equal portions of Army and Air Force students passed or failed; however, there were more Navy and USAR students who passed than who failed. No significant difference ( $p = .157$ ) was found between the number of male and female students within this group (see Table VII).

Table VII *DEMOGRAPHIC DATA FOR PRE-RESTRUCTURING GROUP ONLY*

<b>CATEGORY</b>	<b>FAIL</b>	<b>PASS</b>	<b>DIFFERENCE</b>	<b>P VALUE</b>
<b>AVERAGE AGE</b>	20.8	24.0	Significant	$p < .001$
<b>SEX</b>	20 M / 18 F	44 M / 22 F	Not significant	$p = .157$
<b>RANK</b>	E1 = 15 E2 = 9 E3 = 7 E4 = 5 E5 = 2 E6 = 0	E1 = 15 E2 = 8 E3 = 7 E4 = 25 E5 = 8 E6 = 3	Significant	$p = .020$
<b>BRANCH</b>	17 Army 9 USAR 1 Navy 11 Air Force	18 Army 26 USAR 9 Navy 13 Air Force	Significant	$p = .048$

Demographic data of students in the post-restructuring group were also analyzed to detect differences between students who failed and students who successfully

completed the program. Of the 64 students in this group, only four failed. A two-tailed *t*-test was used to analyze the students' ages and  $\chi^2$  tests were used to analyze their sex, rank, and branch of service. No significant differences were found (see Table VIII).

Table VIII *DEMOGRAPHIC DATA FOR POST-RESTRUCTURING GROUP ONLY*

CATEGORY	FAIL	PASS	DIFFERENCE	P VALUE
<b>AVERAGE AGE</b>	25.8	26.7	Not significant	p=.676
<b>SEX</b>	3 M / 1 F	37 M / 23 F	Not significant	p=.594
<b>RANK</b>	E3 = 0 E4 = 4 E5 = 0 E6 = 0 E7 = 0	E3 = 2 E4 = 34 E5 = 16 E6 = 5 E7 = 3	Not significant	p=.571
<b>BRANCH</b>	1 Army 2 USAR 0 Navy 1 Air Force	21 Army 14 USAR 7 Navy 18 Air Force	Not significant	p=.643

### Summary of Results

The research hypothesis stated that the restructuring of the Army's OTA educational program would result in lower course attrition rates, higher level II fieldwork performance scores, and higher pass rates on the national certification examination. The data supported the first part of the hypothesis. The attrition rate for the post-restructuring group of students was significantly lower ( $p < .001$ ) than that of the pre-restructuring group. The data also supported the second part of the hypothesis. The overall average level II fieldwork performance score of students in the post-restructuring group was significantly higher ( $p = .030$ ) than that of the students in the pre-restructuring group. National certification examination pass rates for the groups could not be determined. Therefore, the last part of the hypothesis was neither supported nor negated.

## Chapter IV

### Discussion

The purpose of this study was to analyze changes which occurred after the Army restructured its occupational therapy assistant (OTA) educational program. In 1994, the Army changed the admission requirements for its OTA program. Candidates who previously were only required to have a high school diploma and basic training, are now required to also have training as a 91B Medical Specialist or the equivalent. Also, active duty Army soldiers are required to work as a 91B for 18 months prior to entering the OTA educational program.

A review of the literature revealed several studies that examined professional, four-year, programs in occupational therapy (OT) and other health care professions. These studies attempted to identify what factors would best predict students' success in the professional programs. They also attempted to identify what factors affected attrition rates in the various programs. The findings were diverse since each study focused on a variety of factors.

Literature in the field of OT contains few studies regarding what factors predict OTA students' success. No studies have examined the Army's OTA program to determine what factors predict success for its students. This study examined the changes that took place after the restructuring of the Army's OTA program and subsequent effects

on attrition rates, level II fieldwork performance scores, and national certification examination pass rates.

This study included 104 students who entered the Army's OTA educational program prior to its restructuring and 64 students who entered after its restructuring. Demographic data were analyzed first. Due to the nature of the new prerequisites, it was expected that the students in the post-restructuring group would be older and perhaps more knowledgeable than previous students. Analysis of the data revealed that the students in the post-restructuring group were, on average, almost four years older than their pre-restructuring group counterparts and were of higher rank as well. There were no significant differences between the groups in the number of males and females or the number of students from each branch of service.

