

## **ABSTRACT**

Linda D. Smith. STUDENT RETENTION IN ASSOCIATE DEGREE NURSING PROGRAMS IN NORTH CAROLINA. (Under the direction of Dr. Martha Engelke) College of Nursing, March, 2013.

The purpose of this study was to examine the relationship between socio-demographic characteristics, dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina. Additionally, as a newly developed instrument was used, the reliability factor structure and psychometric properties of the instrument were tested and compared to the original study in which the instrument was developed. A secondary aim of this study was to explore the relationship between institutional factors and first semester retention rates of associate degree programs. The study sample consisted of 439 nursing students attending 8 associate degree nursing programs in North Carolina. The relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester was measured by specific items and factors on the Dispositional, Situational, and Institutional Questionnaire (Seago et al., 2008).

Data revealed a relationship between ethnicity, related courses completed, number of developmental courses, and other family members financially dependent and first semester retention. There was also a significant relationship between retention and autonomy, confidence in ability, and flexibility. Students not retained were 3.1 times more likely to have family members financially dependent on them compared to retained students. Students not retained

were 2.3 times more likely to not have completed all their related courses compared to retained students and non-retained students were 2.1 times more likely to have taken 2 or more developmental or remedial courses compared to retained students.

Understanding and predicting student retention is a challenge. This study represents a beginning understanding of this relationship and provides implications for nurse educators when reviewing nursing admission requirements and orienting new nursing students to the program and college. With the nursing shortage expected to worsen over the next several years, nursing programs must not only attract qualified students but also employ strategies to retain students and graduate competent professionals.

STUDENT RETENTION IN ASSOCIATE DEGREE NURSING PROGRAMS  
IN NORTH CAROLINA

A Dissertation

Presented to

The Faculty of the College of Nursing

East Carolina University

In Partial Fulfillment of

The Requirements for the Degree

Doctor of Philosophy

by

Linda D. Smith

March 2013

©Copyright 2013

Linda D. Smith

STUDENT RETENTION IN ASSOCIATE DEGREE NURSING PROGRAMS  
IN NORTH CAROLINA

by

Linda D. Smith

APPROVED BY:

DIRECTOR OF DISSERTATION: \_\_\_\_\_  
Martha K. Engelke, PhD, RN, CNE

COMMITTEE MEMBER: \_\_\_\_\_  
Melvin S. Swanson, PhD

COMMITTEE MEMBER: \_\_\_\_\_  
Carol Winters, PhD, RN, CNE

COMMITTEE MEMBER: \_\_\_\_\_  
Annette Peery, RN, Ed.D, CNE, CDE

COMMITTEE MEMBER: \_\_\_\_\_  
Joyce Roth, RN, MSN

DIRECTOR OF THE COLLEGE  
PhD PROGRAM, COLLEGE OF  
NURSING: \_\_\_\_\_  
Marie E. Pokorny, PhD, RN

DEAN OF THE  
GRADUATE SCHOOL: \_\_\_\_\_  
Paul J. Gemperline, PhD

## **DEDICATION**

To my husband, Harry R. Smith and my children, Melissa, Brian, and Chad; for encouraging me to pursue my dream and always believing in my ability to succeed. Without your ongoing support, love, and endless words of encouragement, this would not be possible.

## ACKNOWLEDGEMENTS

There are many individuals that I am deeply grateful to that without their support and dedication this accomplishment would never have been possible.

Dr. Martha Engelke, my dissertation Chair is a true inspiration and mentor. Your expertise, direction and guidance throughout this journey, and endless words of encouragement, I am forever grateful. Always cheering me to be my best and never tiring from inspiring others. You are truly a role model for nurse educators and future researchers.

I am sincerely thankful to Dr. Melvin Swanson, for loving data and having the ability to make data meaningful. Always striving for quality research and never losing sight of what is important and significant. Thank you for teaching me to see the difference.

A special thank you to Dr. Annette Peery and Dr. Carol Winters, committee members, who generously gave their time and expertise and supportive feedback. Your messages of encouragement provided timely motivation throughout this journey.

Words alone do not express my gratitude to Joyce Roth, a committee member, who provided knowledge and valuable input. Thank you for participating in this process, your passion for the nursing profession, and for being a mentor and friend over the years.

Thank you to my nurse colleagues and friends in the community college system for assisting and inspiring me. Always taking the time to respond to emails and phone calls, in addition to your many other responsibilities and commitments. I am also grateful to my administration and co-workers who supported and encouraged me along the way.

Lastly to all, in believing in me and believing that this research was important.

## TABLE OF CONTENTS

LIST OF TABLES .....	viii
LIST OF FIGURES .....	xii
CHAPTER 1: INTRODUCTION .....	1
Statement of the Problem .....	1
Significance/Background.....	2
Theory/Conceptual Framework.....	5
Transitions Theory.....	5
Retention Theory .....	7
Purpose .....	10
Research Questions.....	11
Summary.....	11
CHAPTER 2: LITERATURE REVIEW .....	13
Dispositional Factors .....	13
Academic aptitude and abilities .....	15
Motivation .....	19
Emotional outlook and physical well-being.....	20
Persistence and commitment.....	22
Summary.....	24

Situational Factors .....	25
Social support.....	25
Financial status.....	26
Lack of time or devotion .....	27
Family and job responsibilities .....	28
Summary.....	31
Institutional Factors .....	31
Social integration.....	31
Faculty support.....	33
Academic enrichment programs.....	33
Program characteristics .....	35
Summary.....	36
Literature Review of Theoretical Approach.....	36
Retention theory .....	36
Transitions theory.....	39
Summary.....	42
CHAPTER 3: METHODOLOGY .....	44
Research Design .....	44
Setting.....	44
Sample .....	46

Ethical Considerations .....	47
Data Collection .....	48
Instrument .....	50
Instrument development .....	50
Definition of variables.....	52
Dispositional Constructs.....	58
Demographic characteristics .....	58
Academic aptitude and abilities .....	59
Motivation .....	59
Emotional outlook and physical well-being.....	59
Persistence and commitment.....	60
Career values .....	60
Situational Constructs.....	60
Social support.....	60
Financial status .....	60
Lack of time or devotion .....	60
Job responsibilities .....	61
Family needs .....	61
Institutional Constructs.....	61
Social integration.....	61

Faculty support.....	61
College and program characteristics .....	61
Data Analysis Plan.....	62
Limitations.....	65
Summary.....	66
CHAPTER 4: Findings .....	67
Characteristics of the Sample .....	67
Research Question #1 .....	68
Research Question #2 .....	70
Research Question #3 .....	81
Research Question #4 .....	83
Research Question #5 .....	85
Summary.....	86
CHAPTER 5: DISCUSSION, CONCLUSIONS, RECOMMENDATIONS, IMPLICATIONS	87
Overview .....	87
Discussion.....	88
Conceptual Model.....	93
Strengths and Limitations .....	95
Implications and Recommendations.....	97
Nursing education .....	97

Nursing research.....	99
Summary.....	101
REFERENCES .....	102
APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL.....	114
APPENDIX B: COLLEGE 01 APPROVAL LETTER.....	115
APPENDIX C: COLLEGE 02 APPROVAL LETTER.....	116
APPENDIX D: COLLEGE 03 APPROVAL LETTER .....	117
APPENDIX E: COLLEGE 04 APPROVAL LETTER.....	118
APPENDIX F: COLLEGE 05 APPROVAL LETTER .....	119
APPENDIX G: COLLEGE 06 APPROVAL LETTER .....	120
APPENDIX H: COLLEGE 07 APPROVAL LETTER .....	121
APPENDIX I: COLLEGE 08 APPROVAL LETTER .....	122

## LIST OF TABLES

1. Definition of Variables.....	53
2. Program Retention Characteristics.....	67
3. Socio-Demographic Characteristics of Retained and Not Retained Students.....	69
4. Results of Parallel Analysis.....	73
5. Pattern Matrix for PCA with Oblimin Rotation of Eleven Factor Solution of DSI Items.....	74
6. Factor Extraction and Corresponding Construct.....	80
7. Differences Between Retained and Not Retained Students on Instrument Items.....	82
8. Logistic Regression Predicting Likelihood of Attrition at the End of the First Semester.....	84
9. Logistic Regression of All Predictors of Attrition at the End of the First Semester.....	85
10. Spearman Rank Order Correlation Between Drop Rate and Derived Program Variables.....	86

## **LIST OF FIGURES**

1. Conceptual model: Associate Degree Nursing Student Retention.....113

## **CHAPTER 1: INTRODUCTION**

Student retention is important for measuring program effectiveness in a prevailing environment of accountability and budgetary constraints. Retention rates in associate degree nursing (ADN) programs have varied widely and the reasons for high attrition are not well-understood. Why a student leaves a nursing program, voluntarily or involuntarily, after successfully meeting competitive admission criteria, is an important area of research which can inform educational policy. Before educational leaders can address the issues surrounding attrition it is necessary to first identify the factors that are related to attrition. This study examined factors which contribute to attrition and retention of associate degree nursing students, thereby providing a guide for nurse educators so that they can foster student success and improve graduation rates.

