To the Graduate Council:

I am submitting herewith a dissertation written by Cynthia W. Swafford entitled "The Presence of Anxiety in First Year Associate Degree Nursing Students and The Effectiveness of a Stress Management Program." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education with a major in Technological and Adult Education.

Gerald C. Cheek, Major Professor

We have read this dissertation and recommend its acceptance:

Accepted for the Council:

Associate Vice Chancellor and Dean of the Graduate School

The Presence of Anxiety in First Year Associate Degree Nursing Students and The Effectiveness of a Stress Management Program

A Dissertation

Presented for the

Doctor of Education

Degree

The University of Tennessee, Knoxville

Cynthia W. Swafford

May, 1992

Copyright by Cynthia W. Swafford, 1992
All rights reserved

ACKNOWLEDGEMENTS

I wish to express gratitude to Gerald Cheek, my committee chairman for his interest, support, encouragement, and friendship throughout my course of study. Expressions of thanks also are extended to Roger Haskell, Carroll Coakley, and Malcolm McInnis, the other members of my committee, for their assistance during this process. A special thank-you is extended to Tanya Purdie for her empathy and encouragement and to Herb Hooper for his statistical expertise.

Finally, a heartfelt thank-you is extended to my husband, Don; children, Scott and Don T; and mother, Virginia Wolcott who have kept the home fires burning while I pursued this educational endeavor.

ABSTRACT

The purposes of this study were to document and describe the presence of anxiety in an incoming class of associate degree nursing students and to determine the effects of a stress management program on anxiety reduction and promotion of success in the first semester of a nursing program.

The population was 122 first year nursing students at Chattanooga State Technical Community College in Fall 1990. Treatment (n = 58) and control (n = 64) groups were assigned based on a common schedule of nursing classes.

During the semester, the treatment group voluntarily attended weekly one hour stress management/anxiety reduction sessions. The program, modeled after stress inoculation training described by Meichenbaum (1985), was presented by the researcher. Students in the designated treatment group who attended at least six out of eight sessions comprised the experimental group (n = 20).

At the beginning of the semester, all students completed the State-Trait Anxiety Inventory (STAI) and provided demographic and descriptive information: age, race, gender, marital status, number of children, NLN Preadmission Test score, semester credit hour load, and hours of employment.

Following the final course examination, all students were asked to complete the STAI posttest. Student who

voluntarily withdrew prior to the end of the semester completed an exit interview with the researcher and the STAI.

The overall results of this study did not support the relationship between anxiety, an anxiety reduction intervention strategy, and attrition.

Finding 1. Mean state and trait anxiety of female nursing students were statistically different (state p =.05 and trait p =.00) from female students in the normative STAI population. Male nursing students showed a significant difference (p=.04) in trait anxiety.

Finding 2. Scholastic aptitude, as measured by the NLN Preadmission Test, was the only variable to demonstrate a significant relationship with anxiety level at the .05 level of significance. There was a -.187 correlation between NLN Preadmission Test score and state anxiety.

Finding 3. In determining the effectiveness of the stress management program, independent t-tests showed that the stress management program did not result in a significant difference in state (p = .35) or trait (p = .62) anxiety.

Finding 4. According to independent t-tests for difference, mean final nursing course grade for control (79.8) and experimental (82.7) groups were not significant at the .05 level of significance (p = .07).

Regarding attrition, there was no attrition in the experimental group, while eight out of 64 students (12.5

percent) in the control group either withdrew or failed. The Z-score for this difference was significant at the .05 level.

Finding 5. When comparing pre- and posttest state and trait anxiety levels for nursing course completers and noncompleters, the results of independent t-tests demonstrated no significant differences at the .05 level.

Finding 6. Independent t-tests for differences between the completers and noncompleters with respect to age, NLN Preadmission Test score, semester credit hours, and hours of employment also were not significant at the .05 level.

The stress management intervention did not decrease the anxiety level experienced by students enrolled in an associate degree nursing program. However, attrition for students who received the intervention was significantly different from the control group. It was concluded, therefore, that an intervention strategy could make a difference in the eventual success of students in the first nursing course. The resulting difference in attrition, however, could not be attributed to a significant reduction in anxiety.

It was further concluded that anxiety did not prove to be a significant variable. Reduction in anxiety was not evident, nor did a significant difference in anxiety level occur as a result of the stress management program. Therefore, students at risk of noncompletion could not be identified based on anxiety level.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Statement of the Problem	4
	Purpose of the Study	4
	Research Questions	4
	Null Hypotheses	5
	Delimitation	6
	Limitations	7
	Definition of Terms	7
	Organization of Study	9
II.	REVIEW OF THE LITERATURE	10
	College Attrition	11
	Attrition in Nursing Education	17
	Anxiety	24
	Effects of Anxiety on Academic Performance	27
	Anxiety Reduction	31
	Test Anxiety	33
	Test Anxiety Reduction	34
	Anxiety Tests	40
	Stress	41
	Stress Management	46
	Summary	49
III.	METHODOLOGY	52
	Population	52
	Research Design	53
	Instrumentation	54
	Procedures	56
IV.	FINDINGS	66
V.	ANALYSIS OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS	98
	Introduction	98
	Analysis and Interpretation of Findings	99
	Conclusions	107
	Recommendations	108
REFERENCES		111

CHAPTER PAGE

APPENDIXES 118

Appendix A. Student Information Form 119
Appendix B. Exit Interview Guide 120
Appendix C. Consent to Participate 121
Appendix D. Consent to Participate in Stress Management Program 122
Appendix E. Data Table 123

VITA. 126

LIST OF TABLES

TABLE		PAGE
1.	Summary of Demographic Variables for Total Class and Treatment and Control Groups	67
2.	Means and Standard Deviations for Total Class and t-test Values for Treatment and Control Groups for Age, NLN Preadmission Test Scores, Semester Credit Hours, and Employment Hours	70
3.	Chi Square Tests Comparing Gender, Race, Marital Status, and Number of Children for Treatment and Control Groups	72
4.	Means and Standard Deviations for Total Class and t-test Values for Pretest State and Trait Anxiety Inventories	74
5.	Means, Standard Deviations, and ANOVA Summaries for Age, NLN Preadmission Test Scores, Semester Credit Hours, Employment Hours, and Anxiety Inventories for Control, Nonexperimental, and Experimental Groups	76
6.	Means and Standard Deviations for Pretest State and Trait Anxiety Inventories	78
7.	Tests of Difference in State and Trait Anxiety Inventories Between Males and Females in Normative Population and Nursing Class at Chattanooga State	80
8.	Correlation Coefficient Between Pretest State and Trait Anxiety Inventories and Age, NLN Preadmission Test Scores, Semester Credit Hours, and Employment Hours	82
9.	Means, Standard Deviations, and t-test Values for Pretest State and Trait Anxiety Inventories for Gender, Race, and Number of Children	84
10.	One-Way Analysis of Variance to Determine Difference in State and Trait Anxiety Among Single, Married, and Divorced/ Widowed Students	85

TABLE PAGE

11. Means, Standard Deviations, and t-test Values for Posttest State and Trait Anxiety Inventories for Experimental and Control Groups 88

12. Means, Standard Deviations, and t-test Values for Final Nursing Course Grades for Experimental and Control Groups 90

13. Means, Standard Deviations, and t-test Values for Pre- and Posttest State and Trait Anxiety Inventories for Completers and Noncompleters 93

14. Means, Standard Deviations, and t-test Values For Age, NLN Preadmission Test Scores, Semester Credit Hours, and Employment Hours for Completers and Noncompleters 95

15. Chi Square Tests Comparing Gender, Race, Marital Status, and Number of Children for Completers and Noncompleters 96

CHAPTER I

INTRODUCTION

The nursing profession is currently in a state of crisis. The number of nurses available and seeking employment is not meeting the demands of the health care industry. Nursing education is responding to this need by attempting to increase the number of graduate nurses. Because of fiscal considerations, restrictions on student-teacher ratios, and limited clinical facilities, it is not always feasible to rely on increasing program size to increase the number of graduates. In many schools of nursing the focus is shifting from efforts to enlarge nursing programs to strategies to increase the retention of the students who are accepted and enroll in the programs. The National League for Nursing reported an 80 percent net retention rate in nursing programs across the country, with 83 percent net retention in public institutions and 79 percent net retention in the south (Rosenfeld, 1988). The 20 percent of the nursing school population that leaves school each year prior to graduation is a vital element in meeting the demand for nurses in the future.

The literature is abounded with research studies of college attrition, in general, and nursing programs, in

specific. A variety of variables were identified that caused or contributed to attrition and were the basis for efforts to predict or prevent attrition from occurring. Pantages and Creedon (1978) conducted a meta-analysis of college attrition from 1950-1975. Academic performance proved to be one of the most significant single predictors of attrition, accounting for at least 50 percent of the dropouts. Additionally, once in school, low grades at the end of the first semester were accurate predictors of withdrawal. Knopke (1979) focused on nursing student attrition and identified a 19 percent attrition rate. But of more interest was that 13 percent of the attrition occurred by the end of the first year. Therefore, if one looked at the number of students who dropped out during the first year of nursing study and the relationship between academic performance and attrition, the importance of success in the first semester of the nursing program becomes vital to student retention.

General anxiety is defined as a phenomenological, physiological, and behavioral response that may accompany any event in which the individual perceives that he/she may be unable to deal easily and satisfactorily (McKeachie, 1977). It can result from a multitude of sources, both known and unknown. Recognized sources of anxiety for college students included such things as adjustment to the college environment, test anxiety, and time pressures, to mention only a few. Nursing education, in and of itself, was

characterized by additional sources of anxiety. Rosburg (1989), in comparing anxiety levels of entering nursing students with students in fire and police science and the general student population, found that nursing students had the highest level of anxiety. Other studies identified nursing student stressors to include career choice doubts, fear of clinical inadequacies, and inability to meet demands of the nursing program and the profession.

According to Tobias (1979), there was a substantial body of knowledge linking high anxiety with the ability of students to profit from instruction. Research studies showed that 20 percent of students characterized as highly anxious dropped out of school because of academic reasons. Gaudry and Spielberger (1971) concluded that general anxiety was associated with decreased achievement in all academic levels. Anxious students were preoccupied with worry about themselves and their performance, thus diverting attention from learning the tasks at hand. Therefore, if one looked at the fact that anxiety was inherent to nursing students and that anxiety was a deterrent to academic success, a reduction in anxiety level could increase academic success and, consequently, decrease the rate of attrition from a nursing program.

Statement of the Problem

In order to meet the need for registered nurses in a time of critical shortage, nursing programs are being called upon to increase the number of qualified licensed practitioners. Since most nursing programs experience a minimum net loss of 20 percent of the incoming student body, a major focus of attempts to increase program productivity lies in the retention of students enrolled in a nursing program. Identification of causes of attrition and development of appropriate intervention strategies to counteract the causes are of prime importance.

Purpose of the Study

The purposes of this study were twofold. The first purpose of the study was to document and describe the presence of anxiety in an incoming class of associate degree nursing students and, secondly, determine the effects of a stress management program in anxiety reduction and promotion of success in the first semester of a nursing program.

Research Questions

This study sought to answer the following research questions:

1. What was the anxiety level experienced by an incoming class of first year nursing students in a two year associate degree nursing program?

2. Was there a relationship between the level of anxiety experienced by students at the beginning of the first semester in a nursing program and demographic variables, including: gender, race, marital status, number of children, age, scholastic aptitude, course load, and employment status?

3. Was there a difference in the level of anxiety experienced by students who participated in a structured stress management program during the first semester in a nursing program and those who did not?

4. Was there a difference in academic performance and attrition at the end of the first nursing course for a group of students who participated in a structured stress management program and those who did not?

5. Was there a difference between the anxiety level of students who successfully completed and those who did not successfully complete the first nursing course?

6. Were there differences in demographic variables between students who successfully completed and those who did not successfully complete the first nursing course?

Null Hypotheses

The null hypotheses of this study were:

1. The level of anxiety of an incoming class of associate degree nursing students was not significantly different from the norm referenced group of college students used to validate the State Trait Anxiety Inventory.

2. The level of anxiety in an incoming class of nursing students was not related to age, scholastic aptitude, semester credit hour load, employment status, gender, race, marital status, or number of children.

3. At the end of the first nursing course, the anxiety level of students who participated in a structured stress management program was not significantly different from students who did not participate in the program.

4. Academic performance and attrition for students who participated a structured stress management program was not significantly different from students who did not participate in the program.

5. Anxiety level of students who successfully completed the first nursing course was not significantly different from students who did not successfully complete the course.

6. Demographic data characteristics for students who successfully completed the first nursing course were not significantly different from those who did not successfully complete the first nursing course.

Delimitations

This study was delimited by the following:

1. The data were obtained from two sections of one class of nursing students in the first semester of a two year associate degree nursing program at Chattanooga State Technical Community College. This population was not

necessarily representative of other populations of nursing students.

2. The treatment and control groups were designated by the researcher based on a convenient time slot for the stress management program.

3. The study used a structured stress management program developed and presented by the researcher. The program was modeled after Stress Inoculation Training as described by Meichenbaum (1985).

Limitations

The design of this study was not without weaknesses. The following limitations were identified:

1. The assignment of students into treatment groups was based on a pre-selected class schedule during the college preregistration process for the fall semester.

2. Participation in the treatment program was voluntary. Not all students in the designated treatment group chose to attend all treatment sessions.

Definition of Terms

Academic Performance. Student performance on theory and clinical performance evaluation measures during the first nursing course. This was represented by the numeric final course grade derived from the numeric average of five unit

tests, a final examination, and a ten-point check-off on a clinical laboratory skill.

Attrition. Decrease in the number of students enrolled in the nursing course from the first to the last day of the fall semester. Attrition rate was calculated by dividing the number of students who did not successfully complete the nursing course by the total number of enrolled students.

Course Load. Number of semester credit hours for which a student was enrolled during the Fall, 1990 semester.

Employment Status. Number of hours per week that the student was employed at the beginning of the Fall, 1990 semester. The average of the number of hours worked each week was used for students who reported a range of hours.

Experimental Group. The 20 students in the group designated as the treatment group at the beginning of the study who attended at least six out of eight stress management treatment sessions. The experimental group was compared with the control group in statistical tests to determine the effectiveness of the stress management intervention.

Scholastic Aptitude. Score that a student received on the National League for Nursing (NLN) Pre-Admission Examination. This test, required of all nursing program applicants, was used in the selection process for a new class. The test included reading comprehension, vocabulary, science, and math subsections.

Treatment Group. The 58 students in the nursing class who were designated as the treatment group at the beginning of the study. Out of this group, 20 students completed six out of eight stress management treatment sessions and comprised the experimental group.

Organization of the Study.

Chapter I provided an introduction, statement of the problem, purpose and significance of the study, and research questions addressed. Included were null hypotheses, limitations, delimitations, and a list of definitions applicable to the study.

Chapter II presents a review of the related literature. Specific areas of concentration include attrition, anxiety, stress, and stress management.

Chapter III describes the methodology utilized in the study. Also included in this section are the definition of the population, research design, instrumentation, and procedures for the study.

Chapter IV reports the findings of the study. Data are presented as they relate to each of the null hypotheses.

Chapter V presents an analysis and interpretation of the findings as they relate to each of the research questions. Conclusions and recommendations are also included in this section.

CHAPTER II

REVIEW OF THE LITERATURE

Overview

The review of the literature concentrated on four broad areas: attrition, anxiety, stress, and stress management. Because the overall purpose of the study was to identify a method to decrease attrition from a nursing program, attrition was the first major focus of the literature review.

The literature was replete with studies of attrition in all types of institutions of higher learning. Research studies of general college student attrition served as the background for a closer investigation of studies specifically related to attrition from nursing programs. This information not only provided justification of the need for this study, but also identified causes of withdrawal prior to program completion.

The second major focus of the literature review was anxiety. The concept of anxiety was presented as a broad, general concept with particular emphasis on the work of Spielberger that differentiated between state and trait anxiety and Sarason's study of test anxiety. A variety of studies focusing on the relationship between anxiety and academic performance helped form the theoretical base for

this study. Specific causes of anxiety were identified with a particular emphasis on trait and state anxiety, as defined by Spielberger (1971). Information concerning the State and Trait Anxiety Inventory (STAI) was presented as justification for the selection of this instrument as the dependent measure of anxiety level. A variety of methods to reduce anxiety were identified and the results compared. Particular emphasis was placed on cognitive procedures to modify anxiety, such as stress inoculation training.