Attrition is a concern of all allied health programs today as it is costly for both the student and the institution. Previous studies in this area revealed that a variety of factors contribute to student attrition. This study did not hypothesize regarding the causes of attrition among students in the Army's OTA program, but only that the restructuring of the program would result in lower attrition rates. Of the 104 students entering the pre-restructuring group, 38 failed to complete the program (36.5%). Five students were failed for non-academic reasons, while 33 students failed for academic reasons. Of the 64 students in the post-restructuring group, only four students failed (6.25%). One was recycled for non-academic reasons and successfully completed the OTA course during the next offering. Three students failed for academic reasons. The difference in the attrition rates of the two groups was statistically significant at the  $p < .001$  level.

Thus, with its change in requirements, the Army's OTA program significantly reduced its attrition rate. This researcher believes that a variety of reasons contributed to the lower attrition rate. Students' age, rank, prior experience as a medical specialist, increased knowledge base, prior military experience, maturity, and commitment to service may all be contributing factors. It is recommended that more in-depth student records be kept in effort to analyze these factors in future studies. If specific factors can be correlated with student attrition, then this and other OTA educational programs could use the results when considering potential candidates for their programs.

The second part of the hypothesis in this study was that the students in the post-restructuring group would perform better on their level II fieldwork. This researcher believed that OTA students who were first trained as medical specialists (91B) would perform better on their level II fieldwork due to having an increased knowledge base and having 18 months experience working in the medical field. The data supported this part of the hypothesis. The difference between the pre- and post-restructuring groups' performance on level II fieldwork was statistically significant ( $p=.030$ ). When the two portions of the fieldwork were examined separately, a significant difference was also found between the groups in the performance scores for the physical disabilities portion ( $p=.012$ ). However, for the psychosocial portion, no significant difference between the groups was found ( $p=.172$ ).

Level II fieldwork is a critical part of the OTA's education. Implementing knowledge gained in the classroom is a difficult task. It is often this phase of the program that determines which students will make competent OTAs. Determining

factors that contribute to OTA students' success in the clinic would be of value for all educational programs. With the information produced in this study, further analyses could be conducted to determine what, if any factors, (such as age, years of military experience, etc.) could be correlated with the OTA students' success in this program.

The last part of the hypothesis was that students in the post-restructuring group would have higher pass rates on the national certification examination than students in the pre-restructuring group. No studies were found that identified factors that predict OTA students' success on the examination. For several reasons (identified in the previous chapter), pass rates for the examination could not be determined. As such, several recommendations are made.

First, it is recommended that the military require OTA students to sit for the national certification examination. Currently, this is not a requirement for all students. This will help ensure that military OTA personnel are as qualified as their civilian counterparts and it will add credibility to military OTA personnel. It will also ensure that the Army's OTA educational program is competitive with other programs and current with national standards.

In the past, students have been allowed to write the national certification examination at any offering. Therefore, students from several different classes sat for the same examination, thereby making it difficult to know if any particular class had deficits in a specific area of the examination. Thus, the second recommendation is that military OTA students be required to sit for the first offering of the examination for which they are eligible. This will assist the program instructor in identifying specific strengths and

weaknesses of each class's performance on the examination. If consecutive classes perform poorly in certain areas, program changes would be necessary.

A third recommendation is that the military require OTA students to report their national certification examination scores to the program instructor. This way, the information could be stored in a way in which it could be used for further research. Examination scores could be correlated with academic scores, scores on level II fieldwork, and with any variety of demographic data. Again, this information could be shared and compared with other OTA educational programs.

Although no other hypotheses were made, several other analyses were conducted. A review of the literature revealed that in OT, performance on academic course work is generally not predictive of future clinical performance. Thus, no hypotheses were made in regards to academic performance. However, data regarding academic course work were available and therefore were analyzed. Of five blocks of instruction, only one revealed significantly different scores between students in the pre- and post-restructuring groups. On average, students in the post-restructuring group scored 8.3 points higher on the OT theory block of instruction. Students in the post-restructuring group also scored higher on three other blocks of instruction, but not high enough to be statistically significant. However, the difference in overall academic grade point average of the groups was statistically significant ( $p=.005$ ) with students in the post-restructuring group performing better. Correlation analyses would have to be conducted to determine what, if any factors, such as age or experience contributed to this difference. However, this researcher believes that several factors as previously described played a significant role.