### **Statement of the Problem**

Attrition rates from Associate Degree Nursing (ADN) programs in North Carolina are alarmingly high. Even after strategies were put in place to increase admission requirements, thereby attracting more qualified applicants, these rates still persist. Students spend a great deal of time meeting admission requirements and taking courses to qualify for the limited number of seats in the ADN programs. There are many emotional and financial costs for students, the school and society when a student does not complete a program. These include additional costs encountered by the students, loss of tuition and fees to the institution, loss of time for the student, letting go of a dream, and many times, the loss of a future nurse (Johnson, Johnson, McKee, & Kim, 2009). From the fifty-five associate degree programs in the North Carolina Community College System (NCCCS), the aggregate 3-year (2009-2011) on-time completion rate is 58%.

While policy makers are keenly aware that attrition from ADN programs is problematic, there is lack of empirical evidence to identify the specific factors contributing to student attrition. Sparked by nursing shortages, state and national workforce planners have invested significantly in recruitment efforts and ways to expand program capacity with little regard to program completion rates. The emphasis has been on enlarging the pipeline without fixing the leaks. Therefore, now is the time to focus on retention in nursing programs and supporting students from admission to graduation.

### **Significance/Background**

Although the current economic climate has given some short-term relief to the nurse shortage, large shortages are expected in the next decade. In addition to the 2.5 million existing positions for registered nurses, the U.S. Bureau of Labor Statistics projects that nearly 233,000 additional jobs for registered nurses will open each year through 2016 (U.S. Labor Bureau, 2010). While the number of licensed registered nurses (RN) nationwide grew 5% to a new annual high of 3.1 million between 2004 and 2008, this increase will not meet the projected demand (Health Resources and Services Administration [HRSA], 2010). The growth in number of jobs coupled with nurses retiring or leaving the profession, will create a renewed critical shortage by the end of the decade (American Nurses Association, 2010).

Figures from the National Center for Health Workforce Analysis estimate that 80 percent of the states have a shortage of registered nurses. North Carolina ranks nineteenth in the United States (US), with a deficit of approximately 8000 nurses in 2010 (HRSA, 2010). Furthermore, the total population of North Carolina is projected to grow 13% between 2000 and 2020, while the population 65 years and older is projected to increase 76%, indicating a continued need for more nurses in the workforce (HRSA, 2004). Two-thirds (64.6%) of the practicing nurses in

North Carolina (NC) earn their credentials in a NC Associated Degree Nursing program (Cecil G. Sheps Center for Health Services Research, 2008).

The Task Force on North Carolina Nursing Workforce made recommendations to address the nursing workforce shortage in the state. A priority recommendation was for North Carolina Nursing Programs to increase the production of prelicensure registered nurses and licensed practical nurses (North Carolina Institute of Medicine [NCIOM], 2007). However, increasing the production of new graduates is complex and expensive. Nursing programs need additional faculty, classroom and lab space, clinical sites, and program resources to expand existing programs.

In particular, there is a critical need for faculty. According to the American Association of Colleges of Nursing (AACN), nursing schools turned away 75,587 qualified applicants from baccalaureate and graduate nursing programs in 2011 due to insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints. Almost two-thirds of the nursing schools responding to the survey indicated faculty shortages as the reason for not accepting all qualified applicants into entry-level baccalaureate programs (American Association of Colleges of Nursing [AACN], 2012). A previous 2009 survey indicated entry-level bachelor of nursing programs turned away nearly 40,000 qualified applicants, even as enrollment increased 3.5 percent (AACN, 2010). Furthermore, a 2011 survey found a total of 1,088 faculty vacancies from 603 nursing schools with baccalaureate and/or graduate programs across the country (88.6% response rate). In addition to the vacancies, schools also cited the need to create an additional 104 faculty positions to accommodate student demand (AACN, 2012). When admission is delayed because of lack of capacity, potential students become disillusioned and

frustrated as they are forced to wait another year to apply to a nursing program, therefore choosing an alternate career path.

Limited admissions to nursing programs are a part of the problem related to having an adequate supply of nurses. The other problem relates to attrition. Reducing attrition rates from Associate Degree Nursing programs has the potential to significantly impact RN production, at relatively low cost. Raising the NCCCS state-wide on-time completion rate from 59% to 75% would result in the addition of 531 registered nurses to the workforce, increasing the total contribution from the cohort to 2,342 per year (Cecil G. Sheps Center for Health Services Research, 2008).

In compliance with a recommendation from the North Carolina Institute of Medicine (NCIOM), a consistent standard was developed for the evaluation of retention-specific data statewide across all community college-sponsored nursing programs (NCIOM, 2007). On-time completion is defined as graduating within the prescribed semester sequence required by the nursing education program in which the student is enrolled (North Carolina Board of Nursing [NCBON], 2011). The North Carolina Board of Nursing (NCBON) examines on-time completion annually and these statistics are published on their website. Additionally, the NCBON implemented rules to limit the expansion of nursing programs to those that have at least a three-year student retention rate equal to or higher than the state average retention rate for program type (NCIOM, 2007). Therefore, nursing programs must address student retention in their program in order to increase the number of students that enter the program.

With the nursing shortage expected to worsen over the next several years, nursing faculty shortages and recession-induced resource constraints limiting further program expansion, nursing

schools must address the problem of retention. Clearly, understanding retention and identifying factors that affect student retention in ADN programs will provide substantial gains in RN production, essential in meeting the health care needs of North Carolina's citizens.

### **Theory/Conceptual Framework**

Two conceptual models guide the framework of this study. Meleis (2010) provides a theoretical basis for understanding the transition experience a student encounters as they progress in the nursing program. Student retention theory (Cross, 1981; Pascarella, 1982; Pascarella & Terezini, 1991) provides a framework for organizing and grouping those factors that might be related to a student's academic and social integration into college.

### **Transitions Theory**

According to Meleis (2010), transitions are activated by critical events and changes that occur to an individual or the environment. Transition is conceptualized as a passage from one life phase, condition, or status to another with the defining characteristics of transition to include; process, disconnectedness, perception, and patterns of response (Meleis, 2010). These characteristics are unique to the event and the individual experiencing the transition. Completion of a transition implies an individual has achieved a greater sense of stability. There are four types of transitions relevant to nursing; developmental, situational, health-illness, and organizational transitions (Meleis, 2010). The transition a student experiences into and throughout an educational program is a situational transition. Therefore, a model of situational transition will provide the guiding framework of this study.

Transition theory suggests that certain factors either facilitate or inhibit adaptation to a new situation. Factors that may facilitate successful transition included; feeling connected,

interacting, and developing confidence and coping. Being aware of resolving barriers that affect the transition are essential before attempting to facilitate the transition itself (Meleis, 2010).

Indicators that a transition is occurring include the individual feeling disconnected with their current situation or with other people. It is important for the individual to be aware of his or her response to the change (Meleis, Sawyer, Im, Hilfinger-Messias, & Schumacher, 2000). Change can have positive consequences. For example, the individual may develop increased confidence in coping with change and mastering new skills or modifying former activities to adapt to the change being experienced. Developing confidence leads to the development of strategies for managing and understanding the transition experience. According to Meleis (2010), a successful transition can lead to a sense of belonging, self-confidence, and physical well-being (Meleis et al., 2000). However, the individual's pattern of behavior and response to change is affected by the person's abilities, identity, role, and relationships.