Stress and stress management formed the basis for the final concentration in the review of literature. This included information concerning the concept of stress and its relationship to anxiety, general academic achievement, and nursing education. Finally, concepts and principles of stress management were discussed. Research studies that utilized a variety of techniques to decrease stress level were compared. This information formed the basis for the development of the stress management/anxiety reduction program implemented in this study.

College Attrition

Pantages and Creedon (1978) reported that for every ten college students who entered college in the United States, only four graduated from that college four years later. Of the remaining six students who withdrew, three did so during the first year, two during the second year, and the remaining

one after the second year. Three of the withdrawing students eventually graduated from college, while the remaining three never obtained a college degree. These statistics were used as the underlying rationale for a meta-analysis of studies conducted from 1950 - 1975 which attempted to identify causative factors that contributed to attrition. The premise of the study was that a compilation of findings of studies over a 25 year time span would provide more useful information than that reported in individual research studies, most of which were limited to a five year time period. The study focused on demographic variables, such as, age and gender; non-intellectual factors, such as personality differences, socioeconomic factors, and financial factors; academic factors, such as grade point average, scholastic aptitude, first semester grades, and study habits; financial responsibilities; and student reported reasons for withdrawal.

In relation to demographic data, Pantages and Creedon (1978) reported that although age was not a crucial variable in many attrition studies, the rate of attrition due to age was higher for students who were younger or older than the average age of the entering college student. Additionally, there was evidence to support the notion that older freshmen students were less likely to graduate than freshmen of the usual entering age college student. Most studies found

little or no difference in attrition due to gender or socioeconomic status.

Pantages and Creedon (1978) concluded that academic performance was the most significant single predictor of attrition. The evidence suggested that this factor accounted for half of the variance between persisters and those who dropped out. High school grade point average (GPA), high school rank in class, and scholastic aptitude measures were the best academic predictors of attrition. Although poor grades were not sufficient to cause attrition, there was a high correlation between attrition and grades, particularly during the first semester. One study included in the survey by Pantages and Creedon reported that students who did well on the first examination, generally did better throughout their college career. Students who did not perform well initially did not perform either better or worse on the next examination. In general, poor grades were better predictors of attrition than good grades were of retention. Motivation and personality factors were found to be useful as guidelines for attrition prevention and counseling, but not good predictors of attrition. Financial aid had an equally indifferent effect on attrition. Of the reasons reported by students for early departure, academic matters (poor grades and dissatisfaction with the curriculum), financial difficulties, motivation problems, personal considerations (emotional problems and difficulty "adjusting to college

life"), and personal/family problems were the most frequent responses. Females dropped out more frequently for personal reasons, while males left for curricular reasons. Again, academic performance played a prominent role in the perceived reason for non-completion.

The primary purpose of the study by Pantages and Creedon (1978) was to identify causes of attrition in order to suggest intervention strategies to reduce dropout rates. The following recommendations to decrease attrition were made: (a) measures to decrease attrition should focus on the freshmen students, (b) more comprehensive orientation programs should be instituted, (c) additional student counseling services were needed, and (d) group and individual counseling in study habits, time management, and self-control activities should be initiated.

Two studies included in the analysis by Pantages and Creedon (1978) were of particular interest for this study since they focused on academic performance during the first semester in college and the relationship between success or failure in college and non-cognitive psychological variables.

Rose and Elton (1966), using two personality inventories, evaluated personality differences between students who withdrew from college within the first semester, students who persisted successfully through one year, students who persisted unsuccessfully through one year, and students who persisted successfully but voluntarily withdrew

in the second year. A multiple discriminate analysis revealed that personality characteristics were significantly different between types of persisters, between types of withdrawals, and between withdrawals and persisters. Significant personality variables included anxiety, dependence, hostility, and social introversion. For the present study, it was of particular interest to note that students who persisted with low grades were significantly less anxious than those who defaulted (voluntarily withdrew within the semester), dropped out, or continued in good academic standing.

In a similar study, Rose (1965) assessed psychological variables associated with withdrawal-within-semester freshmen students (defaulter). A total of 60 potential defaulters was identified based on psychological inventories. One-half of the population was exposed to individual counseling sessions over a twelve week period; the other group (30) received no counseling. Five students defaulted in the control group; there were no defaulters in the counseled group. It was also of interest to note that high anxiety, intolerance for conformity, and social introversion differentiated defaulters from persisters. Thus, not only was high anxiety related to student withdrawal, but counseling was found to be a significant deterrent to withdrawals within the semester.

In a more recent study, Lonabocker (1982) conducted an attrition study of students who withdrew from Boston College

during the 1977-78 school year. She concluded that selected reasons for leaving the institution were cited by the entire group, and the same variables continued to emerge when various subgroups were compared. With few exceptions, financial concerns and personal problems received the highest ratings. When the population was broken down into groups based on academic performance (groups with grade point averages above and below 3.0), significant differences were found for the group with a low grade point average and a stated need for a break, lack of motivation, job/study conflict, and illness. Students with high GPA's were more likely to leave due to academic issues and financial reasons. One other subgroup that had a direct bearing on this study was with respect to the selected major of the individual. Liberal arts students were more likely to drop out than their counterparts in professional schools. The most frequently cited reason for withdrawal was that the desired major or courses were not available. This difference was expected since students in a career or professional program would have selected a college that provided the desired career program. Therefore, professional school students were more likely to leave, not because of curricular concerns, but due to personal problems, lack of motivation, and low grades. Because of the reasons for withdrawal most frequently mentioned, Lonabocker concluded that a critical agenda that could not be ignored in working with new college students was

adequate counseling and advising to help the students cope with the stresses of college life.

From these studies, it was concluded that there was a documented high rate of attrition from the population of general college students. Many factors were identified that contributed to early departure from school. Although age, financial difficulties, and personal problems, to mention only a few, were found to contribute to attrition, the most significant variable was academic performance. The next question to be addressed was - how did the picture of general college attrition compare with attrition from nursing programs?

Attrition in Nursing Education

The National League for Nursing (NLN) gathers data annually from nursing programs in the United States. Rosenfeld (1988) reported on a comprehensive study of net attrition from nursing education program using NLN data from 87 percent of the 1,280 nursing programs during the 1985-1986 school year. On a national level, associate degree nursing programs registered net retention rates in the low 80 percent range (83.6 percent for public and 81.8 percent for private institutions). Among the public institutions, in which the vast majority of associate degree programs reside, the net retention rates were: 87 percent for the Midwest, 83 percent for the North Atlantic, and 79 percent for the South. It

should be noted that net retention was not the same as attrition. Net retention rates included a net balance of those individuals who dropped out and those who transferred into or reentered a nursing program. Therefore in most programs, if the net retention rate was 80 percent, the actual attrition rate from the original class enrollment would have been considerably higher that that expressed in the net rate.

According to Rosenfeld (1988), the number of students who entered nursing education and did not graduate was approximately 20 percent. If causes of attrition were identified, measures to counteract the causes would increase the number of students who successfully complete the program, thus increasing the productivity of nursing educational programs. The National League for Nursing data reported by Rosenfeld also included a summary of the most frequent causes of dropouts as identified by deans and directors of the nursing programs. The top four causes were: (a) student having difficulty meeting course requirements, (b) personal problems and family obligations, (c) financial responsibilities, and (d) inability to find jobs. Again, academic performance topped the list. Rosenfeld recommended that students in nursing programs needed academic and emotional support in order to help them complete nursing educational programs.

Knopke (1979), in a six year longitudinal study of attrition in a baccalaureate nursing program at the University of Wisconsin, compared the level of achievement, learning style, and psychological variables of those who continued with those who dropped out of the nursing program. He found that 20 percent of the students dropped out of the nursing program sometime during the program of study. Of the 20 percent of the students lost, 7 percent left by the end of the first semester and 13 percent left by the end of the first year. The major reasons for leaving the program, as identified by the students, included career change, difficulty in basic science courses, inability to work with the sick, difficulty in adjusting to school, and grade point average. It was of particular interest that grade point average significantly differentiated those who dropped out from those who persisted in the first semester. Significant psychological variables included need for order, dominance, and aggression.

In the first of two studies at Emory University School of Nursing, Hutcheson, Garland, and Prather (1973) attempted to identify causes of attrition in a baccalaureate nursing program. Assuming that attrition was attributable, at least in part, to unmet needs of the student, the problem of this study was to identify unmet needs of the potential dropout and design practices to meet those needs. The first study used a correlation matrix to compare a multitude of personal,

socioeconomic and background data, academic aptitude, and achievement. The five factors identified that accounted for 50 percent of the variance were nursing school performance, scholastic aptitude, demographic characteristics, scholastic achievement, and socioeconomic status. Because sample size was only 50 subjects, the conclusions were suggestive, not conclusive. There were no significant differences between demographic characteristics, socioeconomic status, and scholastic achievement. However, educational performance in nursing school and scholastic aptitude were strongly related, but not inferential. A strong correlation was evident between low clinical evaluation and dropout.

In the 1973 Emory pilot study, academic performance and demographic characteristics, while related to attrition, did not demonstrate significant differences to explain the number of dropouts. An attempt was then made to identify attitudinal orientations that might be used as indicators of attrition. To do this, demographic data and academic performance, plus attitudinal data from 261 students enrolled at Emory University School of Nursing were studied by Hutcheson, Garland and Lowe (1979). Of the 261 students included in the four year study, 20 percent (52) did not complete the program. Although the researchers did not find a relationship between attitude and attrition, they did find a significant difference between attrition and the first semester performance measures, specifically grade point

average, and, to a lesser extent, age. They also found that greater family responsibility, as represented by spouse and number of children, affected grades negatively and resulted in a significant increase in the rate of attrition. This contributed to a higher probability that older students would not complete the program with their original class.

Raderman and Allen (1974) compared selected characteristics of registered nurse students in baccalaureate programs who did and did not obtain a degree. Of the 97 students included in the population, the attrition rate was 34 percent. Of the 15 variables studied, there was not a significant difference due to age, number of children, ages of children, sex, race, marital status, or employment while in school. There was a significant difference when the grade point average of the successful and unsuccessful groups was compared. The median GPA of the successful group was 3.17 and the unsuccessful, 2.8. Again, academic performance was directly related to success in the nursing program.

Given the assumption that students in nursing programs have specific educational and occupational goals, Warnecke (1973) examined the relationship between patterns of attrition at the end of the first year in a four year nursing program and non-intellectual factors. Surprisingly, the major non-intellectual factor contributing to attrition was lack of intrinsic commitment to the role of the nurse. In fact, non-intellectual factors were better able to

differentiate between dropouts and non-dropouts than ability, as measured by achievement test scores prior to admission. Warnecke concluded that social factors needed to be given greater consideration when formulating a scheme to explain and reduce attrition.

Another study of nursing program attrition also focused on non-intellectual factors related to attrition. Murray (1983) identified characteristics of the nursing profession that influenced a decision of nursing students to leave the program of study prior to completion. Specific social-psychological factors included in the study were: financial difficulties, shift work, and the stress of patient care. In a survey of 246 nursing students, it was interesting to note that Murray found that 13 percent of the students enrolled in the nursing program definitely planned to leave nursing, 54 percent were unsure, and only 22 percent thought they definitely would not leave nursing. Of the first year nursing students 6 percent already indicated an intention of leaving the profession, while 79 percent stated they might leave.

Marshall (1989) described a study of attrition that compared the social networks of students who left associate degree nursing programs with those who remained. She found that of the demographic variables, age showed the greatest difference between those who left (mean age, 33.5) and those who remained (mean age, 27.8). Gender and employment were

not significant factors in attrition. Those students who remained also had significantly more relationships with a network of individuals who had an impact on the students' lives and received more instances of reported emotional, informational, and tangible support than did dropout students. Dropouts reported more emotional turmoil, although not at a significant level. Support from family, peers, and, to a lesser extent, nursing faculty were important to success in the nursing program.

In a similar focus, Brown (1987) looked at the question of support and attrition from a preventative point of view. This study attempted to reduce attrition due to academic failure in a baccalaureate program by use of a support group. The treatment group received weekly group sessions that provided a forum for discussion of student concerns. Specific concerns that were discussed related to course content and interpersonal problems with instructors. Course content concerns were addressed by providing information about study skills and relaxation techniques to reduce anxiety levels and conducting study sessions. Interpersonal problems with instructors were allowed to be aired without judgement. Problem solving behaviors were encouraged. None of the students who participated in the treatment groups ($n = 9$) failed the nursing course, whereas, seven of the 15 students in the control group failed the course. The performance differences continued during the next two

semesters. Although the number of subjects in the study was very small, the effectiveness of the support group intervention was evident.

Based on the studies of attrition, there was a documented relationship between academic performance and attrition. The next question was - What factors interfered with academic performance? One such factor was anxiety.

Anxiety

Anxiety, according to Sinclair (1971), was a hypothetical construct that mediated between certain situational stimuli and various specified responses. The stimulus situation which evoked an anxiety reaction was assumed to be one that the individual perceived of as a strong threat to self-esteem. Similarly, McKeachie (1977) defined anxiety as a set of phenomenological, physiological, and behavioral responses that accompanied any event in which the individual perceived that he/she might be unable to deal easily or satisfactorily. The event was associated with concerns over possible failure. In the educational setting, this frequently involved performance in a testing or similar evaluative situation.

In studies that focused on the effects of anxiety on academic performance, Spielberger (1971) described anxiety in terms of a series of events. When an evaluation situation arose, this was perceived by the individual. Depending upon

the nature of the evaluation situation and the individual's prior experience, he/she could perceive it as dangerous due to the perception of possible inadequate performance or the loss of self-esteem that could result from a failure. If the individual regarded the situation as dangerous, an anxiety state reaction occurred. This reaction was a complex response that involved physiological responses and a conscious preoccupation with the stressor and the responses to it. Manifestations of this response included feelings of distress, helplessness, worry about inability to do well, self-deprecation, and shame. Following the anxiety response, there was a cognitive reappraisal of the stressful condition to try to find a way to deal with it. This took the form of a constructive coping mechanism to alleviate the stress, a defense mechanism, or avoidance behavior that afforded the individual an escape from the anxious situation. Finally, the coping, defense or avoidance reaction was implemented. Applying this to the educational setting, the individual would seek a way to solve the problem effectively and do well in school; deny his/her feelings of anxiety, blindly blunder through the task, and not do well academically; or avoid the problem and leave the setting entirely by dropping out or withdrawing from the situation that posed the stress.

The state-trait anxiety theory, as proposed by Spielberger (1971), was the basis for this research project. According to this theory there were two distinct types of

anxiety, trait anxiety (A-trait) and state anxiety (A-state). A-state was a transitory, emotional state or condition that was characterized by subjective, conscious, perceived feelings of tension and apprehension and heightened autonomic nervous system activity. A-state varied in intensity and fluctuated over time. A-trait referred to a relatively stable individual difference of anxiety proneness that differentiated between the tendency to respond to a situation perceived as threatening with elevations in A-state intensity. According to the theory, an individual who perceived a particular situation as threatening (stress) responded with an increased level of A-state. The intensity and duration of the A-state reaction was determined by amount of threat and persistence of the appraisal of the stressful situation as a threat. For an individual with high levels of A-trait, a situation that imposed a direct or implied threat to self-esteem resulted in a greater intensity and longer duration of an anxiety state reaction than occurred for an individual with low anxiety trait.

Main assumption of the theory were:

1. For all situations appraised by the individual as threatening, an A-state reaction is evoked.

2. Individuals with increased A-trait perceive situations or circumstances that involve failure or threat to self-esteem as more of a threat than a person with low A-trait.

3. The intensity of an A-state reaction is proportional to the amount of threat posed to the individual.

4. The duration of an A-state reaction depends on the persistence of the interpretation of the situation as threatening.

5. Higher A-state is experienced as unpleasant.

6. Increased A-state has drive properties which may be expressed directly in behavior.

7. Stressful situations that are encountered frequently may cause an individual to develop coping responses.

This theory was the basis of many research studies that focused on the relationship between anxiety and academic performance.