Several analyses of the demographic data of the students yielded interesting findings. Demographic data of students successfully completing the program from both groups were analyzed. As expected, the successful post-restructuring group students were, on average, 2.5 years older and of higher rank than the successful pre-restructuring group students. These differences were statistically significant. Demographic data of students who failed from both groups were also analyzed. Age and rank were again significantly different between the groups,  $p=.013$  and  $p=.003$  respectively. In this case, the students in the post-restructuring group that failed were, on average, five years older and of higher rank than their pre-restructuring group counterparts. It is felt that this is due to the fact that students in the post-restructuring group as a whole were significantly older and of higher rank than the pre-restructuring group students and that only four students in the post-group failed.

The previous analyses compared students in the pre-restructuring group to students in the post-restructuring group. In all cases, the post-restructuring group students' ages and ranks were significantly higher than those in the other group. Because of these findings, further analyses were conducted.

Demographic data were analyzed to examine differences between students who passed or failed within the pre-restructuring group only. The students in this group who passed were over three years older than those who failed. This was a statistically significant difference ( $p<.001$ ). Also, the students who passed were of higher ranks than those who failed. Analysis of this group was the only one that revealed a statistically significant difference between students in their branch of service ( $p=.048$ ). There were

only nine of 35 USAR students who failed and only one of ten Navy students who failed within the pre-restructuring group. The reason for this is unknown.

Demographic data of students in the post-restructuring group were also analyzed to detect significant differences between students who passed and failed. Although the mean age of those who passed was slightly higher than those who failed, a significant difference was not found. Nor were significant differences found between students who passed or failed in the categories of sex, rank, and age within the post-restructuring group. This is likely due to the homogeneity of the group.

Thus, demographically, students who successfully completed the program were generally older and of higher rank than those who failed. Also, students in the post-restructuring group were older, higher ranking, and as a group, performed better academically and clinically than students in the pre-restructuring group. Therefore, it would appear that age and rank are significant factors in contributing to the success of OTA students in the Army's program. Other analyses or studies would have to be conducted to determine causative factors of the improved performance scores. However, this researcher believes that increased age and experience are likely to be major factors.

Although this study identified findings regarding students' age, sex, rank, and branch of service, other demographic data may have been useful. Data such as number of years on active duty, as opposed to years on reserve status, and exact amount of prior education may contribute to our understanding of what factors can predict an Army OTA student's success. This study did not attempt to identify those factors, but future studies may.

## Chapter V

### Summary

The purpose of this study was to examine the implications of the restructuring of the Army occupational therapy assistant (OTA) educational program. In 1994, the Army changed the requirements for entrance into its OTA program. Candidates must first be trained in another military occupational specialty - that of 91B Medical Specialist. After serving 18 months in that capacity, candidates may be trained as OTAs as an additional skill identifier (ASI). The first group of students with the new qualifications entered the Army's OTA program in January of 1995.

This study was a first regarding the Army's OTA program. It is also one of few that have examined OTA students as opposed to OT students. From this study, it was determined that after the restructuring of the Army's OTA program, (a) students entering the program were significantly older and of higher rank, (b) attrition rates decreased significantly, and (c) students performed significantly better academically and clinically (level II fieldwork). Pass rates on the national certification examination could not be determined due to the nature of score reporting.

From the findings identified in this study, several recommendations were made. First, more accurate and complete records need to be kept, to include expanded demographic information on all students entering the Army's OTA educational program.

Second, military OTA students should be required to write the national certification examination. Third, military OTA students should be required to write the examination at the first offering for which they are eligible. Fourth, military OTA students should be required to report their national certification examination scores to the program instructor. Implementing the above recommendations would provide the means to collect valuable information which could be used in future studies. A final recommendation is that further research be conducted in this area in effort to enhance the knowledge regarding OTA student performance. The most significant benefit of future research would be to identify characteristics of students who typically perform poorly in the classroom, in the clinic, and on the national certification examination. Knowledge of these characteristics would help program directors to identify alternative teaching and/or counseling strategies needed to assist students to successfully complete the educational program.

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