Upon entering a nursing program, students are faced with challenges such as balancing reading, studying, and clinical paperwork with class, laboratory, and clinical hours each week. Many community college students complete their general education courses prior to entering the nursing program. Frequently students take two to three general education courses per semester before being exposed to the rigorous workload of a nursing program. This is also a time when students form relationships with their classmates. Their classmates play an important role in their transition process in providing support, encouragement, and the determination to confront and conquer challenges (Delaney & Piscopo, 2010). How the students meet these challenges will affect the transition. The first semester of the nursing curriculum is a critical stage in the change process because it provides students with the foundation for academic success and classroom connections in the nursing program. Successful progression in a nursing program necessitates

that the student adapts to the situation and acquires the necessary skills for continued success.

Transition theory suggests that students who make these connections early in the transition have increased confidence and were more likely to be successful in completion of a nursing program.

### **Retention Theory**

Retention theory describes a specific transition, the ability or inability of a student to successfully transition from the role of a nonstudent to role of a student. There are many factors that affect student retention. Students come to college with individual attributes and experiences, family backgrounds, and academic characteristics and skills. All of these factors affect their social and academic interactions with the institution. Researchers have studied college student attrition for decades, from a variety of perspectives (Bean & Metzner, 1985; Cross, 1981; Metzner & Bean, 1987; Pascarella, 1982; Pascarella, Duby, & Iverson, 1983; Pascarella & Terezini, 1991; Tinto, 1975).

The most frequently cited theoretical framework addressing attrition cited in the literature is Vincent Tinto's model of college student departure. According to Tinto (1975, 1987), students who integrate themselves into the social and intellectual life of the university persist toward graduation, whereas, those who do not integrate themselves experience feelings of isolation and are more likely to depart. Social integration includes peer-group interactions and faculty interactions. Academic integration includes grade performance and intellectual development. Tinto (1975, 1987) hypothesized that these initial commitments and the student's background traits, influence the student's performance academically and socially. Therefore, the greater the student's level of social and academic integration, the greater the commitment to the institution and commitment to the goal of graduation (Tinto, 1975).

However, Tinto's framework is less applicable to community college students who attend nonresidential colleges (Attewell, Heil, & Reisel, 2010). Adapting Tinto's model, Pascarella studied students enrolled in a commuter institution (Pascarella, 1982; Pascarella & Terezini, 1991). These students may have few opportunities for social involvement with faculty and peers. The findings of this study suggest that the characteristics which a student brings to college, secondary school achievement, academic aptitude, family educational and financial status, not only influence the student's interactions with the college environment, but also have a direct effect on persistence.

Bean and Metzner (1985) and Cross (1981) expanded and applied Tinto's model to understand attrition in associate degree programs. Recognizing the limitations of Tinto's model when applied to predicting withdrawal decisions of students in community colleges, Bean and Metzner (1985) presented a model of departure for the older or nontraditional student. This model included environmental variables such as; finances, hours of employment, outside encouragement, family responsibilities, and opportunity to transfer. They found that these variables have a greater impact on student retention than academic variables. Moreover, Bean and Metzner (1985) suggest that environmental factors that influence persistence can compensate for weak academic support. In a later study, Metzner and Bean (1987) presented a model indicating that dropout decisions for nontraditional students are based on four sets of variables. These included; academic performance, psychological outcomes, background and defining variables, and environmental factors (Metzner & Bean, 1987).

Applying adult learning and experiential learning to retention theory, Cross's (1981) approach for studying student success in the community college provides a means for grouping

participant factors that affect retention. Cross suggests that there are three main categories related to retention: dispositional, situational, and institutional.

According to Cross (1981), dispositional factors are those that derive from the behaviors, attitudes, self-perceptions, and abilities of the student. Student dispositional factors include academic attitude, motivation, past academic performance, and academic abilities and aptitude (Philips, Spurling, & Armstong, 2002). For example, students who have a history of academic success are considered to be more successful in the nursing program. In fact, many ADN programs utilize students' past performance in ranking applicants for admission to the program. The dispositional factors that were examined in this study are demographic characteristics, academic aptitude and abilities, motivation, emotional outlook, physical well-being, and persistence and commitment.

Cross (1981) identified situational factors to include the unforeseen or unpredictable reasons that arise from a student's life situation at a given time. These factors affect course performance or attrition, usually resulting in a lack of adequate time or support for devotion to educational pursuits. Situational characteristics include family needs, childcare issues, job responsibilities, transportation problems, financial status, and lack of support (Philips et al., 2002). Community college students are often confronted with such factors. Many students must work part or full-time to support themselves or assist in supporting their families. They may feel pressured to drop out of a nursing program due to these situational factors. The situational factors that were examined in this study included social support, financial status, lack of time and devotion, job responsibilities, and family needs.

The third area identified by Cross (1981) is institutional factors, which included inconvenient scheduling of courses or location of classes, the ability to maintain a full course load, and mandatory prerequisite courses or skills required before enrollment in a course or program of study. In addition to these, other institutional factors that were examined in this study are the number of nursing faculty, accreditation status of the nursing program, and other program specific factors.

In summary, transitions theory and retention theory provide a broad conceptual model that were used as the organizing framework of this study (see Figure 1).

### **Purpose**

The purpose of this study was to examine the relationship between socio-demographic characteristics, dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina. Additionally, as this is a newly developed instrument, it was important to test the reliability of the instrument and determine if the factor structure and psychometric properties reported in the original study supported this study. A secondary aim of this study was to explore the relationship between institutional factors and first semester retention rates.

## **Research Questions**

The following research questions guided the analysis of this study.

1. Is there a difference in the socio-demographic characteristics of associate degree nursing student who are retained after the first semester when compared to those that are not retained?
2. Does the current study support the factor structure and psychometric properties reported in the original study (dispositional, career values, situational, institutional factors)?
3. Is there a difference between retained and not retained students on factors which are derived from the instrument?
4. How well does the combination of socio-demographic factors and derived factors predict student attrition at the end of the first semester?
5. Is there a relationship between institutional characteristics and first semester retention rates of the associate degree programs in the study?

## **Summary**

Although not a new phenomenon, student attrition in ADN nursing programs is alarming. The challenge educators' face is keeping the accepted students enrolled and progressing in the nursing program. While many individual schools have looked at this issue, it has not been done from a theoretical model that included conceptually linked factors, and with a sample that included more than one nursing program. These issues were addressed in the proposed study.

The remainder of the study is organized into four chapters. Chapter 2 represents a review of the related literature on retention in nursing education and the factors that affect successful

progression in nursing programs. Chapter 3 delineates the research design and methodology of the study. A description of the sample population, including determination of the sample selected to participate in the study and the instrument used to gather the data. Chapter 4 will provide an analysis of the data and a discussion of the findings. Finally, Chapter 5 will contain the summary, conclusions, and recommendations of the study. A bibliography and appendixes are found at the end of the study.

## CHAPTER 2: LITERATURE REVIEW

Retention in associate degree nursing (ADN) education is a concern to students, nurse educators, administrators in the North Carolina Community College System (NCCCS), and leaders in health care delivery. A review of the literature identified that studies on student retention are many and varied. Retention is a complex phenomenon influenced by a wide variety of factors. The likelihood of a student leaving or successfully completing a program cannot be reduced to a single attribute. Therefore, this literature review is divided into four sections. Section one examines the dispositional factors, which included demographic characteristics, academic aptitude and abilities, motivation, emotional outlook and physical well-being, and persistence and commitment. Section two examines the situational factors, such as; social support, financial status, lack of time or devotion, and family and job responsibilities. Section three discusses the institutional factors that may affect student retention, which included social integration, faculty support, academic enrichment programs, and program characteristics. Literature applications of student retention and transitions theory are presented in the final section.

### **Dispositional Factors**

The dispositional factors cited in the literature that affect retention included; demographic characteristics, academic aptitude and abilities, motivation, emotional outlook and physical well-being, and persistence and commitment.

**Demographic characteristics.** Demographic characteristics are personal attributes such as; gender, age, and ethnicity. Age and ethnicity were the only statistically significant demographic variables identified in the literature. Although contradictions exist, age correlated with program completion and ethnically diverse students were found to be most at risk for

attrition (Jeffreys, 2007b; Mulholland, Anionwu, Atkins, Tappern, & Franks, 2008; Pence, 2011; Prymachuk, Easton, & Littlewood, 2008).

Jeffreys (2007b) tracked students in a retrospective evaluation study to assess the entry, progression, graduation, and licensure characteristics of associate degree nursing students. The mean age of the cohort ( $n = 112$ ) was 29 years but ranged from 19 to 56 years. Comparison of graduates with non-graduates indicated that they differed significantly with regard to age. Graduates were somewhat younger with a mean age of 26 years, while non-graduates mean age was 33 years. Additionally, the mean age of involuntary attrition was 36 years (Jeffreys, 2007b). However, many times older students have multiple role responsibilities and take longer to complete their education. A weakness to this finding was the lack of inferential statistical analysis, such as multiple regression in correlating age with other student characteristics.