Effects of Anxiety on Academic Performance

Tobias (1979) described anxiety as an affective state. Since most learning was a cognitively mediated process, anxiety affected learning only indirectly by impacting on cognitive processes at various stages. Tobias continued to describe learning in terms of the three classical information processing components: input, processing, and output. Input involved the presentation of instructional material to students. Processing encompassed the operations used to register, record, organize, store, and retrieve instructional input. Output denoted the measurement of achievement of the instructional objective. He took these components and

developed a model that described the effects of anxiety on learning from instruction. According to this model, anxiety potentially influenced the learning at three possible points: preprocessing; during and after processing; and prior to output.

In the preprocessing period, the interference of anxiety was related to the degree to which input information was internally represented. The anxious student tended to divide his/her attention between task demand and a preoccupation with somatic concerns and negative self-references. The diversion of attention in the anxious learner interfered with the process of making nominal input into effective stimuli. Since the information was not internally represented, it would not be effectively processed. In the processing stage, anxiety directly affected the cognitive operations needed to process input information. Modifications that dealt with level of difficulty of the material, memory, and organization of the task had direct relevance to these processes. Finally, the postprocessing effects of anxiety represented interference in retrieving content at a later time. This phase of interference has been the subject of numerous research studies that focused specifically on test anxiety, its effects on academic achievement, and the effectiveness of efforts to reduce test anxiety using an anxiety reduction program.

Spielberger (1971) studied anxiety and dropouts due to academic failure in male students at Duke University. After determining initial levels of anxiety and categorizing students as high and low anxiety, Spielberger compared academic performance and dropout rates for the two groups. He found that eight of the 138 subjects in the low anxiety group dropped out, compared with 26 of the 129 in the high anxiety group. Academic performance was related to most of the dropouts. He concluded that at the college level, the evidence demonstrated that anxiety tended to be associated with lower grades and higher dropout rates.

Wrightman (1962) administered an intelligence test to 234 freshmen at Peabody College. The Manifest Anxiety Scale was administered prior to the test session. One-half of the subjects were given instruction designed to emphasize the importance of the test and its effect on their college career and thus elevate their anxiety level. The instructions to the control group were designed to stress the lack of importance of the test. Subjects in the low anxiety group showed no significant difference in performance on the IQ test, no matter which directions were given. High anxiety subjects performed significantly poorer on the IQ test than did low anxiety subjects. In addition, high anxiety subjects with the stressful instructions performed one standard deviation unit lower on the IQ test than did high anxiety subjects with the nonstressful instructions. Wrightman

concluded that anxiety was unrelated to performance if a test was of little importance. But when personally important, anxiety interfered with performance.

Bradshaw and Gaudry (1971) focused on junior and senior high school students in a study to determine the effect of success/failure on test anxiety level. In this study, students were classified according to gender, socioeconomic status, and English attainment. They were then assigned to a group that either took an easy English test designed to provide good grades and evoke a feeling of success or a difficult test designed to produce failing grades and engender a sense of failure. The anxiety level of the students following the test was then measured using the Test Anxiety Scale (TAS). Bradshaw and Gaudry found that those who failed the test scored significantly higher on the Test Anxiety Scale than did the successful group. In relation to the other variables under investigation, the researchers found that female students and students with lower initial abilities scored significantly higher on the TAS than did male and higher functioning students. This study provided evidence that academic performance was affected by anxiety level and that there were different responses to stress based on gender and scholastic ability.

Anxiety Reduction

According to Tobias (1979), there was a self-control, anxiety reduction continuum that included: applied relaxation techniques, self-control training techniques, and cognitive techniques. The purpose of applied relaxation was to bring the relaxation response under voluntary control and apply it in stressful situations. This provided students with an effective means for coping with anxiety. Self-control training techniques consisted of relaxation training plus guided rehearsal. Utilizing the technique, students were encouraged to actively confront a stressful stimulus during the training program and initiate previously learned self-control coping skills. Cognitive coping techniques added a cognitive component to the self-control procedures. Students were taught that the beliefs they held in most situations affected emotional reactions, especially the beliefs about themselves as expressed in negative self-references that occurred in stressful situations. Students were then assisted to develop more positive self-statements in order to reduce anxiety in stressful situations.

Allen, as reported by Tobias (1979), reviewed 49 studies describing anxiety reduction programs. He found that in 58 percent of the investigations, the treated groups showed greater improvements than the untreated groups on self-report measures of anxiety. In no instance did untreated students report greater improvement on self-report measures that

treated students. In terms of improvement on cognitive performance indices, such as test scores and grades, 50 percent of the studies showed approximately equal performance outcomes for the treated and untreated students. In a comparison of anxiety reduction treatments, 77 percent of the studies reported that students who underwent progressive desensitization improved to a greater extent than untreated control groups. However, in only 11 percent of the studies was the performance of the treated groups superior on cognitive indices.

In a similar review of the results of 20 anxiety reduction studies, Tobias (1979) reported that Denney found that in all but two studies there was evidence of a significant reduction in anxiety as determined by self-report measures. Furthermore, 54 percent of 15 studies that used performance measures demonstrated significant improvement in the treated as compared to the untreated group. In a comparison of the three techniques, relaxation techniques provided evidence of improvement in performance in 33 percent of the studies, self-control training techniques resulted in improved performance in 50 percent of the studies, while 71 percent of the studies using cognitive coping techniques demonstrated improvement in measures of performance performance.

Test Anxiety

In a major review of literature on test anxiety, Wine (1971) concluded that the high test anxious individual typically performed more poorly on tests than did the low test anxious individual, especially when there were stressful, evaluative conditions related to the administration of the test. The primary reason for the difference in performance, according Wine, was a difference in the attentional focus of high and low test-anxious individuals during the evaluative period. The energy of high test anxious individual was intentionally focused on self-evaluative, self-deprecative thinking and the related autonomic nervous system responses. Since attention was divided between the task at hand and anxious behavior, individuals could not perform adequately while dividing their attention between the two tasks. The non-constructive activities included worries about performance, worries about how others might do, mulling over choices, and repetitive behaviors.

Sarason (1960) and Wine (1971) cited evidence that high test-anxious individuals were more self-preoccupied and self-dissatisfied than low test-anxious individuals. High test-anxious people responded more positively to reassurance and were more responsive than low-anxious people to reinforcement when the responses being reinforced were negative. When confronted with an evaluative situation, the high test-

anxious individual emitted self-oriented, negative responses which caused time to seem to pass more slowly and interfered with the task at hand. Wine further suggested that high test anxious subject performance might be improved by direct attention to task relevant variables and away from self-evaluative ruminations.

Applying this theory in a research setting, Sarason (1962) studied 738 college students at the University of Washington. He correlated 13 intellectual measures with six different personality scales. The results showed that test anxiety was the only personality variable that consistently related to academic performance measures and achievement. All 13 of the correlations between intellectual measures and test anxiety were negative and 11 of 13 were statistically significant. Sarason concluded that test anxiety interfered with performance on school tests or "test-like" situations. The greater test-like characteristics of the task, a higher anxiety level was manifested which, in turn, interfered with performance. Conversely, the less test-like characteristics of a task, a lower anxiety level was anticipated.

Test Anxiety Reduction

Tryon (1980) conducted a representative, but not exhaustive, review of 85 studies dealing with behavioral and cognitive treatments of test anxiety. Systematic desensitization was the most widely used behavioral technique

for treatment of test anxiety. Desensitization participants were told not to terminate a scheme when anxious, but to use anxiety as a cue to relax. Most of the 41 studies that reported using systematic desensitization procedures demonstrated a decrease in pre- and posttest, self-reported test anxiety and/or a decrease in self-reported test anxiety for treatment compared to no treatment groups. However, systematic desensitization resulted in significant academic improvement in only seven of 17 studies. Because of multiple methodological problems, the need for trained therapists, and the emphasis on emotionality instead of the worry component of test anxiety, Tryon discouraged future experimentation using this technique.

A second method of treatment consisted of self-controlled relaxation and desensitization. These methods usually combined a coping component with a standard behavioral technique, such as relaxation or desensitization. Relaxation, as a general skill for coping with anxiety, has received more attention as a means to cope with test anxiety. Individuals treated with this technique were taught to relax at times when they would otherwise be anxious. Desensitization with self-control instructions also has been used to treat test anxiety. In Tryon's review, all of the 17 studies that used self-control procedures, such as relaxation and desensitization with self-control instructions, all found these procedures to be effective in the reduction of self-

reported test anxiety. Participants in four of five studies measuring changes in academic performance showed a significant increase in grades following self-control intervention activities.

The third general category of procedures reviewed by Tryon (1980) included cognitive procedures that helped the individual learn to focus on the task at hand rather than attend to interfering self-oriented responses. This strategy was felt to cope with the worry aspect of anxiety. An example of this type of procedure was the cognitive modification procedure described by Meichenbaum (1972). In this procedure, participants were made aware of anxiety-producing thoughts and were instructed to substitute thoughts and behaviors that would redirect attention to the task at hand. Related procedures included in this category were stress inoculation, systematic rational restructuring, and retentional behavior therapy. Tryon found that when cognitive treatments were used, there was a significant reduction in self-reported test anxiety. Two of four studies that used cognitive procedures also reported a significant improvement in academic performance.

Because of the effectiveness of cognitive modification in treating test anxiety, the work of Meichenbaum (1972) was important. In a classic example of research that focused on test anxiety reduction using cognitive modification, he compared the effects of a cognitive modification treatment

program with a classic systematic desensitization strategy. The experimental treatment contained two components. The first component attempted to make test anxious subjects aware of thoughts, self-verbalizations, and self-instructions emitted prior to and during test situations that contributed to poor performance. Through discussion, the subjects became aware of these thoughts as cues which signified anxiety and task irrelevant behavior. This self-awareness was the first step in anxiety reduction. The subjects were then required to visualize themselves becoming anxious and tense; then visualize themselves handling and coping with the anxiety by slow deep breathing and positive self-instructions to attend to the task at hand. This process was called coping imagery. Thus the experimental treatment combined an insight orientation which fostered an awareness of anxiety engendering thoughts with a modified desensitization procedure in which relaxation, task-relevant self-instruction, and coping imagery were used to handle anxiety. In Meichenbaum's study, the effectiveness of this treatment strategy was compared to a standard desensitization treatment and a wait list control group. Dependent variables included self-report anxiety measures and grade point average. The results indicated that the cognitive modification group produced the most marked improvement, although not significantly different from the systematic desensitization group. Of the performance measures, grade point average

showed the most significant performance improvement. The wait list control group showed significantly less improvement than did the two treatment groups in grade point average. Thus, either treatment was significantly better than none at all. The data further suggested that cognitive modification was responsible for the change from pre- to post-treatment assessment.

In a study of the effects of different types of interventions on test anxiety, similar to those of Tryon and Meichenbaum, Hussian and Lawrence (1978) obtained similar results. Based on previous research that suggested the superiority of cognitive modification in treating test anxiety, Hussian and Lawrence compared the effects of a general versus specific type of stress inoculation training on the results of the Test Anxiety Scale and State-Trait Anxiety Inventory. Again, a modification of the Meichenbaum stress inoculation training program was used. Each treatment group received similar sessions involving education, rehearsal, and application phases. The major difference was the suggested statements for one treatment group were general and related to general stress, whereas, the other group received test-specific stress inoculation training to relieve test anxiety. The control groups received non-specific discussion or were placed on a wait list. Using a multivariate analysis, significant differences among the four groups were found. The test-specific inoculation treatment

was significantly different from the control groups. There was no difference between the test-specific and general inoculation treatment group or between the control groups.

Anton (1976) recognized the consistent effectiveness of systematic desensitization for relief of test anxiety. But the evidence regarding the effects of test anxiety desensitization on academic performance was less clear. Therefore, he designed a study to compare the effectiveness of desensitization, group counseling, and no treatment on test anxiety, trait anxiety, and academic achievement. The desensitization group initially received relaxation training, followed by a desensitization process using descriptive scenes from the test anxiety hierarchy. The counseling group received an equal number of sessions that focused on test anxiety, abilities, and feelings. The Test Anxiety Scale (TAS), STAI A-trait, and term grades were obtained before and after the treatment procedure. The desensitization group showed a significant decrease in the TAS scores compared with the counseling and no-treatment groups. There was no significant difference between the discussion group and the no-treatment group. A-trait and GPA did not show significant differences, suggesting that grades and A-trait were not influenced by the experimental treatment. One recommendation identified by Anton was to determine the effectiveness of a treatment program designed to reduce anxiety in test situations and improve student study skills.

In a follow-up study to Anton (1976), Bedell (1976) utilized a similar treatment procedure to examine the role of high and low outcome suggestions on treatment effectiveness. In this study, there were two desensitization groups and two relaxation groups. One of each group received either instructions designed to develop an expectancy of treatment success or instructions designed for neutral treatment outcome. As expected, there was a significant reduction in test anxiety for all treatment groups, as compared with the no treatment control group. The reduction was comparable for all four experimental groups, indicating no effect due to outcome suggestion. Again, significant differences in A-trait scores and academic performance were not found.

The result of these studies suggested that there were effective methods to decrease anxiety. In many studies any type of treatment was significantly better than no treatment at all. One successful and easy to implement procedure was a modified stress inoculation procedure.

Anxiety Tests

The State-Trait Anxiety Inventory (STAI) was developed by Spielberger (1983) to evaluate the distinction between the transitory condition of perceived anxiety (state anxiety or A-state) and a relatively stable condition of anxiety proneness (trait anxiety or A-trait). The test consisted of 40 brief items; 20 to assess A-state with questions such as,

"How do you feel right now, that is, at this moment?" and 20 to assess A-trait, such as, "How do you generally feel?" Separate A-state and A-trait scores were obtained. Normative scores were established based on a large sample of college freshmen, university undergraduates, high school students, neuropsychiatric patients, general medical and surgical patients, and prison inmates. The numbers available for each subgroup were adequate for comparative purposes.

According to Katkin (1978), the STAI was easy to administer, easy to score, reliable, and a valid index of either individual difference in proneness to anxiety (A-trait) or individual difference in transitory experiences of anxiety (A-state). There was voluminous research literature attesting to the reliability and validity in a variety of contexts. Test-retest reliability for A-trait over six months were .73 (male) and .77 (female). As expected, the A-state test-retest reliability was lower because state anxiety conceptually was a transitory, not a persistent characteristic. Dreger (1978) concluded that the revised STAI was one of the best standardized measures of anxiety, if not the best. It was also noted that the user need not have psychometric training to administer the test.

Stress

But how are anxiety and stress related to the college student? Stress, according to Spielberger, Vagg, Barker,

Dunham, and Westberry (1980), was "a complex psychologic process generally initiated by a stimulus or situation that is potentially harmful or dangerous" (p. 95). Taken one step further, they stated that if a stressful situation was appraised to be dangerous or threatening, it would evoke an anxiety state.

Utilizing Selye's classic definition of stress, Barrow and Prosen (1981) created a model of stress as a basis for the development of counseling interventions. While stress was an ongoing, unavoidable part of life, and was useful, if not necessary, in adapting to emergency situations, overly high or prolonged levels of stress were capable of producing a number of undesirable consequences. Stressors included threats when a person's self-esteem was perceived to be under attack, frustration when the attainment of a desired goal was blocked, and conflict.

Barrow and Prosen (1981) identified four categories of difficulties that resulted from uncontrolled emotional stress. These included: (a) physiological and pathological changes such as hypertension, heart disease, ulcers, and colitis; (b) depletion of body energy and resistance levels leading to disease and injury; (c) interference with productivity; and (d) damaging effects of stress-reducing mechanisms. Interference with productivity was of particular interest to this study as it was felt to disrupt the thought processes or indirectly produce fatigue and disease. High

levels of stress were not conducive to rational, systematic thought demanded by many mental tasks, as seen in the test anxiety work of Wine (1971).

The Barrow and Prosen (1981) model recognized that stress was capable of being self-generalized and usually resulted from a demand presented by the environment. Situations occurred that required adaptation to change and involved a threat, frustration, or conflict. Once a stressor was present in the environment, the individual mentally processed the event and cognitively appraised the situation using internal and external cues. A variety of emotional and physiological responses resulted.

But the question arose, "Do students have stress?" Linn and Zeppa (1984) studied the perceived sources of stress for junior medical students. For the 169 students surveyed, the three most frequently identified sources of stress were: (a) need to do well (self-imposed), (b) amount to be learned, and (c) lack of time for self, family, friends, and study. The subjects were also asked to rate the sources of stress as favorable and unfavorable. Those stressors that were deemed to be most unfavorable were lack of time for family, friends and self interests; financial difficulties; uninteresting curriculum; lack of study time, and health problems. Favorable stressors were dealing with the patient, presentation of patients in conference, amount to be learned, being evaluated, and oral examinations. It was of interest

that favorable stress scores did not correlate with performance areas, while unfavorable stress scores correlated significantly with performance measures. Age demonstrated a slightly positive correlation with unfavorable stress scores. Females perceived more unfavorable stressors that did their male counterpart. Race was not related. Thus in medical students there were positive and negative stressors, but it was negative stressors that primarily interfered with performance.

Archer and Peters (1986) identified major sources of stress from the literature and asked law students to rank the most frequent sources of stress. The identified sources included the Socratic teaching method, high expectations of law students, competitive examinations, heavy work load, culminating final examination, social isolation, and family tension. The researchers found that 54.8 percent of students identified factors related to examination and performance feedback as the major source of stress. This was followed by personal relationship strains (29.9 percent) and time pressures (25.2 percent). It was also of interest to note that there were gender differences in the perception of major stressors. The stress identified by male students focused on worry about future success, while female students were more concerned with personal relationships and time pressures. There were no differences based on residence, ethnicity, or age. One recommendation of the study was implementation of a

stress management program to help students cope with the pressures of educational programs.

A doctoral dissertation by Rosburg (1989) compared the level of anxiety of incoming freshmen with majors in police science, fire science, nursing, and general education. Utilizing the State-Trait Anxiety Inventory, Rosburg concluded that nursing students suffered from the highest level of anxiety, thus indicating that nursing students had the greatest amount of stress.

Biggers, Zimmerman, and Alpert (1988) compared students in the three levels of nursing education (baccalaureate, associate degree, and diploma) on both state and trait measures of anxiety, apprehension about communications, and anxiety about the future. These researchers reported that nursing students, in general, encountered more sources of stress and anxiety than many other student groups because of the nature of a nurses' position, concerns over caring for others, sense of responsibility, insecurities about competence, and job stresses, to mention only a few. In differentiating the stressors that were characteristic of each type of nursing program, Biggers, Zimmerman, and Alpert found that associate degree nursing students were most anxious in situations when they did not feel dominant or in control.

In a qualitative approach, Parkes (1985) examined stressful episodes reported by student nurses interviewed in

early stages of hospital training. The researcher reported that a majority of students were readily able to recall relevant stressful episodes. It was clear that stressful situations occurred frequently, and often caused anxiety and stress. Two-thirds of the episodes reported were accounted for by three major content areas: care of the dying patient, interpersonal conflicts with other nurses, and insecurities about professional skills and competence. One contributing factor identified by the students was inadequate support and guidance. Recommended skills to counteract the effects of stress included improved communication skills, enhancing social supports, and the use of stress management techniques.

Stress Management

According to the stress model by Barrow and Prosen (1981), intervention at the environmental level prevented stress by improving one's ability to assess and alter stress producing aspects of the environment. More importantly for this study, were the methods to control the internal capacities to handle stress. The mental processing phase lent itself to cognitive modification approaches in which thoughts of self-talk were assumed to play a crucial role in the development of an emotional reaction. The modified stress inoculation procedure developed by Meichenbaum (1977), was cited as an example of an effective cognitive

intervention in this phase. In this procedure, the client learned to use cognitive coping skills to confront stressors. The subjects were expected to: (a) understand the stressful reaction and learn that the resulting maladaptive self-statements could be changed, (b) learn and practice behaviors and/or cognitive coping skills that included training to control negative images, appropriate relabeling of stressful experiences, and changing self-statements, and (c) practice the new skills.

At the point of response activation, individuals were taught to send out messages stimulating the relaxation response. This included skeletal muscle relaxation, altering autonomic nervous system functions via deep breathing, and conscious mental activity (meditation). Therefore, a variety of possible interventions were available to attack stress and anxiety at various points.

Archer (1986) conducted a study using a multidimensional stress management model in a prevention program for college students. The stress management course incorporated a variety of approaches and techniques designed to help the student physically and mentally relax (deep muscle relaxation and situational relaxation), to modify cognitive processes that created stress and anxiety (use of rational, non-perfectionist belief systems, positive self-statements, assertiveness, supportive relationships, and time management), and to examine changes in lifestyle choices that

led to stress (aerobic exercise and limitation of caffeine and sugar). Archer measured the frequency of stress management behaviors before and after the stress management course. The students in the stress management class had significantly greater gain scores than the control group in four of the behavior rating categories. The difference was obtained in regular relaxation, situational relaxation, aerobic exercise, and positive self-statements. Archer suggested that not only were positive self-statements easy to develop and use, but provided immediate relief from high stress situations, particularly for students who substituted them for frequent negative self-statements.

In a study of stress reduction in practical nursing students, Wernick (1984) attempted to reduce attrition due to personal factors with a structured stress management program. A stress inoculation training (SIT) program, adapted from Meichenbaum (1977) was used to teach practical nursing students skills that enabled them to cope with a stressful nursing program. The SIT involved the three phases of training as identified by Meichenbaum: (a) Education Phase - students learned ways to recognize and cope with the stress associated with nursing training; (b) Skill Rehearsal Phase - students were taught to break the anxiety cycle by the use of physical coping skills (deep breathing and progressive muscle relaxation), reappraisal strategies, and cognitive restructuring (replace negative self-statements with positive

coping statements), and (c) Implementation Phase. A 52 percent attrition rate for the no treatment group was significantly higher than the 29 percent attrition rate reported by the SIT treatment group. In this study, intervention significantly decreased attrition.

Summary

From the literature, it was apparent that attrition from colleges, in general, and nursing programs, in specific, was a problem of sufficient magnitude to warrant investigation. There were a variety of factors that contributed to attrition. Pantages and Creedon (1978) cited academic performance as the most significant predictor of attrition. Grades in the first semester and even on the first examination were important in determining the potential success of students. The reasons reported by students for withdrawal supported the relationship between poor academic performance and withdrawal. Other variables related to attrition were: age, gender, number of children, marital status, and personal problems. In studies that included personality variables, anxiety was identified as a potential determinant of attrition. A frequent recommendation from attrition studies was a need for counseling or other supportive services for students early in their college career. When group support was utilized, student attrition decreased.

Spielberger (1971) provided a theoretical base on which to understand a relationship between anxiety and performance. According to Spielberger, anxiety resulted when the individual perceived an event or situation to be potentially threatening or harmful. According to the literature, the sources of stress for a college student were numerous, particularly for a student in professional preparation curricula such as medicine, law, and nursing. A major source of student anxiety was stressful or threatening situations related to evaluation, such as testing or giving a speech. The evaluation situation resulted in elevated anxiety level and an increase in self-deprecating thoughts which interfered with intellectual performance. Identification of potential stressors varied with age and gender.

Studies that focused on the interrelationship of stress, anxiety, attrition, and performance were numerous. In general, students with high anxiety levels demonstrated poorer performance levels, which translated into increased attrition. Although most studies documented a significant decrease in anxiety level, the effects of anxiety reduction on academic performance was not evident on a consistent basis.

Studies that attempted to manage stress and reduce anxiety utilized a variety of techniques. The studies demonstrated that an intervention strategy usually resulted in a decrease in anxiety, which in some instances, translated

directly into increased academic performance. One frequently used intervention program that was found to be successful, but did not require clinical psychological training, was an adaptation of Meichenbaum's stress inoculation training (1977). The modified stress inoculation procedure included relaxation training and the use of cognitive coping skills.

Therefore, it was concluded from the literature review that data supported a connection between a stress intervention program early in an educational program to decreased anxiety level, improved academic performance, and decreased attrition.

CHAPTER III

METHODOLOGY

Population

The target population for the study was the 122 first year nursing students enrolled in the Nursing Program at Chattanooga State Technical Community College in the Fall, 1990. Because of the structure of the nursing curriculum and size of the program, the class was divided into two sections. Students in each section shared a common nursing class schedule. Upon acceptance into the program, students were assigned a date and time to select a class and clinical schedule and sign-up for clinical practice agencies. The assignment of times was based on alphabetical order and time of acceptance. Selection of the class schedule was on an individual student basis. Possible factors that influenced the decision included: schedule of general education classes, availability and location of clinical agencies, work schedules, and clinical instructor preference.

The resulting two groups constituted the treatment and control groups. The treatment group was comprised of students selecting a Monday-Wednesday-Friday class schedule. This designation was made because the schedule for this section of the class provided a convenient time for the

presentation of the stress management program that was projected to encourage optimum attendance.

Research Design

The design for the study was both descriptive and quasi-experimental. Information obtained from the State-Trait Anxiety Inventory (STAI) pretest and the Student Information Questionnaire was used to describe an anxiety profile of an incoming class of nursing students. Similarly, information obtained from the Exit Interview Guide and the STAI posttest was used to describe the characteristics of those who did not successfully complete the first nursing course.

The pretest - posttest quasi-experimental design was used to determine the effectiveness of a stress management program in reducing anxiety level. Since random selection and assignment of the subjects was not utilized in this study, a quasi-experimental design was indicated. The following design, as defined by Campbell and Stanley (1966) was used:

O_1 X O_2

O_3 O_4

The State-Trait Anxiety Inventory (O_{1-4}) was given to both groups as a pre- and posttest and provided a measure of the dependent variable. The stress management program (X),

administered to the treatment group, was the independent variable.

Instrumentation

Three instruments were used in this study: State-Trait Anxiety Inventory (STAI), a Student Information Questionnaire, and an Exit Interview Guide.

The first instrument used in this study was the State-Trait Anxiety Inventory. This was the primary measure of anxiety, the dependent variable. The STAI was a self-report test of perceived anxiety. The test consisted of 40 brief questions. STAI Form Y1 included 20 questions to assess the presence of a state of anxiety in reference to a specific potentially stressful situation. STAI Form Y2 had 20 questions to assess the trait for anxiety.

For purposes of this study, the stressful situation described prior to the administration of the state anxiety inventory was the stresses associated with entrance into the nursing program. Normative scores for college students enrolled in a general psychology course were used to compare the degree of anxiety experienced by the nursing student population. The test was used as a pretest and posttest.

The STAI, as described in the Eighth Mental Measurements Yearbook (Buros, 1978), is easy to administer, easy to score, reliable, and a valid index of either individual difference in proneness to anxiety (trait anxiety) or individual

difference in transitory experiences of anxiety (state anxiety). Test-retest reliability over six months was .73 for males and .77 for females (Katkin, 1978, p. 683).

The Student Information Form was administered to students at the beginning of the study (see Appenxis A). The primary purpose of the instrument was to obtain pertinent demographic data from individual students. Based on the demographic characteristics that influenced attrition, academic performance, anxiety, and stress identified in the review of the literature, information concerning age, gender, race, marital status, number of children, course load, and employment status was obtained. The questionnaire also attempted to document the presence of stress and anxiety and identify potential sources. Students were asked if entering nursing school was a source of anxiety. If yes, the students was asked to identify the two primary sources of perceived anxiety from a list of potential sources.

For validation purposes, the questionnaire was reviewed by two faculty members and administered to approximately 65 second year students enrolled in the nursing program. Suggestions for improvement were incorporated into the document.

The third instrument developed for this study was the Exit Interview Guide (see Appendix B). The purpose of this instrument was to provide a systematic, objective guide for conducting an interview with a student who withdrew from the

course prior to completion. The focus of the questions was on the identification of circumstances surrounding the decision to withdraw, with a particular emphasis on the factors contributing to attrition as identified in the literature review. Specific questions related to feelings of stress and anxiety were included. The Exit Interview Guide was reviewed by two faculty members involved in the routine nursing program exit interview process. Suggested improvements were incorporated into the form.

Procedures

In order to complete the study the following steps were utilized: (a) treatment and control groups were identified, (b) pretest STAI and student information questionnaire were administered to each group, (c) treatment group was exposed to the stress management program, (d) posttest STAI was administered at the completion of the semester, (e) measures of academic performance were obtained, and (f) exit interviews were conducted with students who withdrew prior to course completion.

Treatment, Experimental, and Control Group Designation. As previously described, during the Summer semester, students selected a class schedule based on individual preference. The schedule selection placed the student into the treatment or control group. Because of a convenient time slot for the stress management program,

students in the Monday-Wednesday-Friday schedule constituted the treatment group; students in the Monday-Tuesday-Thursday schedule were designated as the control group. It was felt that the timing of the treatment sessions in the Monday-Wednesday-Friday schedule provided the best opportunity for attendance in the stress management sessions. There were 58 students in the designated treatment group and 64 students in the control group.

Participation in the study was voluntary. At the orientation session for each class section, the purpose of the study was briefly introduced and students were asked to sign a Consent to Participate form (see Appendix C). Initial introductory comments were general in nature so as not to bias the results of the anxiety inventory. Following administration of the pretest, the purpose of the study and the stress management program was explained to students in the treatment and control groups. Since the treatment and control groups had separate orientation sessions, the explanations varied.

The proposed benefits of participation in the stress management program were stressed to the treatment group. The students were asked to sign a Consent to Participate in Stress Management Program form (see Appendix D). For this group, a record of attendance at the stress management sessions was maintained by the researcher. A student had to attend at least six out of the eight treatment sessions in

order to be included in the tests to determine the effectiveness of the stress management intervention. The group of students who met this criterion were designated as the experimental group. Those students who did not meet the attendance criterion were included only in the descriptive portions of the study.

The purpose of the study was explained to the students in the control group. Students were offered the opportunity to participate in a similar program in the Spring semester, if they desired.

Administration of the Pretest and Student Information Questionnaire. The State-Trait Anxiety Inventory was administered to all students enrolled in NS 118 at the nursing program orientation sessions on August 20 and 21, 1990, one week before the beginning of Fall semester classes. The test was administered at the beginning of each session according to the guidelines in the Manual for the State-Trait Anxiety Inventory (Form Y) (Spielberger, 1983). The state anxiety inventory (STAI Form Y-1) was administered first. Students were instructed to read the instructions silently, as the researcher read them aloud. The students were told that "at this moment" meant "as they were about to enter into the Chattanooga State Nursing Program". Following the administration of STAI Form Y-1, the students were asked to complete the trait anxiety inventory (STAI Form Y-2).

Additionally, students were asked to provide the information requested on the Student Information Questionnaire.

Implementation of the Stress Management Program. Beginning on Monday, September 10, 1990, the treatment group was exposed to a structured stress management program that was developed and presented by the researcher. The program was modeled after Stress Inoculation Training as described by Meichenbaum (1985). The treatment sessions occurred during the hour following completion of the nursing class that met each Monday from 9:00 a.m. to 10:50 a.m.

Week 1: There were two purposes of the first treatment session. The first purpose was to introduce students in the treatment group to the concepts of anxiety and stress. Definitions of the terms were discussed and a relationship between stress and anxiety delineated. Potential sources of stress, in general and as a nursing student, were identified. The role of the individual in the perception of stress and anxiety was discussed. Signs and symptoms were identified. Alternative strategies for coping with stress were introduced using the acronym - AAABC. The acronym stood for Accept it, Avoid it, Alter it, Build resistance, and Change it. This formed the basis for the introduction of various coping strategies that were used in later treatment sessions.

The session consisted of a presentation of information and group discussion. A variety of visual aids were used to supplement the presentation. Three student participation

activities were used to elicit sources of stress, focus on individual perceptions of stress, and list signs and symptoms associated with stress and anxiety.

The second purpose of the session was to introduce a skill to help students cope with a potential source of stress for college students. The focus of this session was on study skills. Suggestions were given to help students know themselves and identify their style of learning. Tips were given to help get the most out of class and study time. A preview, view, and review technique was stressed for use in reading assignments, reviewing notes, and studying for tests.

Week 2: The primary focus of the second session was on relaxation techniques, one of the active techniques used to cope with stress. The purpose of this portion of the session was to present, discuss, and practice a variety of relaxation techniques. The session provided guided instruction and practice in breathing techniques, visualization/visual imaging, and progressive relaxation. Since relaxation techniques were a type of active coping strategy, the need for continued practice was stressed. Practice exercises were given to the students. Each subsequent treatment session began with a new relaxation technique.