In comparison, two English studies found that older students were more likely to complete the program than the younger students (Mulholland et al. 2008; Prymachuk et al. 2008). In a longitudinal study using pre-existing data from student records, Mulholland et al. (2008) found that a higher percentage of students' ages 26-32 years (82%) and ages 33 and over (83%) completed the program compared to younger students, less than 26 years (76%). Prymachuk, Easton, and Littlewood (2008) in a retrospective study using routinely-collected data from one cohort of nursing students found the median age for completers was 24 years and for non-completers was 21 years. A limitation to this study was the lack of information regarding the age range for the entire cohort.

In the community college setting the majority of students are nontraditional, students who are over the age of 25 years. Pence (2011) recently studied nine associate-degree nursing

programs in Illinois. Data received from 388 participants indicated the minimum age of the participants was 18 years, and the maximum age of the participants was 56 years, with a mean age of 29.6 years. The mean age of not retained participants was 33.20 (n = 25) as compared with the mean age of 29.34 for the retained participants (n = 363;  $p = .026$ ). The results of this study suggested that there was a statistically significant relationship between age and retention at the end of the first nursing course. Students who were older were less likely to be retained at the end of the first nursing course (Pence, 2011).

**Academic aptitude and abilities.** Academic aptitude and abilities include nurse entrance exams, grade point average (GPA), and past performances. In qualitative and quantitative research, preadmission testing scores were the most frequently cited academic factor that was used to predict student success (Ellis, 2006; Higgins, 2005; Hopkins, 2005; Newton & Moore, 2009; Sayles, Shelton, & Powell, 2003; Stickney, 2008; Symes, Tart, & Travis, 2005). There are multiple standardized preadmission tests utilized by associate and baccalaureate nursing schools across the nation. Essentially, these tools are a diagnostic instrument employed as part of admissions criteria or for screening purposes, for measuring student's academic aptitude in essential skills areas, including math, reading comprehension, critical thinking appraisal, test-taking skills, and learning styles. Two tests cited in the literature were the Nurse Entrance Test (NET) and the Health Education Systems, Inc. (HESI) test.

The NET provides faculty and students with valuable information on students' academic abilities. In particular, math and reading composite scores identified from the NET were found to predict student retention (Ellis, 2006; Hopkins, 2005; Sayles et al. 2003; Symes et al. 2005).

Hopkins (2005) examined two cohort of students admitted into one diploma nursing program, group 1 admitted before changes in admission criteria (n = 82) and group 2 admitted after changes in admission criteria (n = 55). The change in admission requirement was higher NET scores on the critical thinking analysis portion of the exam. According to percentages calculated between the 2 groups, 89.1% of the students in group 2 were retained at the end of level I nursing courses compared with 70.7% in group 1 (Hopkins, 2005). A limitation to this study was a very small sample size and only one diploma nursing program was included in the sample.

Ellis (2006) sought to develop a model that explained success in the first semester nursing course among ADN students at one small, private college. The academic variables included in the study were students' SAT and ACT scores, cumulative high school GPA and cumulative college GPA, and math and reading composite scores identified from the NET. Using a simple correlation, SAT score, high school GPA, and NET score were all generally correlated and were included in an exploratory factor analysis. Using regression analysis to examine the probability of successful completion of the first nursing course, Ellis (2006) found that among the new nursing students who matriculated between 2001 and 2004, 68 students (17.75%) were unsuccessful and 315 students (82.25%) were successful. The regression analysis of the full model with all predictors was statistically significant, indicating that the variables reliably predicted those who would be successful,  $\chi^2 (9, n = 383) = 33.10, p < 0.01$ . Predicted success was good, with 99% of the successful student correctly identified. However, the model did not do a good job of predicting those students who would be unsuccessful. Limitations to this study included the low variance (Cox and Snell R square = 0.08, Nagelkerke R square = 0.14)

explained by the model used to predict student success, indicating that other variables that have not been identified influence student success (Ellis, 2006).

The HESI test was used by Higgins (2005) in determining predictors of passing the NCLEX-RN® and completion of the nursing program. No statistical difference was found between components of this preadmission test and completion of the program (Higgins, 2005). On the other hand, there was a statistical significant correlation between HESI Exit Examination scores given to students in the final semester of the program and passing the license exam. Although informative, this study was completed at one community college and was complicated by lack of robust evidence in the nursing literature on the reliability and validity of HESI tests on predicting on-time completion and NCLEX-RN® success.

Several research studies used the prerequisite course grades as the academic factor predicting completion of a nursing program. In one of the earliest nursing research articles written in this area, Benda's (1991) study examined the relationship among the constructs in Tinto's model to retention of baccalaureate degree nursing students. Although other nonacademic variables were also investigated, the findings indicated that high school class rank and high school GPA influenced retention and completion of the first year. The finding that academically strong students are more likely to complete a nursing program is not surprising. However, the research is inconsistent on the relationship between pre-nursing GPA and completion of a nursing program. Four studies found pre-nursing GPA statistically correlated to program completion (Jeffreys, 2007b; Sayles et al. 2003; Stickney, 2008; Symes et al. 2005). Whereas, Higgins (2005) and Newton & Moore (2009) found no significant relationship between pre-nursing GPA and student success. However, Higgins (2005) and Symes et al. (2005) found science courses statistically correlated to program completion. Conversely, Jeffreys (2007b)

found no correlation with Anatomy and Physiology and Microbiology course grades and completion of a program. Student's pre-nursing GPA and required science courses varies considerably from study to study and seemed to be related to the institution's course requirements and definition and calculation of pre-nursing GPA. These inconsistent findings warrant additional research in this area.

Two studies (Sayles et al. 2003; Tipton, Pulliam, Beckworth, Illich, Griffin, & Tibbitt, 2008) examined successful completion of a nursing program with NCLEX-RN® success. Sayles et al. (2003) and Tipton et al. (2008) conducted correlation studies utilizing the scores on the NET and passing the licensure exam. Sayles et al. (2003) found that NET scores on the reading, math, and composite, grade point average on courses toward the nursing degree, and the last nursing course statistically correlated with passing the NCLEX-RN®. However, the sample was very small (n = 68) and the demographic characteristics of the majority of the sample (69.6%) were licensed practical nurses or held certifications in other health care areas. This group of graduates is not typical of prelicensure students in the general population. Interestingly, Tipton et al. (2008) found that neither the reading nor math score on the NET was useful in determining success on the NCLEX-RN®.

Jeffreys (2007b) followed students through program entry, progression, graduation, and licensure. Included in the sample were students who may have dropped out or stopped out of the program. Examination of the number of withdrawals and failures revealed that 94% of the students who had no withdrawals or failures in nursing courses passed the RN licensing exam on the first attempt (Jeffreys, 2007b). In contrast, only 50% of students with two withdrawals and/or failures passed on the first attempt. The analysis revealed that the number of withdrawals and/or failures was inversely correlated with first time pass rate. Regardless, both Jeffreys (2007b) and

Tipton et al. (2008) found that having a higher cumulative nursing grade average was statistically correlated with NCLEX-RN® success. These studies reinforce the importance of a strong foundation for a student to be more successful throughout their educational journey toward becoming a registered professional nurse.

**Motivation.** Motivation implies the desire to succeed in a nursing program. In a qualitative study, Rogers (2010) explored the factors that contribute to student success at one public university in rural West Virginia. Participants consisted of graduates who completed the program and were successful on the NCLEX-RN® licensure examination, as well as instructors who were experienced in working with successful students. In semi-structured, open-ended, and face-to-face interviews, all participants agreed that no one factor guarantees success and none of the participants cited prenursing academic achievement as an important factor. Rather, the participants indicated that the competitive admission process brings in students of similar academic backgrounds, so they believed there were other factors contributing to success. It was the emerging theme of motivation and the importance in getting good grades that persisted with the participants (Rogers, 2010). In fact, participants stated that students “have to really want nursing” to be successful (Rogers, 2010, p. 97).