The second focus of this session was on one of the greatest sources of stress and anxiety for a student - the testing situation. This session concentrated on test-taking skills. Application of the preview, view, and review method

as the student prepared for and took examinations was discussed. Different methods of testing and types of test questions were discussed. Suggestions were given for responding to each type of item. Application of relaxation techniques before and during a testing situation were also discussed and practiced.

Week 3: Stress inoculation training (SIT) for the test situation began during the third treatment session. Utilizing the methodology suggested by Meichenbaum (1985), the session focused on the conceptualization/educational phase. In this phase, students were given a framework for understanding how they might have defined and coped with the test situation in the past. With this framework, students were taught that when stressors were identified, individuals could actively alter the perception of the stressor through the use of behavioral and cognitive coping skills.

The researcher utilized role play and discussion to elicit a description of activities, events, and feelings surrounding a test situation. Students were asked to close their eyes and replay in their minds what happened the last time they took an examination. They were asked to focus on activities, feelings, and thoughts while they prepared for the test and in the period immediately before, during, and following the test. The resulting list of thoughts, feelings, and activities were analyzed and discussed by the group. The discussion that followed focused on the anxiety

cues and negative self-statements that occurred and how individuals contributed to their own stressful reaction. It was emphasized that early recognition of these feelings and thoughts by students provided the key to controlling the situation and their reaction to it. If students were attentive to the low intensity body cues that indicated anxiety and were aware of the negative self-deprecative thoughts, they could "short circuit" the sequence of anxiety that surrounded the test situation.

Since most of the students in the session had an examination in another subject during the following week, they were asked to try to be more aware of their thoughts, feelings, and activities as they prepared for and experienced the evaluation situation.

Week 4: The purpose of the skill acquisition/rehearsal phase of stress inoculation training was for students to generate positive strategies to cope with the feelings of anxiety and negative thoughts surrounding the testing situation. The list of behaviors and feelings identified in the previous session was reviewed and amended based on experiences during the preceding week. The class was divided into groups of four to five students to discuss the problems from the list that were most relevant to them and identify positive coping strategies and self-statements to counter each of the items. The results of the small group discussions provided the basis for a larger group discussion.

Students were then asked to close their eyes while a test preparation and test-taking scenario was read by the researcher. They were instructed to counteract each negative, stress-inducing aspect of the scenario with a positive self-statement. The key to the success of the training session was recognition of early, prodromal cues of negative behaviors and substitution of more positive, productive alternative responses. Students were asked to practice these skills during their studies and as they encountered testing situations during the week that followed.

Week 5: The last phase of the stress inoculation training provided additional opportunities to apply and practice skills introduced in the previous session. Upon arrival at the treatment session, students were told they had five minutes to study a drug calculation handout for a pop quiz. A brief ten question math test was then given. This, plus the test related experiences during the previous week provided the basis for discussion of the application and practice phase.

In addition to completion of the final phase in the stress inoculation program, opportunity was provided in this session for open discussion of students problems or topics of individual concern. Concerns voiced included: time needed to study, overstudying, test taking skills, and clinical practice insecurities. Appropriate information and reassurances were provided by the researcher.

Weeks 6 and 7: During the next two treatment sessions, the stress inoculation training format was applied to feelings of anxiety associated with the clinical practice situation. Because the foundation for the stress inoculation training process was provided in the previous treatment sessions, less time was needed to introduce and discuss the rationale for the stress inoculation process applied to clinical practice insecurities. Following a brief introduction, the researcher role-played a student approaching his/her first patient care experience, including a variety of negative self-statements. Students were asked to critique the performance and describe how their feelings and thoughts agreed or differed from those portrayed. A list of concerns, thoughts, and feelings was created. Counteracting positive self statements were identified for each item on the list. The seventh session involved further discussion and opportunities to identify early cues and practice substituting positive self-statements. Small group discussion and role play were again utilized.

Week 8: The stress management program concluded with a presentation on time management skills and a final open discussion. The open discussion centered on attempts to apply the relaxation techniques and stress inoculation principles as they took tests, especially those in their nursing courses and prepared for their first hospital experience.

During the semester, the control group maintained the regular class schedule. They did not receive a treatment. The opportunity to receive a similar treatment procedure was made available to students during the spring semester if the students expressed an interest.

Administration of the Posttest. Immediately following completion of the final course examination, the posttest was administered. The same instructions and descriptors given prior to the pretest were repeated during the administration of the posttest.

Academic Performance Measures. Upon completion of the course, the final course grades were obtained from the grade roster maintained by the Course Coordinator.

Exit Interview With Course Withdrawals. Any student who withdrew from the nursing course prior to the end of the semester was asked to schedule an exit interview with the researcher. According to the Chattanooga State Nursing Student Handbook, the student must complete an exit interview with a faculty member prior to departure from the course if future reentry was desired. The interview with the researcher served that purpose. The Exit Interview Guide was completed at that time. Additionally, the student was asked to take the posttest anxiety inventory. All students who withdrew prior to the completion of the course completed the exit interview process.

CHAPTER IV

FINDINGS

Findings of the Study

In the Fall 1990, there were 122 students enrolled in the Nursing Program at Chattanooga State Technical Community College. In the beginning, all 122 students were included in the study. Based on the selection of class schedules during the registration process, the control group was comprised of 64 students in the Monday - Tuesday - Thursday schedule. The 58 students with nursing classes on Monday - Wednesday - Friday were designated as the treatment group. Table 1 presents the demographic data for the enrolled class, as well as for the groups designated as treatment and control.

The class consisted of 110 (90.2 percent) females and 12 (9.8 percent) males. The racial composition of the class was 119 (97.5 percent) Caucasian, 2 black and 1 Asian. For statistical purposes in this study, the 3 non-Caucasian students were combined into one category, black/other which comprised 2.5 percent of the total class. The treatment and control groups were closely matched with regard to gender and race. The control group was 90.6 percent female and 98.4 percent Caucasian, while the treatment group was 89.2 percent female and 96.6 percent Caucasian.

Table 1

Summary of Demographic Variables for Total Class and Treatment and Control Groups

	Control Group (n=64)		Treatment Group (n=58)		Total Class (n=122)	
	Freq.	%	Freq.	%	Freq.	%
Gender						
Female	58	90.6	52	89.2	110	90.2
Male	6	9.4	6	10.3	12	9.8
Race						
Caucasian	63	98.4	56	96.6	119	97.5
Black/other	1	1.6	2	3.5	3	2.5
Marital Status						
Single	23	35.9	17	29.3	40	32.8
Married	32	50.0	34	58.6	66	54.1
Divorced/ Widowed	9	14.1	7	12.1	16	13.1
Number of Children						
0	39	60.9	25	43.1	64	52.5
1	11	17.2	13	22.4	24	19.7
2	7	10.9	14	24.1	21	17.2
3 or more	7	10.9	6	10.4	13	10.7

With regards to home and family responsibilities, the majority (66 or 54.1 percent) of students were married with 40 (32.8 percent) single and 16 (13.1 percent) divorced or widowed. For the purposes of the study, the number of children was defined as the number of children residing in the home at the time of the study. The number of children at home ranged from zero to five. Over half of the class (64 or 52.5 percent) did not have any children. Twenty-four (19.7 percent) had one child and 21 (17.2 percent) had two children. The remaining 13 (10.7 percent) students had three or more children.

In comparing the control to the treatment group, over half of the students in each group were married; 32 or 50 percent in the control group and 34 or 58.6 percent in the treatment group. Thirty-six percent of the control group were single, compared with 29.3 percent of the treatment group. The control group had more students with no children (60.9 percent) than the treatment group (43.1 percent). The number of students with three or more children showed little difference; 10.9 percent in the control group and 10.4 percent in the treatment group.

The other variables used to profile the class were age, score on the NLN Preadmission Test, number of credit hours for which students were enrolled during the fall semester, and number of hours of employment outside of school. Means

and standard deviations for the total class and the treatment and control groups for each variable appear in Table 2.

The mean age of students in the class was 29 years. On the NLN Preadmission Test used in the student selection process, the class had a mean score of 114.7. Students were enrolled for a mean of 12.8 semester credit hours. All students were enrolled in nine credit hours of nursing courses. The remainder of credit hours was in general education courses required for the Associate of Applied Science degree. Students were employed an average of 14.4 hours per week.

Prior to the beginning of the study, tests were performed to determine if there were statistically significant differences between control and treatment groups. Independent t-tests were calculated to determine if there were differences between the control and treatment groups in age, scholastic aptitude as measured by the NLN Preadmission Test, semester credit hour load, and hours of employment. Results of these tests are presented in Table 2.

The computed t-tests demonstrated only one significant difference between treatment and control groups at the .05 level of significance. Students in the treatment group were employed a mean of 11.3 hours, while the control group worked a mean of 17.3 hours. The t-value of 2.45 ($p = .02$) was significant. The treatment group had a mean of 116.9 on the NLN preadmission test, while the mean for the control group

Table 2

Means and Standard Deviations for Total Class and t-test Values for Treatment and Control Groups for Age, NLN Preadmission Test Scores, Semester Credit Hours, and Employment Hours

	Total Class (n=122)	Control Group (n=64)	Treatment Group (n=58)	df	t value	p value
Age						
Mean	28.96	28.19	29.81	118	-1.00	0.32
S.D.	8.95	8.93	8.98			
NLN Preadmission Test						
Mean	114.74	112.79	116.86	118	-1.84	0.07
S.D.	12.30	12.33	12.02			
Credit Hours						
Mean	12.82	12.39	13.29	115	-1.48	0.14
S.D.	3.37	3.21	3.50			
Employment Hours						
Mean	14.44	17.30	11.28	118	2.45*	0.02
S.D	13.52	13.52	13.60			

* $t \geq 1.96$ significant at .05 level

was 112.8. The probability for this difference was 0.07 and therefore, not significant. The other variables, age and semester credit hour load, were also not significant at the .05 level. Therefore with the exception of hours of employment outside of school, the treatment and control groups were equated.

To determine if there were differences between the control and treatment groups in the demographic variables of gender, race, marital status, and number of children, a chi square was calculated for each variable. The chi square values and degrees of freedom for each variable appear in Table 3.

According to the chi square tests in Tables 3, the treatment and control groups demonstrated independence in relation to the demographic variables of gender, marital status, and number of children. Because the chi square for race contained two expected values of less than five, the results of this test were not considered. Again the groups were equated.

At the orientation session prior to the beginning of the semester, students were given the State-Trait Anxiety Inventory. Pretest scores for state and trait anxiety were obtained. There were 20 questions on each of two subtests. A score of 20 was indicative of low anxiety, while a score of 80 indicated the highest level of anxiety. Mean scores and standard deviations for the total class and the treatment and

Table 3

Chi Square Tests Comparing Gender, Race, Marital Status, and Number of Children for Treatment and Control Groups

Gender		Race		Marital		Children	
χ^2	df	χ^2	df	χ^2	df	χ^2	df
.032	1	.451	1	.919	2	4.66	2

* $\chi^2_{.05\ (df=1)} = 3.84$
* $\chi^2_{.05\ (df=2)} = 5.99$

control groups were determined. Independent t-tests were calculated to determine if there were differences in state and trait anxiety between the treatment and control groups. Means, standard deviations, and results of the independent t-tests appear in Table 4.

Mean score on the state anxiety inventory for the 122 students who attended the orientation sessions was 36.6. The trait inventory, representative of a general tendency towards anxiety, showed a mean score of 32.4. The difference in scores between control and treatment groups for each inventory was minimal. The t-values of 0.23 ($p = 0.82$) for state anxiety and -0.86 ($p = 0.39$) for trait anxiety were not significant at the .05 level. The groups were equated according to anxiety level.

Students in the designated treatment group were asked to voluntarily participate in the stress management treatment program. They were not required to do so. Of the 58 students in the designated treatment group 24 students did not attend any of the stress management sessions; 14 attended less than six of the treatment sessions; and 20 attended six or more sessions. As a result, the designated treatment group was divided into two subgroups: the experimental group (Exp), those students who attended six out of eight treatment sessions and the nonexperimental group (Nonexp), those students who either chose not to participate in the stress management program or did not attend the predetermined number

Table 4

Means and Standard Deviations for Total Class and t-test Values for Pretest State and Trait Anxiety Inventories

	Total Class (n=122)	Control Group (n=64)	Treatment Group (n=58)	df	t value	p value
State - Pretest						
Mean	36.62	36.81	36.40	119	0.23	0.82
S.D.	9.91	10.12	9.76			
Trait - Pretest						
Mean	32.43	31.95	32.97	119	-0.86	0.39
S.D.	6.51	6.60	6.43			

* $t \geq 1.96$ significant at .05 level

of treatment sessions. The control group remained the same. Since initial efforts to equate the treatment and control groups were based on two groups and three different groups emerged following completion of the stress management program, similar statistical tests were performed to determine if there were significant differences among the resulting three groups.

A one way analysis of variance was performed for age, NLN Preadmission Test score, semester credit hours, hours of employment, and state and trait anxiety inventory scores. Means, standard deviations, and results of the ANOVA for each variable appear in Table 5.

The results of tests of difference among the three groups (control, nonexperimental and experimental) were similar to the results of t-tests between the treatment and control groups. The only variable to show a significant difference between groups at the .05 level was number of hours of employment. The control group worked an average of 17.3 hours, while the nonexperimental and experimental groups worked an average of 11.9 and 10.2 hours respectively. There were no significant differences in age, NLN Preadmission Test score,credit hours, and employment hours and state and trait anxiety inventory scores among the three groups.

Chi squares were computed to determine if there were relationships among the three treatment groups (control, nonexperimental and experimental) and categorical data for

Table 5

Means, Standard Deviations, and ANOVA Summaries for Age, NLN Preadmission Test Scores, Semester Credit Hours, Employment Hours, and Anxiety Inventories for Control, Nonexperimental, and Experimental Groups

	Control Group (n=64)	Nonexp. Group (n=34)	Exp. Group (n=20)	F value	p value
Age					
Mean	28.19	28.47	32.35	1.75	0.18
S.D.	8.93	7.93	10.44		
NLN Preadmission Test					
Mean	112.79	116.89	116.80	1.67	0.19
S.D.	12.33	10.99	14.07		
Credit Hours					
Mean	12.39	13.05	13.75	1.38	0.26
S.D.	3.21	3.51	3.54		
Employment Hours					
Mean	17.30	11.86	10.20	3.08	0.05*
S.D.	13.52	14.14	12.77		
State - Pretest					
Mean	36.81	36.92	35.40	0.18	0.84
S.D.	10.12	10.07	9.32		
Trait - Pretest					
Mean	31.95	32.92	33.05	0.37	0.69
S.D.	6.60	6.67	6.13		

* Significant at .05 level

gender, race, marital status, and number of children. Results of these tests were not valid because each chi square contained cells with expected frequencies of less than five.

With tests to determine group equivalence completed, the focus shifted to the purposes of the study and testing the null hypotheses. The first purpose of the study was to describe an anxiety profile of an incoming class of nursing students. Hypotheses 1 and 2 related to the descriptive purpose of the study.

Hypothesis #1. The level of anxiety of an incoming class of associate degree nursing students was not significantly different from the norm referenced group of college students used to validate the State Trait Anxiety Inventory (Spielberger, 1983).

To determine if differences were present, anxiety level of the nursing class at Chattanooga State was compared to the general college student population used by Spielberger (1983) in validation studies for the State-Trait Anxiety Inventory. Table 6 displays the means and standard deviations for the male and female subgroups in the normative population and the first semester nursing class at Chattanooga State.

State and trait anxiety scores for males and females in the nursing class were lower than the norm referenced groups. Mean state anxiety for the normative sample was 36.5 (male) and 38.8 (female) compared with 36.3 (male) and 36.7 (female) in the nursing class. Mean trait anxiety was 38.3 (male) and

Table 6

Mean and Standard Deviation for Pretest State and Trait Anxiety Inventories

	Male Students		Female Students	
	Norm	Nursing	Norm	Nursing
State - Pretest				
N	324	12	531	110
Mean	36.47	36.25	38.76	36.66
S.D.	10.02	12.79	11.95	9.62
Trait - Pretest				
N	324	12	531	110
Mean	38.30	33.50	40.40	32.32
S.D.	9.18	8.65	10.15	6.28

40.4 (female) in the norming group compared with 33.5 (male) and 32.3 (female) in the nursing class. In order to determine if these differences were significant, male means were compared using an independent t-test; females students were compared by the calculation of a Z-score. Results of these tests of difference appear on Table 7.

Three of the four tests of difference in anxiety level between males and females in the normative population and the nursing class were significant. Anxiety level of female nursing students, as measured on the state and trait inventories, was significantly different from female students in an introductory psychology class used by Spielberger (1983). This was evidenced by a Z score of 2.0 ($p = .05$) for state anxiety and 10.9 ($p = .00$) for trait anxiety.

Differences for male students were less dramatic. Pretest state anxiety for male nursing students was not significantly different from the normative group ($t = .07$, $p = .47$). However, trait scores did demonstrate a significant difference ($t = 1.78$, $p = .04$) at the .05 level of significance.

Therefore, the null hypothesis, as applied to female students, was not supported; anxiety level of female students was significantly different from the normative population on both state and trait inventories. The null hypothesis applied to male students was inconsistent in that only state anxiety supported the null hypothesis; male nursing students'

Table 7

Tests of Difference in State and Trait Anxiety Inventories Between Males and Females in Normative Population and Nursing Class at Chattanooga State

	Male Students		Female Students	
	t value	p value	Z value	p value
State Anxiety	0.07	0.47	2.00*	0.05
Trait Anxiety	1.78*	0.04	10.90*	0.00

* $t \geq 1.96$ significant at .05 level
* $Z \geq 1.64$ significant at .05 level

trait anxiety was significantly different from the normative male.

Hypothesis #2. The level of anxiety in an incoming class of nursing students was not related to age, scholastic aptitude, semester credit hours, employment status, gender, race, marital status, or number of children.

To determine if there was a relationship between the stated variables and anxiety level, correlation coefficients and independent t-tests were calculated. Results of the correlation coefficients between state and trait anxiety and age, NLN Preadmission Test scores, semester credit hours, and hours of employment are presented in Table 8.

There was a positive correlation between pretest state anxiety and age (0.039), credit hour load (0.133), and hours of employment (0.059). The correlation between state anxiety and the NLN Preadmission Test score was the only negative relationship (-0.187). The correlation between pretest trait anxiety and the same variables showed three negative relationships and one positive. The correlation between trait anxiety and NLN score was -0.142; age, -0.061; and credit hour enrollment -0.099, while the correlation between hours of employment and trait anxiety was 0.015.

Of the correlation coefficients presented in Table 8, only the relationship between the NLN Preadmission Test and pretest state anxiety was significant at the .05 level. Since the relationship was negative, this suggested that the

Table 8

Correlation Coefficients Between Pretest State and Trait Anxiety Inventories and Age, NLN Preadmission Test Scores, Semester Credit Hours, and Employment Hours

	State Pretest	t value	Trait Pretest	t value
NLN	-0.187	2.09*	-0.142	1.57
Age	0.039	0.43	-0.061	0.67
Credit Hrs.	0.133	1.47	-0.099	1.09
Employment Hrs.	0.059	0.65	0.015	0.16

* $t \geq 1.96$ significant at .05 level

higher the scholastic aptitude, as indicated by the NLN Preadmission Test score, the lower the state anxiety level. None of the correlations between anxiety level (state or trait) and age, credit hours, or employment was significant.

In addition to tests of correlation to determine relationships between anxiety and the interval data described above, independent t-tests were also performed to determine if there were differences in anxiety level between male and female students, Caucasian and ethnic minority students, and students with and without children. A one way analysis of variance was performed to determine if there was a difference in anxiety level among single, married and divorced/widowed students. Means, standard deviations, and results of the t-tests for gender, race, and number of children appear in Table 9.

Results of the t-tests suggested there were no significant differences between groups in anxiety level based on race, gender, and whether a student did or did not have children. The final test for difference was a one way analysis of variance to determine if there was any difference in anxiety level based on marital status. The results of the ANOVA for state and trait anxiety appear in Table 10.

The results of the analysis of variance to determine if there was any difference in state or trait anxiety level for single, married, and divorced/widowed students again showed no significant difference. The F-statistic for state anxiety

Table 9

Means, Standard Deviations, and t-test Values for Pretest State and Trait Anxiety Inventories for Gender, Race, and Number of Children

	State Anxiety					Trait Anxiety				
	N	Mean	S.D.	t value	p value	N	Mean	S.D.	t value	p value
Gender										
Female	110	36.65	9.62	.11	.92	110	32.32	6.27	.46	.65
Male	12	36.30	12.8			12	33.50	8.65		
Race										
White	119	36.70	10.0	.96	.41	119	32.44	6.54	.03	.98
Other	3	34.67	3.21			3	32.33	6.35		
Children										
None	64	36.42	9.61	.22	.82	64	32.67	6.53	.42	.67
≥1	58	36.80	10.3			58	32.17	6.53		

* $t \geq 1.96$ significant at .05 level

Table 10

One Way Analysis of Variance to Determine Difference in State and Trait Anxiety Among Single, Married, and Divorced/Widowed Students

Source	df	SS	MS	F	p
State - Pretest					
Marital	2	188.5	94.3	0.96	0.39
Error	119	11696.4	98.3		
Total	121	11884.9			
Trait - Pretest					
Marital	2	90.6	40.3	0.95	0.39
Error	119	5049.4	42.4		
Total	121	5130.0			

was 0.96 ($p = .39$) and trait anxiety, 0.95 ($p = 0.39$).

Therefore, with the exception of the relationship between NLN preadmission score and pretest trait anxiety, null hypothesis #2 was supported; the level of anxiety was not related to age, student credit hour enrollment, employment status, race, gender, marital status, or number of children. It was of interest to note that the one variable that was not supportive of the null hypothesis was a negative correlation between state anxiety and the score on the measure for scholastic aptitude, suggesting that the higher the NLN test score, the lower the state anxiety level.

The next two hypotheses focused on the effectiveness of the stress management program in reduction of anxiety. During the Fall semester, the students in the treatment group were exposed to the stress management program. Of the 58 students in the treatment group, 20 students attended a sufficient number of treatment sessions to be included in the determination of the effectiveness of the program in reducing anxiety and decreasing attrition. Therefore, the tests to determine the effectiveness of the stress management program compared the 20 students in the experimental group to the 64 students in the original control group. The 38 students in the treatment group who did not participate in the stress management program were not included in the calculations. It should be noted also that all students did not elect to take the state-trait anxiety inventory given as a post-test at the

end of the semester. In the experimental group, 19 of 20 students took the posttest, while 50 of 64 students in the control group completed the inventory.

Hypothesis #3. At the end of the first nursing course, the anxiety level of students who participated in a structured stress management program was not significantly different from students who did not participate in the program.

To test the null hypothesis, t-tests for two independent samples were calculated to determine if posttest state and trait anxiety inventory scores for the control group were different from the experimental group who received the stress management program. Table 11 shows the means and standard deviations of the posttest state and trait inventories for the experimental and control groups and the results of the t-tests to determine difference.

The posttest state anxiety mean for the experimental group was 44.8, while the control group mean was 47.8. Although the state anxiety inventory mean for the experimental group was less than the control group mean, the t-value of 0.95 did not constitute a significant difference at the .05 level. As was expected, the difference between the experimental and control groups was less for posttest trait inventories. The experimental trait mean was 38.2; and 39.4 for the control group. This difference was also not significant at the .05 level.

Table 11

Means, Standard Deviations, and t-test Values for Posttest State and Trait Anxiety Inventories for Experimental and Control Groups

	Control Group (n=50)	Experimental Group (n=19)	df	t value	p value
State - Posttest					
Mean	47.80	44.79	41	0.95	0.35
S.D.	13.86	10.84			
Trait - Posttest					
Mean	39.40	38.21	36	.50	0.62
S.D.	9.45	8.48			

* $t \geq 1.96$ significant at .05 level

Therefore null hypothesis #3 was not rejected since no significant differences were found in the anxiety level of those who did and did not receive the stress management program.

Hypothesis #4. Academic performance and attrition for students who participated in a structured stress management program was not significantly different from students who did not participate in the program.

Final nursing course grades attained by students in the experimental and control groups were used to determine if the grades for students who participated in the stress management program were significantly different from the grades of students who did not attend the treatment sessions. The means, standard deviations, and t-test results are shown in Table 12.

Students in the experimental stress management program received a final course grade mean of 82.7. Students in the control group had a mean of 79.78. Numerically, students in the experimental group did better in the first nursing course than students in the control group, however, the t-value of 1.84 ($p = .07$) was not significant at the .05 level. Therefore the first part of the null hypothesis was not rejected.

The second part of hypothesis #4 suggested that attrition rate for the experimental group was not different from that of the control group. In the control group, eight

Table 12

Means, Standard Deviations, and t-test Values For Final Nursing Course Grades for Experimental and Control Groups

	Control Group (n=59)	Experimental Group (n=20)	df	t value	p value
Grade					
Mean	79.78	82.70	32	-1.84	0.07
S.D.	6.08	6.13			

* $t \geq 1.96$ significant at .05 level

of 64 students either withdrew or failed the first nursing course. All twenty students in the experimental group successfully completed the course. Attrition rate for the control group was 12.5 percent, while that of the experimental group was 0 percent. A Z-value calculation for difference in the two percentages yielded a Z-value of 1.64. The critical value for a Z-score at the .05 level of significance was 1.64. Therefore, the difference in attrition rates for the experimental and control groups was significant. The second part of the null hypothesis was rejected.

The focus of the last two hypotheses of the study was on the differences between those who did and did not complete the first nursing course. Hypothesis #5 was related to the differences in anxiety level, while hypothesis #6 focused on the differences in the other descriptive and demographic the first nursing course. Hypothesis #5 was related to the differences in anxiety level, while hypothesis #6 focused on the differences in the other descriptive and demographic variables. The groups used to test these hypotheses were the students who successfully completed the nursing course (completers) and those who either withdrew prior to completion or failed the nursing course (noncompleters).

There were 13 students who did not successfully complete the first nursing course. Of those, four received a failing grade for the course and nine voluntarily withdrew during the

semester. The reasons for withdrawal included: excessive study demands based on full time load (four students), marital problems, U.S. Army Reserve military obligation, complications of pregnancy, mental health problems (anxiety attacks) and one gave no reason.

Hypothesis #5. Anxiety level of students who successfully completed the first nursing course was not significantly different from students who did not successfully complete the course.

In order to look at the relationship between anxiety and attrition, both the pre- and posttest scores on the state and trait anxiety inventories for completers and noncompleters were subjected to independent t-tests. The results are presented on Table 13.

Mean pretest state anxiety scores for completers (36.4) was lower than the mean scores for those who eventually did not successfully complete the course (38.5). The pretest trait scores showed a similar difference with completers having a pretest trait mean of 32.1 while noncompleters had a mean score of 35.7. None of the differences was significant at the .05 level.

Differences in anxiety level between completers and noncompleters were even less at the time of the posttest. Posttest state mean for completers was 46.5, while noncompleters had a mean of 45.9. Again, the difference was not significant at the .05 level. The difference between

Table 13

Means, Standard Deviations, and t-tests Values For Pre- and Posttest State and Trait Anxiety Inventories For Completers and Noncompleters

	Completer	Noncompleter	df	t value	p value
State - Pretest					
Mean	36.39	38.46	15	-0.74	.47
S.D.	9.98	9.47			
Trait - Pretest					
Mean	32.05	35.69	15	-2.05	.06
S.D.	6.49	6.01			
State - Posttest					
Mean	46.50	45.90	10	0.14	.90
S.D.	13.26	16.87			
Trait - Posttest					
Mean	39.70	39.90	11	-0.07	.94
S.D.	9.22	8.16			

* $t \geq 1.96$ significant at .05 level

posttest trait scores was minimal and also not significant. Therefore the null hypothesis concerning the relationship between anxiety level and attrition was not rejected.

Hypothesis 6. Demographic data characteristics for students who successfully completed the first nursing course was not significantly different from students who did not successfully complete the first nursing course.

The last hypothesis compared completers and non-completers with regard to the other variables utilized throughout the study: age, NLN Preadmission Test score, semester credit hours, hours of employment, gender, race, marital status, and number of children. Independent t-tests were calculated to determine if there were differences between completers and noncompleters' age, NLN test score, semester credit hours, and employment hours. The results of the t-tests appear in Table 14.

The results of the computed t-tests showed no significant differences between students who completed and those who did not complete with respect to age, NLN Preadmission Test, credit hour load, and hours of employment.

To determine if there were differences between completers and noncompleters' demographic variables of gender, race, marital status, and number of children, a chi square was calculated for each variable. The chi square values and degrees of freedom for each variable appear in Table 15.

Table 14

Means, Standard Deviations, and t-test Values For Age, NLN Preadmission Test, Semester Credit Hours, and Employment Hours for Completers and Noncompleters

	Completer	Noncompleter	df	t value	p value
Age					
N	109	13			
Mean	29.32	25.92	14	1.28	0.22
S.D.	8.91	9.09			
NLN					
N	108	13			
Mean	114.81	114.23	13	0.12	0.90
S.D.	11.80	16.44			
Credit Hours					
N	109	13			
Mean	12.72	13.69	14	-0.86	0.41
S.D.	3.30	3.95			
Employment					
N	109	13			
Mean	13.77	20.12	14	-1.42	0.18
S.D.	13.55	15.41			

* $t \geq 1.96$ significant at .05 level

Table 15

Chi Square Tests Comparing Gender, Race, Marital Status and Number of Children for Completers and Noncompleters

Gender		Race		Marital		Children	
χ^2	df	χ^2	df	χ^2	df	χ^2	df
.08	1	.36	1	.467	2	3.97	2

$\chi^2.05$ (df=1) = 3.84
$\chi^2.05$ (df=2) = 5.99

Because of the small number of noncompleters, chi square test results were not considered due to the number of cells in each test that contained expected values of less than five. Thus null hypothesis #6 was not rejected.

CHAPTER V

ANALYSIS OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The nursing shortage across the country is prompting nursing educational programs to seek strategies to increase the number of graduates. One alternative to the enrollment of more students to increase nursing program productivity is the reduction of attrition. The study focused on the presence of anxiety in an incoming class of nursing students and sought to determine the effectiveness of a stress management program in reducing anxiety, improving academic performance, and preventing attrition.

The results of the State-Trait Anxiety Inventory, given at the beginning and end of the first semester in a nursing program, were used to profile the anxiety level of a class of associate degree nursing students. A stress management program, modeled after the stress inoculation training process described by Meichenbaum (1985) was presented to twenty students in the class. The effectiveness of the stress management program in reducing anxiety, improving grades, and decreasing attrition was determined. Finally, the study sought to identify differences between those who

did and did not successfully complete the first nursing course.

Analysis and Interpretation of Findings

In order to analyze and interpret these findings, the research questions, as originally stated in the study, are identified and discussed.

Question 1. What was the anxiety level experienced by an incoming class of first year nursing students in a two year associate degree nursing program?

The anxiety level of the nursing students at Chattanooga State was lower on the state and trait anxiety inventories for both male and female students than reported by Spielberger (1983). Differences between female state and trait and male trait anxiety were significantly different from the normative college students enrolled in a general psychology class. These findings were particularly surprising in light of the results of Rosburg (1989) in which nursing students had the highest scores on the State-Trait Anxiety Inventory when compared with fire science, police science, and general education students.

In order to speculate as to why nursing student anxiety level in this study was lower, one might look at the process of application and acceptance into the nursing program. Because of increased interest in nursing as a career, the number of applicants far outweighed the number of slots

available. Many students accepted into the nursing class had been at Chattanooga State for several semesters or even years prior to gaining acceptance into the nursing program. Therefore, once accepted into the program, students might have felt relieved and excited at the first class meeting, as opposed to anxious and stressed.

The lower pretest anxiety level at the beginning of the semester might also help explain why anxiety level of the students in this study increased from pretest to posttest. The posttest scores were more in line with the state and trait scores of the normative population.

Question 2. Was there a relationship between the level of anxiety experienced by students at the beginning of the first semester in a nursing program and demographic variables, including: gender, race, marital status, number of children, age, scholastic aptitude, course load, and employment status?