Robshaw and Smith (2004) utilized focus groups to try and understand students’ experiences who were struggling to meet the demands of a nursing program. Using an inductive sociological approach, this study examined the experiences of student nurses after referral due to failure on the first attempt of a summative assessment. The analysis revealed that it is the desire to succeed and become a registered nurse that was the most significant factor determining whether or not the student remains in school. Motivation, ambition, and goal setting were extremely important to the students (Robshaw & Smith, 2004). This concurs with the findings of

Rogers (2010) who found that motivation and the desire to be a nurse had an impact on student success.

Pence (2011) conducted a quantitative study to determine the relationship between emotional intelligence, motivation, demographic variables, and retention. First year nursing students (n = 390) attending nine ADN programs in Illinois participated. The Motivated Strategies for Learning Questionnaire used in the study included motivation subscales such as; task value, time and study, and effort regulation. Inferential analysis suggested statistically significant differences in the mean scores for the participants. Students who were retained at the end of the first semester had higher mean scores for the task value, time and study, and effort regulation subscales as compared to those students who were not retained (Pence, 2011).

Pence (2011) suggested that task value indicates the perceptions of students regarding the importance and value of course materials. A higher task value may be characteristic of students who believe learning and gaining an understanding of the coursework is important, relevant, and useful. In addition, higher mean scores in effort regulation indicate effective scheduling, planning, and managing time for study. This study suggests that students who are able to self-manage academic learning and are committed to completing learning goals despite difficulties or barriers to success are more likely to be retained (Pence, 2011).

**Emotional outlook and physical well-being.** Emotional outlook and physical well-being are factors that may influence student attrition. In a recent qualitative study, O'Donnell (2009) reported that nursing students who leave either voluntarily or nonvoluntarily, experience considerable emotional distress. Feelings of anger, frustration, and resentment were reported by students who were asked to leave or were not successful in the program. Whereas, students who

voluntarily withdrew experienced emotions linked to personal failure and embarrassment (O'Donnell, 2009).

O'Donnell (2009) identified the theme of disengagement as a strategy that students use in an attempt to delay the decision to withdraw from the program even though they realized it was unlikely that they would be successful. These students used disengagement strategies such as, stopping attendance at class or tutorials (O'Donnell, 2009). However, lack of attendance increased the stress the student experienced, thereby reinforcing emotional distress and disengagement. Although the sample size was small and the focus was on a single nursing education site, these findings highlighted the importance of formal and informal support for nursing students who are experiencing academic adjustment difficulties. The finding that students use disengagement and absenteeism in response to stress warrants further study. Stress may not be the issue, rather the way an individual copes with these stressors may be the important issue.

Roger's (2010) findings were similar and she indicated the importance of managing stress and personal well-being, specifically rest and nutrition. Nurses are taught that physiological needs are essential basic needs, however often nursing students are performing under demanding circumstances, without addressing these needs. One participant indicated that until she starting eating right and sleeping more, she was performing well below her potential (Rogers, 2010).

Bowden (2008) investigated attrition in one English university's pre-registration nursing programs. Although academic issues were frequently cited as reasons for why respondents considered leaving, the stress and anxiety caused by examinations was repeatedly identified as a

contributing factor. Eight of the ten respondents who seriously considered leaving shared similar stories about the stress caused by examinations.

**Persistence and commitment.** Persistence and commitment are student attributes found to influence the student's willingness to continue in a nursing program. Although definitions varied, the literature revealed concepts such as hardiness, self-efficacy, and presence to describe a student's commitment to succeed and persistence in progressing in a nursing program (Andrew, 1998; Hegge, Melcher, & Williams, 1999; McLaughlin, Moutray, & Muldoon, 2007; Williams, 2010).

In an earlier study, Hegge et al. (1999) conducted a descriptive correlational study to explore the relationships between hardiness and academic performance, social support, and help-seeking behavior. Hegge et al. (1999) described hardiness as an optimistic orientation to life which enables individuals to alter or eliminate stressful situations. Analysis of variance revealed a highly significant relationship ( $r = .246$ ,  $p = .0002$ ) between hardiness and academic performance (Hegge et al., 1999). Students who exhibited a higher level of hardiness were more successful in completing a nursing program.

The concept of self-efficacy in explaining and predicting students' academic performance has been applied to student retention (Andrew, 1998; McLaughlin et al., 2007). Self-efficacy theory is a personal expectation about one's ability to successfully perform a specific task or behavior (Bandura, 1986). Andrew (1998) investigated nursing students' self-efficacy for science as related to academic performance in the science-based first year nursing courses. Piloting a newly developed research instrument, students completed the Self-Efficacy for Science (SEFS) questionnaire. The SEFS was designed to contain items based on general science, chemistry and

physics principles, and mathematic items applied to science. Students at this international university study two science subjects in their first year. The first course contains aspects of physics and chemistry considered relevant to nursing. The second science course included an introduction to the biological functions of the body. Respondents indicated on a scale of one (not confident) to five (very confident), their confidence in their ability to successfully perform tasks in each of these areas. The SEFS was specifically designed to predict academic performance in the first year of an undergraduate nursing course. In general, the students were not confident in performing many of the SEFS science tasks, particularly those involving physics and mathematics. Correlation results indicated that the SEFS could predict 24% of students' academic performance in the first science course and 18.5% in the second science course (Andrew, 1998). However, limitations of this study included; this was the first test of a newly developed instrument, only one nursing cohort at one educational institution was included in the sample population, and the sample size (n=64) was small.

McLaughlin et al. (2007) examined the role of personality and self-efficacy in predicting academic performance and attrition in nursing students. Bandura's theory of self-efficacy as it applies to academic performance in nursing was the theoretical framework of the study. A longitudinal design was used, with questionnaires being administered to students in the first year of the nursing program and again at the end of the program. Of the 384 students who entered the program and completed the questionnaire, 350 students were successful and completed the questionnaire at the end of the program. Self-efficacy was shown to be a significant in predicting students' academic performance, suggesting self-efficacy enhances student success (McLaughlin et al., 2007). Limitations to this study were only one nursing program was included and little information was provided on the instrument utilized.

In a recent qualitative study, Williams (2010) interviewed nursing students who had successfully completed first- or second-level nursing courses at a small college in the Midwest. Four major themes emerged as key to persistence in these students; keeping up, not giving up, doing it, and connecting (Williams, 2010). The first three themes refer to students' mindset or self-talk, whereas the fourth theme refers to the use of resources.

Fowler and Norrie (2009) investigated the factors influencing students to consider leaving a pre-registration nursing and midwifery programs at one UK school of nursing. In a mixed-method design, quantitative data from questionnaires and qualitative data from interviews were reviewed and analyzed. Regression analysis of the data from the 605 student respondents identified predictors associated with student commitment to the program. Commitment to the program accounted for 17.7% of the shared variance. In addition, the qualitative responses from the students' questionnaires and individual interviews revealed self-determination in regard to long-term ambition to become a nurse or midwife and sheer determination that the program was not going to beat them, as emerging themes supporting completion of the program.

## **Summary**

Demographic characteristics, academic aptitude and abilities, motivation, emotional outlook and physical well-being, and persistence and commitment are the dispositional factors identified that have an impact on nursing student retention. The literature revealed the most recurring attribute discussed was the student's academic aptitude and abilities and student success. While the majority of studies on retention were conducted with baccalaureate students, some of the findings related to retention may be different for ADN students. However, much of this research has influenced nursing programs to re-examine their admission requirements and require new or additional academic prerequisites prior to entry into a nursing program. Although

many NCCCS ADN programs have made these changes, student attrition continues to impact retention rates. Dispositional factors have an impact on student retention and further study is warranted.

### **Situational Factors**

The situational factors that affect retention most frequently cited in the literature included; social support, financial status, lack of time or devotion, family and job responsibilities. Although many of the studies on retention recognize these factors, few studies report statistically significant relationships between situational factors and student success.

**Social support.** Social support encompasses the support students receive from people who are influential in the student's life. The most commonly referenced sources of support in the literature are parents, partners, friends, and peers. In a study previously discussed, Hegge et al. (1999) found the most frequently reported support person was a family member, with spouse or partner being the most frequent response. However, there was also no significant relationship between social support and academic performance (Hegge et al., 1999).

Investigating student perceptions of variables influencing retention, Jeffreys (2002) found social integration as perceived by friends in class, was related to retention. Similarly, Bowden (2008) identified peers as a major source of support for students and influential in students persisting in the nursing program. These findings indicated that students found reassurance in the presence of students who shared similar experiences. The participants expressed a common theme related to the need to affiliate with individuals who also understood what they were going through (Bowden, 2008).