The intent of including the demographic variables in this question was to determine if "at risk" students could be identified based on the relationship between anxiety level and demographic variables. Most studies included in the review of literature which focused on anxiety and anxiety reduction did not include statistical information concerning demographic variables. However, it was felt to be an important consideration for the descriptive purpose of this study. The results of the study showed no significant

differences in state or trait anxiety levels in the nursing student population based on race, gender, marital status, or number of children. Similarly, there was no significant correlation between anxiety and age, semester credit load, or hours of employment.

Scholastic aptitude, as measured by the NLN Preadmission Test, was the only variable to demonstrate a significant correlation with either state or trait anxiety. Students who scored higher on the NLN test had significantly lower state anxiety levels. According to Pantages and Creedon (1978), scholastic aptitude was one of the best predictors of attrition. If this was true, then students with a higher aptitude would be expected to do better in school than those with lower scores. Other studies found similar relationships between increased anxiety, lower grades, and attrition (Spielberger, 1971) and increased anxiety and poor academic performance (Bradshaw and Gaudry, 1971). Therefore, the correlation between NLN test score and state anxiety could have important implications for counseling students accepted into the nursing program with lower NLN scores.

State anxiety also correlated positively with age, number of credit hours, and hours of employment. Though not significant on an individual basis, one also would be concerned for older students, taking heavy course loads with many hours of outside employment responsibilities.

Question 3. Was there a difference in the level of anxiety experienced by students who participated in a structured stress management program during the first semester in a nursing program and those who did not?

The stress management program in the study did not result in a significant difference in the state or trait anxiety level between the experimental and control groups. This was in direct contrast to what was expected based on the literature review. The meta-analysis by Tobias (1979) identified two major studies in which the treatment groups showed greater improvement than the untreated groups on a self-report measure of anxiety following an anxiety reduction program. He described a survey study by Allen in which over half (58 percent) of the studies in the survey found improvement in the treatment groups on self-report anxiety tests, with no instances in which the untreated groups showed more improvement that the treated groups. Similarly, another survey found evidence of reduction in anxiety as a result of stress management/anxiety reduction treatment in all but two studies included in the survey.

Contrary to these finding, this study showed an increase in anxiety level by both the treatment and control groups. This difference possibly could be explained by the timing of the posttest since it was given immediately following the final course examination. Although all course requirements had been completed at that point, the final outcome of the

course was not yet known. This could account for the increase in both the state and trait anxiety levels.

This finding was of interest in two ways. First it was noted that pretest anxiety scores were significantly lower than the anxiety scores for the norm- referenced college students identified by Spielberger (1983). The increase anxiety scores at the time of the posttest were much closer to those of the norm referenced group.

Question 4. Was there a difference in academic performance and attrition at the end of the first nursing course for a group of students who participated in a structured stress management program and those who did not?

The final course grades of the students in the control group was not significantly different from the grade received by the students who participated in the stress management program. This result was consistent with the literature.

The studies cited by Tobias (1979) that provided consistent support for the effectiveness of a stress management/anxiety reduction treatment did not demonstrate a similar consistency in findings related to the effect of anxiety reduction on academic performance. In fact, 50 percent of the studies included in one survey showed approximately equal academic performance outcomes for treated and untreated groups. Thus it was not unusual to have a reduction in anxiety level that did not result in improved

academic performance. These finding were supported by Tryon (1980) and Anton (1976).

The most important finding of the study was the significant difference in attrition for the experimental and control groups. There were no withdrawals or failures in the experimental group as compared to eight (12.5 percent) in the control group. If the finding of difference in attrition was combined with the lack of differences in state and trait anxiety, one must search for other explanations for the difference in attrition besides reduction in anxiety.

One possible explanation was suggested by Anton (1976) when the effectiveness of a specific treatment program was compared with a group counseling control group. In this study the counseled group received time and attention equal to that of the treatment group, but without a particular stress management or anxiety reduction strategy. The results prompted Anton to recommend further study to determine the effectiveness of focused attention on anxiety reduction. Therefore, although there was no effect of anxiety reduction as a result of the stress management program in the present study, it was speculated that the time and attention given to the students during the stress management sessions might have been sufficient to make a difference in their ability to handle program demands.

Another factor that might have influenced the lack of attrition in the treatment group was the voluntary nature of

participation in the stress management program. Frequently it is the "good" student who takes advantage of opportunities to do better. If that were true in this study, the nature of students who voluntarily participated in the stress management program could have biased the composition of the experimental group.

Question 5. Was there a difference between the anxiety level of students who successfully completed and those who did not successfully complete the first nursing course?

The differences in anxiety level for completers and noncompleters showed the same pattern as was seen with the differences between the experimental and control groups. State and trait anxiety increased from pretest to posttest. In this instance, completers showed a greater increase in anxiety than did noncompleters. Again, timing of the posttest could have influenced the difference. The completers took the posttest at the time of the final examination, whereas the noncompleters took the posttest after the decision to withdraw had been made and the burden and pressure of school reduced.

Question 6. Were there differences in demographic variables between students who successfully completed and those who did not successfully complete the first nursing course?

The test to determine difference in demographic variables between the completers and noncompleters did not

result in significant differences. In the literature, various research studies have isolated variables that were either strongly related or significantly related to attrition, including scholastic aptitude (Pantages and Creedom, 1978), grade point average (Knopke, 1979) and age (Hutcheson, Garland, and Lowe, 1979 and Marshall, 1989). On the contrary, Raderman and Allen (1974) found there were no significant differences in any descriptive or demographic variables such as age, scholastic aptitude, number of children, gender, race or marital status. The only variable consistently identified in the literature as different was grade point average (Knopke, 1979; Hutcheson, Garland and Lowe, 1978; and Raderman and Allen, 1974).

Results of this study, however, supported the study of Raderman and Allen (1974) since there were no significant differences between completers and noncompleters in scholastic aptitude, age, student credit hour load, or hours of employment. Although not significant, it was interesting to note that noncompleters in this study were younger, had slightly lower NLN scores, averaged more credit hours, and worked more hours outside of school. This knowledge could have implications in the prevention of attrition. The younger student with lower scholastic aptitude on the measure of scholastic aptitude could be targeted for preadmission counseling in regards credit hour load and outside employment.

Conclusions

The findings of the study did not demonstrate that a short term stress management intervention decreased the anxiety level experienced by students enrolled in an associate degree nursing program. However, the attrition rate for the group of students who undertook the stress management/anxiety reduction program was significantly different from the control group. It was concluded, therefore, that completion of an intervention strategy, which included a combination of cognitive and behavioral anxiety reduction techniques and stress management, test-taking, and study skills, did make a difference in the eventual success of students in the first nursing course. The resulting difference in attrition, however, could not be attributed to a significant reduction in anxiety or to an improvement in academic performance. The implication of these two conclusions appeared to be that another explanation for the attrition other than anxiety reduction needed to be identified.

One possible explanation of the finding was the positive effect of time and attention as provided by the researcher during the treatment sessions. The opportunity to air complaints, discuss problems, receive encouraging feedback, and develop additional support systems might have provided the edge needed to meet the requirements of a demanding curriculum.

However, one must be cautious in attributing the difference in attrition to the stress management program. Because of the voluntary nature of the experimental group, the self-selection process could have influenced the composition of the experimental group such that success in the course was more likely.

It was further concluded that anxiety, whether used to identify differences in the nursing class, determine effectiveness of the stress management program, or differentiate completers from noncompleters, did not prove to be a significant variable. Reduction in anxiety level was not evident, nor did a significant difference in anxiety level occur as a result of the stress management program. Therefore, students at risk of noncompletion could not be identified based on anxiety level. Other variables, though not significant, showed some interesting trends in terms of program success or failure. Specifically, noncompleters were younger, has slightly lower NLN scores, averaged more semester credit hours, and worked more hours outside of school. Improved preadmission counseling and an intervention strategy could help these students to succeed in the nursing program.

Recommendations

The results of this study did not demonstrate a relationship between anxiety, anxiety reduction, and success

in a nursing program. However, there was a significant difference in attrition for those who participated in the treatment program. The study also raised other questions related to attrition and success in a nursing program that bear consideration. Based on the findings of the study, the following recommendations, therefore, are made.

1. Nursing programs should develop and implement a comprehensive advisement program for pre-nursing students, particularly targeting students at risk of noncompletion.

2. Since the anxiety levels demonstrated by nursing students in the study were not what was anticipated, verification of these findings is indicated. It is suggested that additional study be conducted in which potential design errors are addressed. One design change would involve administration of the pre- and posttest at different times. The pretest would be given on the first day of class, not at an orientation session prior to the beginning of the semester; the posttest would be given after the final examination and course grades were known. A second change would involve the integration of the treatment strategies into the curriculum for the treatment group. This change would address the possible bias in the composition of the treatment group when participation is voluntary.

3. The need for additional study to determine the effect of focused time and attention on attrition rate was evident. It is therefore recommended that a study be

conducted with three groups: one group would receive the stress management intervention strategy, that includes test-taking, time management, and study skills and selected self-control activities, one group would receive an equal amount of staff time but with a focus unrelated to established methods of stress management or anxiety reduction, and a control group. If the stress management intervention strategy is effective, a comprehensive orientation program for new nursing classes should be developed and implemented.

LIST OF REFERENCES

LIST OF REFERENCES

Anton, W.D. (1976). An evaluation of outcome variables in the systematic desensitization of test anxiety. Behavior Research and Therapy, 14, 217-224.

Archer, J. (1986). Stress management: evaluating a preventive approach for college students. Journal of American College Health, 34 (2), 157-160.

Archer, J. & Peters, M.M. (1986). Law student stress. NASPA Journal, 23 (4), 48-54.

Barrow, J.C. & Prosen, S.S. (1981). A model of stress and counseling intervention. Personnel and Guidance Journal, 60 (1), 5-10.

Bedell, J.R. (1976). Systematic desensitization, relaxation training and suggestion in the treatment of test anxiety. Behavior Research and Therapy, 14, 309-311.

Biggers, T., Zimmerman, R.S., & Alpert, G. (1988). Nursing, nursing education, and anxiety. Journal of Nursing Education, 27 (9), 411-417.

Bradshaw, G.D. & Gaudry E. (1971). The effects of a single experience of success or failure on test anxiety. In E. Gaudry & C.D. Spielberger (Eds.), Anxiety and Educational Achievement (pp.132-137). New York: John Wiley.

Brown, M.L. (1987). The effects of a support group on student attrition due to academic failure. Journal of Nursing Education, 26 (8), 324-327.

Buros, O.K. (ed.). (1978). The Eighth Mental Measurements Yearbook (Vol I). Highland Park: The Gryphon Press.

Campbell, D.T. & Stanley, J.C. (1966). Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally.

Dreger, R.M. (1978). State-Trait Anxiety Inventory. In O.K. Buros (Ed.), The Eighth Mental Measurements Yearbook (Vol I, pp. 1094-1095). Highland Park: The Gryphon Press.

Gaudry, E. & Spielberger, C.D. (1971). Anxiety and Educational Achievement. New York: John Wiley.

Hussian, R.A. & Lawrence, P.S. (1978). The reduction of test, state, and trait anxiety by test-specific and stress inoculation training. Cognitive Therapy and Research, 2 (1), 25-37.

Hutcheson, J.D., Garland, L.M., & Prather, J.E. (1973). Towards reducing attrition in baccalaureate nursing programs: an exploratory study. Nursing Research, 22 (6), 530-533.

Hutcheson, J.D., Garland, L.M., & Lowe, L.S. (1979). Antecedents of nursing school attrition: attitudinal dimensions. Nursing Research, 28 (1), 57-62.

Katkin, E.S. (1978). State-Trait Anxiety Inventory. In O.K. Buros (Ed.), The Eighth Mental Measurements Yearbook (Vol II, pp. 1095-1096). Highland Park: The Gryphon Press.

Knopke, H.J. (1979). Predicting student attrition in an baccalaureate curriculum. Nursing Research, 28 (4), 224-227.

Linn, B.S. & Zeppa, R. (1984). Stress in junior medical students: relationship to personality and performance. Journal of Medical Education, 59 (1), 7-12.

Lonabocker, L. (1982). Can an institution construct a dropout profile? College and University, 58 (1), 76-84.

Marshall, J.E. (1989). Student attrition: is lack of support a key? Nursing Outlook, 37 (4), 176-178.

McKeachie, W.J. (1977). Overview and critique. In J.E. Sieber, H.F. O'Neil, & S. Tobias (Eds.), Anxiety, Learning, and Instruction (pp.3-10). New York: John Wiley & Sons.

Meichenbaum, D.H. (1972). Cognitive modification of test anxious college students. Journal of Counseling and Clinical Psychology, 39 (3), 370-380.

Meichenbaum, D.H. (1977). Cognitive Behavior Modification - An Integrative Approach. New York: Plenum Press.

Meichenbaum, D.H. (1985). Stress Inoculation Training. New York: Pergamon Press.

Murray, M. (1983). Role conflict and intention to leave nursing. Journal of Advanced Nursing, 8 (1), 29-31.

Pantages, T.J. & Creedon, C.F. (1978). Studies of college attrition: 1950-1975. Review of Educational Research, 48 (1), 49-101.

Parkes, K.R. (1985). Stressful episodes reported by first year student nurses: a descriptive account. Social Science Medicine, 20 (9), 945-953.

Raderman, R. & Allen, D.V. (1974). Registered nurse students in a baccalaureate program: factors associated with completion. Nursing Research, 23 (1), 71-73.

Rosburg, M.O. (1989). A Comparison of the anxiety levels of college students: nurses, police and fire fighters. (Doctoral dissertation, University of California, 1988). Dissertation Abstracts International, 49, 2082-A.

Rose, H.A. (1965). Prediction and prevention of freshman attrition. Journal of Counseling Psychology, 12 (4), 399-403.

Rose, H.A. & Elton, C.F. (1966). Another look at the college dropout. Journal of Counseling Psychology, 13 (2), 242-245.

Rosenfeld, P. (1988). Measuring student retention: a national analysis. Nursing and Health Care, 9 (4), 198-202.

Sarason, I.G. (1960). Empirical findings and theoretical problems in the use of anxiety scales. Psychological Bulletin, 57 (5), 403-415.

Sarason, I.G. (1962). Test anxiety and the intellectual performance of college students. Journal of Educational Psychology, 52, 201-206.

Sinclair, K.E. (1971). The influence of anxiety on several measures of classroom performance. In E. Gaudry & C.D. Spielberger (Eds.), Anxiety and Educational Achievement (pp. 95-106). New York: John Wiley.

Spielberger, C.D. (1971). The effects of manifest anxiety in academic achievement of college students. In E. Gaudry & C.D. Spielberger (Eds.), Anxiety and Educational Achievement (pp. 118-125). New York: John Wiley.

Spielberger, C.D., Vagg, P.R., Barker, L.R., Dunham, G.W., & Westberry, L.G. (1980). In I.G. Sarason & C.D. Spielberger (Eds.), Stress and Anxiety (Vol. 7, pp.95-110), New York: Halsted Press.

Spielberger, C.D. (1983). Manual for the state-trait test anxiety inventory booklet (Form-Y). Palo Alto, CA: Consulting Psychologists Press.

Tobias, S. (1979). Anxiety Research in Educational Psychology. Journal of Educational Psychology, 71 (5), 573-582.

Tryon, G.S. (1980). The measurement and treatment of test anxiety. Review of Educational Research, 50 (2), 343-372.

Warnecke, R.B. (1973). Non-intellectual factors related to attrition from a collegiate nursing program. Journal of Health and Social Behavior, 14 (2), 153-167.

Wernick, R.L. (1984). Stress management with practical nursing students: effects on attrition. Cognitive Therapy and Research, 8 (5), 543-550.

Wine, J. (1971). Test anxiety and direction of attention. Psychological Bulletin, 76 (2) 92-104.

Wrightman, L.S. (1962). The effects of anxiety, achievement, motivation, and task importance upon performance on intelligence test. Journal of Educational Psychology, 53, 150-156.

APPENDICES

APPENDIX A

STUDENT INFORMATION FORM

Please provide all of the information requested below.

Student ID Test Number: _____

Age: _____ **Sex:** _____ **Race:** _____

Marital Status: (Check one)

_____ Single, never married
_____ Married, or live-in relationship
_____ Divorced
_____ Widowed

Number of Children:

Total # children: _____
Children at home: _____

Ages of Children: _____

Employment Status:

Hrs/week employed: _____
Hourly or weekly pay: _____
Type of work: _____

Student Status:

Credit hrs: _____

Do you feel a sense of anxiety when you think of entering nursing school?