Roger's (2010) qualitative study reinforces social support as a contributing factor to academic success in a nursing program. According to the participants in this study, successful students collaborate with others (Rogers, 2010). Likewise, O'Donnell (2009) found a significant number of study participants reported they were more likely to seek support and related advice from peers rather than faculty or other formal support systems.

Peer support may be an important mechanism in helping nursing students get through nursing courses (Higgins, 2004; Loke & Chow, 2007; Robinson & Niemer, 2010). In an earlier study, Higgins (2004) studied whether there was a relationship between academic performance and retention, and participation in a peer-tutoring program for at-risk students enrolled in a medical-surgical nursing course. Although the sample size was very small ( $n = 26$ ), the results from the study indicated that peer tutoring had a significant effect on the academic performance and retention of at-risk students (Higgins, 2004).

Robinson and Niemer (2010) implemented a Peer Mentor Tutor Program (PMTP) to increase the retention rate of nursing students during their first two semesters in nursing at a baccalaureate nursing program. Although overall attrition rates did not change significantly in the first year of implementation, the analysis revealed that the participants that were in the program were less likely to drop out than the students who did not participate in the program (Robinson & Niemer, 2010).

**Financial status.** The ability of students to pay for courses, books, and clinical travel is necessary for student progression and retention. Although studies looking at nursing retention often mentioned finances and student retention, few reported a correlation between student's financial status and retention.

However, stressors such as family responsibilities and financial status were perceived as psychological factors affecting student attrition (Jeffreys, 2002, 2007a; Fowler & Norrie, 2009). Jeffreys (2007a) examined environmental factors such as; employment hours, employment responsibilities, and finances on student retention. This multisite study included undergraduate nursing students enrolled in 5 associate and 2 generic baccalaureate programs. The majority of the respondents (n = 994) were enrolled in an associate degree program. The results demonstrated that financial status and employment were barriers to retention. This finding was consistent and not affected by age, gender, ethnicity, educational background, previous healthcare experience, marital status, dependent children, or first-generation college student experience (Jeffrey, 2007a).

Fowler and Norrie (2009), while looking at reasons why pre-registration nurses and midwifery students considered leaving a program, found that money and getting assistance with travel costs were factors associated with thoughts of resigning. Regression analysis identified finances, particularly noted for the midwife students and those with family dependents, was one of the eight predictors associated with student retention or students considering leaving the program (Fowler & Norrie, 2009).

**Lack of time or devotion.** Although the reasons for lack of time or devotion to a nursing program may vary, students often underestimate the rigorous demands of a nursing program. Many nontraditional students have multiple responsibilities and commitments that may further impede their ability to devote the necessary time and effort to complete a nursing program. Although it may be difficult to separate lack of time or devotion from employment hours, job responsibilities or family commitments, two studies identified attendance at classes as a predictor

of student progression and retention in a nursing program (Mulholland et al., 2008; O'Donnell, 2009).

Mulholland et al. (2008) conducted a retrospective study to explore the relationship between selected diversity variables (gender, country of birth, ethnicity, age, educational qualifications, additional visa status, and absence rates) and nursing students' progression and attrition at one university. Of the 1808 preregistration students, 1431 (79%) completed the program and 377 (21%) students did not complete the program (Mulholland et al., 2008). Regression analysis revealed the only statistical significant predictor was absence. Of the 146 (39%) students who did not complete due to failure, 44 (53%) were absent 23 or more days (Mulholland et al., 2008). Not surprising, attendance is an indicator to program completion.

Through student interviews, O'Donnell (2009) found students who decided to leave a nursing program participated in disengagement strategies. Study participants described a number of disengagement strategies in an attempt to delay the decision to finally leave. The most frequent was not attending class or leaving early. Although difficult to differentiate whether students disengage due to academic difficulty or used as a coping mechanism in response to situations which are perceived to be stressful, these findings support the need for nurse educators to be alert to changes in the pattern of attendance for students, in order to identify those students who may need additional support (O'Donnell, 2009).

**Family and job responsibilities.** As previously mentioned, the majority of students enrolled in community college nursing programs are nontraditional students, many times older, returning to college for an alternate career or personal enrichment, attend part-time, commute to campus, and have additional family and job responsibilities compared to traditional-age students

attending residential universities. Although frequently mentioned as a factor in student retention, few research studies have investigated student attrition and family and job responsibilities.

White, Williams, and Green (1999) conducted a longitudinal study at one UK university with four cohorts of student nurses (n = 315) who had commenced their initial training and were currently enrolled in the pre-registration nursing course, as well as students who had discontinued their training and were no longer in the program. Seventy of the students (36%) who had exited the program completed the survey and 258 current students (82%) completed the survey from the 4 cohorts of student nurses. The questionnaire consisted of 14 possible reasons for leaving. The most important reason identified by students who exited the program was personal/family (32% of total) issues (White, Williams, & Green, 1999).

In a qualitative study exploring student retention at one UK university, Trotter and Cove (2005) found that students' other life commitments such as part-time jobs and family commitments competed with time allocated for study. Students now had to fit their job or family time around their class schedule, rather than the reverse. Students commented on the importance of clustering classroom activities and requirements, so as not to have gaps in their schedule. They wanted to make good use of their time and did not like to feel that their time was unproductive. For example, one student commented on having to come early for registration and remain for three hours to attend a one hour lecture (Trotter & Cove, 2005).

Studies (Fowler, 2009; Jeffries, 2002, 2007a) which linked financial status to retention factors also identified family responsibilities as important to retention. Jeffries (2002, 2007a) found that environmental variables relating specifically to finances and family were perceived as severely restrictive of retention. Utilizing a pre- and post-test methodology, Jeffries (2002)

examined ADN student perceptions concerning the restrictiveness or supportiveness of select variables that influence retention at the end of a required clinical course at one university. Descriptive reduction techniques (percentage and frequency) were used to examine the variables. Pretest results found family crisis (18%) and family responsibilities (14%) were severely restrictive of retention, and this finding was also evident at the end of the course (Jeffries, 2002). A limitation to this study was the small sample size (n=28).

In a similar study, Jeffries (2007a) targeted nursing students enrolled in a clinical nursing course in five associate and two generic baccalaureate programs. Of the 1156 respondents, 86% were enrolled in an associate degree program. Students completed the questionnaire during the last three weeks of class. Descriptive analysis found the most frequently cited restrictive variables related to retention were environmental factors, including family crisis and family responsibilities (Jeffries, 2007a).

Likewise, Fowler and Norrie (2009) found increased home life responsibilities was a reoccurring theme from students and one of the four negative predictors of student attrition. This, along with financial factors, was the most frequent negative predictor associated with students considering leaving the program (Fowler & Norrie, 2009).

It is not surprising that students who are unable to devote time to their studies due to increased family and job responsibilities are more likely to voluntarily withdraw or find themselves unsuccessful and unable to progress in the program. Hegge et al. (1999) when investigating hardiness and persistence behaviors and social support of nursing students with academic performance found when examining social support and academic performance, finances ( $r = -.1357$ ,  $p = .035$ ) had an inverse relationship on academic performance, indicating

the negative impact of this factor on academic achievement. In addition, family problems ( $r = .230, p = .031$ ) and children living at home ( $r = .362, p = .001$ ) were influential factors in students' academic performance. These results reinforce the importance of social support to academic success (Hegge et al., 1999).

## **Summary**

Situational factors discussed in the literature that affect student retention are social support, financial status, lack of time or devotion, family and job responsibilities. Many community college students are nontraditional students that are older, have families, must work at least part-time, and are enrolled in classes. It is these factors that may force a student to voluntarily withdraw from a program or interfere with their ability to devote time to their studies. Without a doubt, situational factors may impede student success and the ability to progress in a nursing program.

## **Institutional Factors**

The institutional factors most frequently cited in the literature that may affect student retention are the environmental elements that promote success. In fact, much of the qualitative research about retention is focused on the importance of mentoring and support services to foster student retention. Creating a sense of community where faculty provide students with both functional and psychological support in a caring atmosphere is important. Therefore, the institutional factors were grouped into four major areas; social integration, faculty support, academic enrichment programs, and program characteristics.