Yes: _____ No: _____

If yes, identify two factors from the list below that cause you the most anxiety when you think about entering nursing school. Please feel free to add any other sources of anxiety that are not on the list.

Place a "1" on the line of the greatest source of anxiety
Place a "2" on the line of the next greatest source of anxiety.

_____ nursing course grades
_____ patient care insecurities
_____ not enough time to study
_____ not enough time for family/friends
_____ not enough time for self
_____ heavy course load
_____ personal health
_____ family problems
_____ financial problems
_____ employment
_____ choice of nursing as a career
_____ Other, please specify _____
_____ Other, please specify _____

Thank-you.

APPENDIX B

EXIT INTERVIEW GUIDE

Student ID Test Number: _____

Date of Interview: _____ **Last Day of Attendance** _____

1. What is your test average in NS 118 at the present? _____%

2. Please describe your reason for withdrawing from the nursing program at this time.

3. Do you feel that you have a high, moderate, or low anxiety level concerning being in nursing school?

4. Are any of the following related to your decision to withdraw from school?

   _____ nursing course grades
   _____ patient care insecurities
   _____ not enough time to study
   _____ not enough time for family/friends
   _____ not enough time for self
   _____ heavy course load
   _____ personal health
   _____ family problems
   _____ financial problems
   _____ employment
   _____ choice of nursing as a career

   Which is most important?

   Which is second most important?

5. Do you plan to reenter the nursing program at a later time?

APPENDIX C

CONSENT TO PARTICIPATE

Students when they decide to enter a nursing program experience a variety of thoughts and feelings as classes are scheduled to begin. As a student in the doctoral program in Adult and Technological Education at the University of Tennessee at Knoxville, I am attempting to identify and describe the emotions and feelings that are experienced by a new class of nursing students as they begin their journey into the profession of nursing.

As part of this project, I would like for you to complete the attached two forms. One is a two page Self-Evaluation Questionnaire on which you are able to describe and rate your feelings "in general" and "at this moment, as you start school". The same questionnaire will again be administered at the completion of the fall semester. The second form is an information form that provides personal descriptive information. The information from the data form and scores on the questionnaire will be confidential and used to describe a profile of the entering class of nursing students. The number that appears on each form will be used by the researcher for recording the data. All data records will be maintained using only the identification number.

Completion of these forms is totally voluntary and is not related to your enrollment in the Nursing Program.

You signature below indicates your willingness to complete the attached forms and participate in this study.

Thank-you for your help in this project.

Cynthia W. Swafford

_____ _____

(Signature of Student) (Date)

APPENDIX D

CONSENT TO PARTICIPATE IN STRESS MANAGEMENT PROGRAM

To the Student in the Monday-Wednesday-Friday Group:

As part of the requirements for a doctoral degree from the University of Tennessee at Knoxville, I am in the process of conducting a research project that focuses on nursing student anxiety and the effectiveness of a structured stress management program in decreasing stress and anxiety. As part of this project, I am seeking your participation in a stress management program. The program will consist of approximately eight, one hour sessions to be held each Monday from 11:00 a.m. to 12:00 noon, beginning September 10, 1990.

The program will focus primarily on anxiety associated with test-taking and clinical performance evaluation. Included in the program will be the discussion, practice and implementation of a variety of coping strategies designed to decrease anxiety and/or stress, such as breathing and progressive muscular relaxation techniques, positive self-statements, visual imagery, study skills, test-taking skills and time management. The sessions will include lecture, role playing, small and large group discussions, and group participation in stress reduction techniques.

Participation in this program is totally voluntary and in no way related to your enrollment in the Nursing Program. Although attendance at each of the sessions is encouraged, it is not required. You may voluntarily withdraw from the program at any time during the semester.

In signing this statement, I indicate my agreement to participate in the stress management program.

Student Signature _____ Date _____

APPENDIX E

DATA TABLE

ID#	GRP	RX	ATT	bSTATE	bTRAIT	aSTATE	aTRAIT	SEX	RACE	MAR	CHLD	AGE	NLN	N118	CR H	EMP
1	C	C	P	24	28	41	36	F	W	S	0	28	125	84	9	15.0
2	C	C	P	28	23	.	.	F	W	S	0	27	114	84	9	0.0
3	C	C	P	42	33	53	43	F	W	M	1	24	115	93	9	0.0
4	C	C	P	43	31	69	28	F	W	M	1	23	107	86	12	0.0
5	C	C	P	32	29	.	.	F	W	D	4	42	136	84	16	32.0
6	C	C	P	29	25	33	31	F	W	M	0	20	.	80	9	20.0
7	C	C	P	32	32	60	39	F	W	M	0	21	103	80	12	24.0
8	C	C	P	64	21	72	36	F	W	D	1	37	125	82	19	48.0
9	C	C	P	36	36	58	47	F	W	S	0	20	103	75	9	20.0
10	C	C	P	46	36	.	.	F	W	M	1	24	124	80	15	0.0
11	C	C	P	35	27	.	.	F	W	M	0	29	137	90	12	13.5
12	C	C	P	35	37	69	45	F	W	S	0	19	102	73	13	25.0
13	C	C	P	32	27	39	30	F	W	M	0	27	125	90	16	0.0
14	C	C	P	28	28	55	36	F	W	D	2	39	133	77	12	0.0
15	C	C	P	32	24	30	24	F	W	M	3	39	116	72	9	6.0
16	C	C	P	34	41	.	.	M	W	M	0	39	118	74	9	38.0
17	C	C	P	38	35	33	42	F	W	S	0	21	100	79	12	27.5
18	C	C	P	25	20	40	35	F	W	D	0	25	107	78	9	35.0
19	C	C	P	33	32	59	49	F	W	M	0	25	108	77	12	28.0
20	C	C	P	39	31	.	.	F	W	M	1	42	111	82	12	30.0
21	C	C	W	43	39	73	52	F	W	S	0	18	108	.	19	0.0
22	C	C	P	56	43	68	50	F	W	M	2	35	105	79	12	9.0
23	C	C	P	20	22	49	51	M	W	S	0	21	130	79	12	32.0
24	C	C	P	27	38	58	50	F	W	D	1	26	109	87	12	0.0
25	C	C	P	34	26	36	33	F	W	M	3	43	99	79	9	0.0
26	C	C	P	33	33	36	34	F	W	S	0	19	108	88	12	15.0
27	C	C	P	35	33	48	51	F	W	D	0	48	109	87	9	30.0
28	C	C	P	37	36	47	34	F	B	S	0	22	90	84	15	30.0
29	C	C	P	56	47	80	64	M	W	S	0	20	104	80	12	30.0
30	C	C	P	38	42	45	45	F	W	S	0	20	108	74	12	9.0
31	C	C	P	30	24	20	21	F	W	W	1	33	100	72	12	0.0
32	C	C	P	36	32	58	39	F	W	S	0	23	116	74	13	20.0
33	C	C	P	25	28	36	30	F	W	M	3	44	116	84	9	30.0
34	C	C	P	69	45	44	39	F	W	M	2	41	110	87	9	0.0
35	C	C	P	34	34	48	46	F	W	M	0	20	141	91	9	36.0
36	C	C	W	38	36	.	.	F	W	S	0	20	119	.	12	28.0
37	C	C	W	50	44	.	.	F	W	M	0	20	98	.	9	18.0
38	C	C	P	32	26	28	26	F	W	S	0	23	107	76	15	37.5
39	C	C	P	32	28	63	55	F	W	M	1	20	127	83	12	0.0
40	C	C	P	41	28	33	33	F	W	M	2	28	113	88	15	0.0
41	C	C	P	36	33	47	42	F	W	S	0	30	95	76	12	24.0
42	C	C	P	33	28	64	38	F	W	D	0	46	107	81	16	20.0
43	C	C	P	42	37	.	.	F	W	S	0	20	116	82	9	20.0
44	C	C	P	31	24	.	.	F	W	S	0	20	115	82	16	0.0
45	C	C	P	24	30	36	40	F	W	M	4	38	108	83	9	24.0
46	C	C	P	37	36	51	43	F	W	M	2	35	107	80	15	32.0
47	C	C	P	29	29	56	48	F	W	M	2	29	121	81	19	0.0
48	C	C	W	44	43	33	44	F	W	W	0	46	143	.	13	0.0
49	C	C	P	47	29	.	.	F	W	M	0	21	117	72	12	33.0
50	C	C	W	34	29	31	38	F	W	M	0	41	130	.	12	22.5

. indicates missing data

ID#	GRP	RX	ATT	bSTATE	bTRAIT	aSTATE	aTRAIT	SEX	RACE	MAR	CHLD	AGE	NLN	N118	CR H	EMP
51	C	C	P	42	34	49	61	F	W	M	0	33	103	87	16	20.0
52	C	C	P	48	36	39	38	F	W	M	2	27	121	78	15	0.0
53	C	C	P	33	24	35	28	M	W	S	0	21	103	73	9	26.0
54	C	C	F	24	27	.	.	F	W	S	1	19	95	66	9	20.0
55	C	C	P	31	26	52	38	F	W	M	1	36	104	78	20	24.0
56	C	C	F	60	31	62	38	M	W	M	0	25	99	67	16	37.5
57	C	C	P	35	29	45	31	F	W	M	0	28	133	73	13	20.0
58	C	C	P	25	21	36	28	F	W	M	3	24	104	74	12	12.0
59	C	C	P	33	30	24	25	M	W	S	0	27	119	81	19	0.0
60	C	C	P	61	38	.	.	F	W	S	0	18	109	83	19	14.0
61	C	C	P	25	28	.	.	F	W	S	0	20	101	71	9	18.0
62	C	C	F	37	45	46	29	F	W	M	1	21	91	68	8	30.0
63	C	C	P	38	40	53	42	F	W	M	3	45	110	81	12	0.0
64	C	C	P	34	38	50	45	F	W	S	0	19	129	78	9	24.0
65	T	NX	P	31	32	.	.	M	W	M	3	29	111	75	24	24.0
66	T	NX	P	30	23	60	42	F	W	S	1	30	115	77	12	7.5
67	T	NX	P	46	27	79	30	F	W	S	0	22	101	85	9	28.0
68	T	NX	P	37	44	55	49	F	W	M	1	29	111	72	16	20.0
69	T	NX	P	27	33	22	34	F	W	S	0	18	112	79	16	0.0
70	T	NX	W	33	31	28	30	F	W	M	0	35	125	.	13	28.0
71	T	NX	P	40	42	49	60	F	W	S	0	19	113	78	9	0.0
72	T	NX	P	52	27	56	46	F	W	D	3	26	106	71	12	23.0
73	T	NX	P	40	39	42	46	F	W	M	1	28	120	89	12	0.0
74	T	NX	P	25	31	40	37	F	W	M	3	42	120	79	12	0.0
75	T	NX	P	46	40	39	39	F	W	M	4	36	106	78	9	25.0
76	T	NX	P	21	24	31	30	F	W	S	0	19	101	85	12	22.5
77	T	NX	P	20	20	20	21	F	W	S	0	26	107	82	12	0.0
78	T	NX	F	38	31	63	53	F	W	S	0	20	108	68	19	0.0
79	T	NX	P	25	24	30	32	F	W	M	2	37	136	82	13	0.0
80	T	NX	P	32	39	57	44	F	W	S	0	21	97	70	9	21.0
81	T	NX	P	25	34	63	46	F	W	S	1	19	110	74	9	0.0
82	T	NX	.	26	40	24	36	F	W	M	0	21	136	.	12	37.5
83	T	NX	P	47	37	58	41	F	W	M	2	35	116	78	15	0.0
84	T	NX	P	42	47	38	39	M	W	M	0	28	118	88	12	0.0
85	T	NX	P	22	23	33	26	F	W	D	2	29	140	83	9	0.0
86	T	NX	P	44	35	51	40	F	W	D	1	43	105	81	12	10.0
87	T	NX	P	37	35	50	49	F	W	M	2	26	118	80	9	0.0
88	T	NX	P	61	44	36	48	F	W	M	1	44	104	79	12	0.0
89	T	NX	P	57	34	67	60	F	W	S	0	18	110	75	19	40.0
90	T	NX	P	50	35	40	37	F	W	M	0	24	119	83	9	36.0
91	T	NX	P	46	29	49	50	F	W	M	1	36	117	91	12	0.0
92	T	NX	P	28	27	34	41	F	W	M	0	45	120	88	13	0.0
93	T	NX	P	32	22	70	35	F	W	M	2	28	126	75	16	0.0
94	T	NX	P	43	34	32	51	M	W	S	0	19	118	72	15	0.0
95	T	NX	P	31	36	.	.	F	B	S	0	27	139	85	12	20.0
96	T	NX	P	40	28	58	45	F	W	M	2	43	123	74	15	30.0
97	T	NX	P	47	29	.	.	F	W	M	1	23	112	78	12	0.0
98	T	NX	W	38	33	44	36	F	W	M	0	28	111	.	19	0.0
99	T	NX	P	28	30	.	.	F	W	M	2	33	128	85	16	0.0
100	T	NX	W	35	35	.	.	F	W	S	1	23	122	.	17	40.0
101	T	NX	P	41	36	37	34	F	W	M	2	26	124	87	9	16.0
102	T	NX	P	40	41	46	45	F	W	M	2	27	137	92	12	22.0
103	T	X	P	40	31	51	29	M	W	M	5	39	109	78	12	0.0
104	T	X	P	36	37	41	39	F	W	M	1	35	101	88	12	17.5
405	T	X	P	46	36	60	54	F	W	S	0	18	103	79	16	17.5
106	T	X	P	30	25	45	32	F	W	M	2	43	131	93	12	0.0

. indicates missing data

ID#	GRP	RX	ATT	bSTATE	bTRAIT	aSTATE	aTRAIT	SEX	RACE	MAR	CHLD	AGE	NLN	N118	CR H	EMP
107	T	X	P	32	29	63	37	F	W	M	3	44	120	84	9	0.0
108	T	X	P	30	40	46	47	F	W	M	2	30	118	84	12	15.0
109	T	X	P	38	40	35	34	F	W	M	2	36	133	89	19	0.0
110	T	X	P	28	27	49	47	F	W	M	3	32	133	86	16	0.0
111	T	X	P	27	28	28	24	F	W	M	1	30	145	91	19	45.0
112	T	X	P	42	44	48	49	F	W	S	0	19	98	75	9	17.5
113	T	X	P	45	33	36	40	F	W	D	2	39	139	92	13	32.5
114	T	X	P	22	40	49	45	M	W	M	1	44	121	70	12	10.0
115	T	X	P	21	23	.	.	M	W	S	0	19	123	76	15	12.0
116	T	X	P	27	26	39	34	F	W	S	0	22	112	79	19	15.0
117	T	X	P	39	35	26	41	F	W	M	2	48	123	86	9	0.0
118	T	X	P	60	36	43	39	F	W	D	0	43	112	78	15	0.0
119	T	X	P	44	36	28	30	F	W	M	0	18	108	79	19	0.0
120	T	X	P	30	31	59	48	F	W	D	1	22	106	84	9	0.0
121	T	X	P	36	25	54	28	F	AI	M	0	43	103	80	16	0.0
122	T	X	P	35	39	51	29	F	W	D	0	22	98	83	12	22.0

. indicates missing data

VITA

Cynthia Wolcott Swafford was born in Warsaw, New York on September 26, 1946. She attended elementary school in Cincinnatus, New York and graduated from Perry Central High School, Perry, New York in 1964. In the fall of that year she entered the School of Nursing at the State University of New York at Buffalo and in May 1968 received the degree of Bachelor of Science in Nursing with honors. The following fall, she entered the Rackham School of Graduate Studies at the University of Michigan. The degree of Master of Science with a major in Medical Surgical Nursing was conferred in May 1970.

Upon completion of graduate studies, she taught Medical Surgical Nursing at The University of Michigan School of Nursing from 1970-72 and at Austin Peay State University from 1972-75. She served at the Supervisor of Health Occupations Education with the Chattanooga City Schools from 1975 to 1988, prior to assuming her present position as Director of the Nursing Program at Chattanooga State Technical Community College in 1988.

She entered the Doctor of Education program in Technological and Adult Education and was awarded the degree in May 1992.