**Social integration.** For integration to occur, students must have positive interactions and feel a connection with others within the institution (Tinto, 1975, 1987). In a recent study,

Williams (2010) interviewed 10 nursing students who were in the final year of their nursing program. The key theme of connecting emerged from the participants as important for their persistence. Connecting with others, starting with family and extending to friends, peers, and instructors was essential for these students (Williams, 2010). Trotter and Cove (2005) also found in a qualitative study that getting acquainted with faculty, peers, and campus life during the first few weeks of entering a program was instrumental in students' social and academic integration.

Zeitlin-Ophir, Melitz, Miller, Podoshin, and Mesh (2004) conducted a study to analyze the variables that influence the academic integration of nursing students at one generic nursing program in Israel. Socio-demographic factors, satisfaction with the school's facilities, social integration, and the degree of their influence on the students' personal growth, values, attitudes, career goals, and intellectual growth were examined. There were positive correlations between academic integration and relationships with school personnel, close social connections with other students, and greater accessibility to school facilities and teaching staff (Zeitlin-Ophir, Melitz, Miller, Podoshin, and Mesh, 2004). Although generalization of the results to students in the United States must be done with caution, some commonalities do exist.

Ramsburg (2007) describes a successful retention program that included both social and academic integration by creating a sense of community through a caring atmosphere that begins with an orientation program. The two-day orientation sessions provides an opportunity for students and faculty to become acquainted. It serves as a starting point for students and faculty advisors to discuss study strategies, time management concerns, or other issues that may affect student success (Ramsburg, 2007). Additional academic support services and remediation efforts are included in the program. Students' expressed positive feelings about the services and the faculty reported a reduction in attrition.

**Faculty support.** The importance of faculty support is well documented in the literature. Shelton (2003) conducted a study to explore the relationship between perceived faculty support and student retention in ADN students. Using a cross-sectional design, the author found a significant difference in perceived faculty support between students who persisted throughout the nursing program without withdrawing (n = 300), students who had withdrawn voluntarily (n = 83), and students who had been required to withdraw because of academic failure (n = 75) (Shelton, 2003). The greatest difference in total perceived faculty support between groups was between students who persisted and students who withdrew due to failure. However, students withdrew at various points in the program, with various amounts of exposure to academic experiences, which may have affected their perceptions of the support they received from faculty (Shelton, 2003).

Ramsburg (2007) and Rogers (2010) found that a significant number of study participants reported that recurrent meetings with the nursing faculty and/or faculty advisors were important factors for success. Furthermore, communication with faculty members and the level of faculty involvement with students were recurring themes that contributed to success (Ramsburg, 2007; Rogers, 2010).

**Academic enrichment programs.** Retention strategies frequently discussed in the literature included ways to address at-risk students and increase retention through formal remediation services, tutoring programs, and various academic enrichment programs.

Higgins (2004) conducted a study to determine whether there was a relationship between academic performance and retention, and participation in a peer-tutoring program for at-risk students. The Fisher's exact test was used due to the small sample size (n = 20). The Fisher's

exact test was 0.0278, indicating that peer tutoring had a significant effect on the academic performance and retention of at-risk students (Higgins, 2004). Similarly, Jeffreys (2002) found that students perceived tutoring and faculty interactions/mentoring supported retention in nursing courses. Post-test responses revealed that tutoring ranked second, behind faculty advisement, as greatly supportive of retention, as perceived by students (Jeffreys, 2002).

Qualitative research results also emphasized the significance of tutoring in assisting in student success, as well as the tutors themselves who offered personal support and encouragement (Bowden, 2008; Ramsburg, 2007; Rogers, 2010). Collaboration and caring relationships fostered the development of positive relationships and offered support while facilitating learning. Participants suggested that collaboration and caring encouraged growth and further development as a professional (Bowden, 2008).

Robinson and Niemer (2010) implemented a peer-based mentor tutor program for at-risk students in a traditional baccalaureate program. Of the 97 identified at-risk students who participated in the program during the first year, only 8 students were unsuccessful and unable to progress in the nursing program. Although, overall program attrition rates did not significantly change when compared to previous years, an analysis showed that the mentees that participated in the program accounted for less than 1% of the overall program attrition rate (Robinson & Niemer, 2010). Although unclear as to the overall program attrition, the results suggest that the majority of students who did not successfully complete the program did not participate in the peer-based mentor tutor program. A weakness of the study was lack of information on the criteria used to identify the at-risk students. In addition, information regarding each group of students; those that participated in the program, those that qualified to participate in the program

but refused to participate, and those that did not qualify and the attrition rate for each group in comparison to the overall program attrition rate was not provided.

**Program characteristics.** Little research was found on whether there is a relationship between student retention and program characteristics. Program characteristics vary based on a multitude of factors including, program type, size, faculty, and funding sources.

In response to high attrition rates, the North Carolina Community College System (NCCCS), in collaboration with the Cecil G. Sheps Center for Health Services Research conducted a study to identify the factors influencing attrition in the NCCCS ADN programs. Characteristics of the ADN faculty employed during 2002 through 2005 were included in this study. Overall, programs in the top performance category had higher proportions of master's degree faculty relative to other programs, although this difference was not statistically significant. The researchers acknowledged that despite this fact, further investigation at the program-level was warranted (Cecil G. Sheps Center for Health Services Research, 2008).

Retention concerns are not unique to nursing education. Ari (2009) conducted a retrospective study investigating the relationship between student retention rate in respiratory care education and program resources to predict student retention. Program resources included; financial resources (operating budget and personnel budget), personnel resources (full-time staff, full-time faculty, and part-time faculty), and clinical resources (number of clinical affiliations). Correlation analysis revealed that mean financial resources per student strongly correlated with the mean student retention rate ( $r = 0.5666$ ,  $\rho < .001$ ) and was responsible for 33% of the variance in student retention (Ari, 2009). These results support the assertion that the money spent per student has a positive effect on student retention in the program. Although this study focused

only on baccalaureate of science degree respiratory care programs, 36 (63%) of the 57 programs in the United States responded and were included in the study.

## **Summary**

A review of the literature uncovered the lack of empirical evidence demonstrating a relationship between institutional factors and student retention in nursing programs. Increased attention to retention has provoked nursing programs to implement strategies to address attrition factors. Social integration, faculty support, academic enrichment programs, and program characteristics have been discussed as factors affecting student retention in nursing education.

## **Literature Review of Theoretical Approach**

**Retention theory.** Although many authors have attempted to explain retention, one of the most popular theoretical perspectives regarding retention is Tinto's integration framework (1975, 1987). Based on Durkheim's theory of suicide, Vincent Tinto's Student Integration Model (SIM) of attrition was designed to offer a longitudinal model to explain all aspects and processes that influenced an individual's decision to leave college or university, and how the processes interact to ultimately cause attrition (Tinto, 1975). This is important, as prior to Tinto's 1975 published paper all attrition was grouped under dropout, without differentiating the various causes. Tinto identified five different types of behaviors leading to attrition. These included; academic failure, voluntary withdrawal, permanent dropout, temporary dropout, and transfer (Tinto, 1975, 1987).

Tinto asserts that dropout occurs when the individual is not fully integrated into different aspects of college life, the two most important being academic and social systems of the college. Lack of integration in either or both of these systems would cause dropout. In addition, extreme integration in either academic or social systems would also likely cause problems in the other

system (Tinto, 1975). For example, a student who dedicates all their time into studying would likely have little time for social activity and similarly if a student spent all their time engaged in social activities, their academic performance would suffer. Therefore, Tinto illustrates a model that included integration into a college by developing connections with individuals, participating in clubs, and engaging in academic activities; becoming connected to the social and academic life of that institution. According to Tinto (1975), these individuals are more likely to persist.

One of the most consistent criticisms of Tinto's model is that it is applicable only to a traditional residential type student (Brunsden, Davies, Shevlin, & Bracken, 2000; Metzner & Bean, 1987). The contention is that Tinto's model cannot generalize beyond students who are a resident on, or near, campus and who enter a college directly after leaving high school. Bean and Metzner (1987), who proposed their own model of student attrition, assert that Tinto's model did not explain attrition in nontraditional students who were over twenty-four years, did not live on campus, or were not enrolled full-time. The concern is that social integration is generally considered an unlikely experience for students at two-year and commuter institutions to attain (McCubbin, 2003). However, others would argue that these students attend class, develop relationships, and participate in activities that facilitate social integration.

Utilizing Tinto's model as it relates to community college students, Karp, Hughes, and O'Gara (2008) conducted an exploratory study of student persistence in community colleges to explore what students report about their initial institutional experiences and the relationship between those experiences and progress toward a degree. The participants (n= 44) were first-time enrollees attending two urban community colleges in the Northeast. Two semi-structured interviews were conducted. The first interview (spring semester) focused on students' initial experiences in college and the second interview (the following fall semester) was directed on

students' decisions to continue in college or not, and the challenges they faced in progressing toward their degree goals. Additional probing questions were related to social and academic relationships, the knowledge and use of available institutional services, and the sense of comfort on campus (Karp, Hughes, & O'Gara, 2008).

Defining integration as having a sense of belonging on campus, Karp et al. (2008) reported thirty-one students (70%) of the sample described feeling a sense of belonging on campus. Only thirteen students indicated no attachment to the institution. Additionally, of the forty students whose enrollment status in the following fall semester was known, those who were coded as being integrated persisted (nearly 90%) to the second year. These findings support Tinto's theory that integration is related to persistence and that integration is also important for community college students (Karp et al., 2008).

Several studies (Ramsburg, 2007; Shelton, 2003; Stickney, 2008) have used Tinto's model to examine student retention in nursing education. Ramsburg (2007) applied Tinto's Theory of Retention to initiate a comprehensive program that incorporated social and academic integration into one baccalaureate school of nursing, while Shelton (2003) and Stickney (2008) incorporated elements of Tinto's theory to predict academic performance and persistence in nursing students. Ramsburg (2007) implemented a successful retention program which included; creating a sense of community for students, frequent faculty contact with regular faculty advisor-student meetings, academic support services, and an additional 10- week course for at-risk students improved retention by 50% prior to implementation of the program.

Shelton (2003) found that students who persisted in the nursing program had significantly greater perceived faculty support than students who withdrew either voluntarily or because of

academic failure. Students who persisted perceived there was more functional support available and may have used that support to a greater extent than those who dropped out. Additionally, students who persisted perceived more psychological support from faculty and felt faculty cared and wanted them to succeed. These findings suggest that faculty support promotes academic integration and according to Tinto (1987), students who are integrated into the academic environment of the institution are more likely to persist and be academically successful.

Stickney (2008) found academic variables, as measured with the Test of Adult Basic Education (TABE) and prerequisite courses were significantly different for students in the retention group compared with students in the attrition group. Based on study results, Stickney (2008) recommended early intervention sessions to satisfy academic integration and to continue these strategies throughout the nursing program. In addition, Tinto (1987) advocated the importance of social integration along with academic integration for student success. Therefore, implementing study and support groups, referrals to student services, and frequent contact with faculty advisors in the nursing program would assist incoming students with variables that present as barriers to success in the nursing program (Stickney, 2008).

**Transitions theory.** Transitions theory has a long history within anthropology and other disciplines. Derived from the Latin word transition is defined as, passage from one state, stage, subject, or place to another; change (Merriam-Webster, 2005). The meaning of transition in the social sciences and health disciplines has evolved over the years. Indeed, transition is a concept important to nursing and facilitating transition has been identified as a central concept for nursing (Schumacher & Meleis, 1994). In fact, nurses have contributed to the building of knowledge about the transition process as it relates to life and health (Kralik, Visentin, & von Loon, 2006).

Van Genneep (1960) first described the way people move through life's stages in three distinct phases. This three-phase approach to transition continues to influence current transition thinking in the nursing literature. Although transition definitions vary by discipline, most agree that transition involves a passage of change (Kralik et al., 2006). Meleis et al. (2000) provided a framework for creating meaning of the concept of transition from a developmental, situational, health/illness and organizational perspective. Indicators that transition is occurring included the individual feeling connected to, and interacting with, their situation and other people. Through reflection and interaction, the individual develops increased confidence in coping with change and mastering new skills and ways of living (Meleis et al., 2000).

Chick and Meleis (1986) proposed the importance of awareness of the change. They suggested that to be in transition, an individual must have some awareness of the changes that are occurring. This awareness is followed by engagement, where the individual is immersed in the transition process and embarks on activities to assist in that process (Meleis et al., 2000). These activities may include, seeking information or support, identifying new ways of living and being, modifying former activities, and making sense of the circumstances. According to Meleis et al. (2000), the level of awareness will influence the level of engagement. Therefore, a lack of awareness signifies that an individual may not be ready for transition (Chick & Meleis, 1986; Meleis, 2010; Meleis et al., 2000).

Transitions in various educational and professional roles are classified as situational transitions (Schumacher & Meleis, 2010). Studies addressing situational transitions included; transitions into and throughout educational programs, various role transitions and changes in practice settings, family situational changes, and immigration.

Brennan and McSherry (2010) explored the transitional processes associated with moving from a health care assistant (HCA) to student nurse at one English University. Health care assistant is a term used in the United Kingdom to describe a support worker for the qualified nurse. Through focus group interviews, the themes emerged around culture shock and clinical issues. An interesting finding revealed that students reverted to their HCA role as a strategy to overcome the shock of new situations during their first year in clinical or faced with a new experience. The theme of comfort zone was used as a strategy for the student when unsure about their student role or when they wanted to demonstrate their abilities in an effort to gain acceptance of members of the healthcare team. The findings of this study expand on the existing literature on reality shock and transition and provide a new framework for the transition and professional socialization from HCA to student nurse (Brennan & McSherry, 2010).

Wieland, Altmiller, Dorr, and Wolf (2010) designed a study to describe the clinical transition experiences of nursing students in a senior-level precepted clinical course. Data was analyzed using constant-comparative methods from comments received on a feedback form completed by the students, faculty, and clinical preceptors and student journal entries. According to all participants, there was an increase in students' knowledge and skills during the preceptorship experience, as well as many students became an integral member of the hospital unit team (Wieland, Altmiller, Dorr, & Wolf, 2010). Although students gained confidence, time management abilities, and improved documentation skills, this research provided a voice for the need for continuous quality improvement of precepted experiences. Issues for improvement included, facilitating connections between students and preceptors, enhancing the orientation for preceptors and preceptees, reviewing with students reality-based expectations of the experience, clarifying guidelines for final student clinical evaluations, and maintaining consistency among

faculty by retaining those who had taught the student earlier that semester (Wieland, Altmiller, Dorr, & Wolf, 2010).

In a phenomenological study to explore the experience that associate degree and diploma nursing graduates have when transitioning from RNs to BSNs, Delaney and Piscopo (2010) analyzed 12 stories describing the participants' transition. The findings validated and extended on previous qualitative and quantitative studies. The participants also believed they had improved their critical thinking skills and enhanced their professionalism. However, an interesting finding revealed that the participants' classmates played an important role in their transition process. Their classmates, particularly those of a similar age, provided support, encouragement, and the determination to confront and conquer challenges, while the younger or unengaged classmates caused a delay in the nurses' transition (Delaney & Piscopo, 2010). Implications for nurse educators suggest building on classmate connections to foster persistence and motivation throughout the nursing program. These findings also suggest that RN-BSN program students have the best experiences when they are in a cohort rather than integrated with traditional students (Delaney & Piscopo, 2010).

## **Summary**

A review of the literature revealed extensive research in retention theory, including many variations to Tinto's theory over the years. Additionally, nursing and transitions theory has been studied to examine role transition in nursing education and practice. Although several studies have used transitions theory to examine role transition, no studies were found that examined situational transitions and student retention in nursing education. Therefore, further exploration is needed to examine the relationship among the multitude of student, academic, and institutional

factors as the student transitions into a nursing program and is retained at the end of the first semester in an associate degree nursing program.

## **CHAPTER 3: METHODOLOGY**

This chapter presents the methodology that was used in this research study. The purpose of this descriptive correlational study was to explore student factors that affect student retention and attrition at the end of the first semester in associate degree nursing programs in North Carolina. A secondary purpose was to explore the institutional characteristics of the nursing programs that affect student retention and attrition at the end of the first semester in associate degree nursing programs in North Carolina. This chapter is divided into six sections; research design, a description of the setting and sample, ethical considerations, description of the instrument, data collection procedures, data analysis, and limitations.

### **Research Design**

Correlational research methodology was used to examine the relationship between socio-demographic characteristics, dispositional, situational, and institutional factors related to retention of first semester associate degree nursing students. Correlational studies are designed to examine relationships between variables (Polit & Beck, 2008). This study examined the interrelationship between multiple variables on the student being retained at the end of the first semester. In addition, this study utilized a multi-site, cross-sectional prospective approach to explore the factors which can be identified at admission to predict retention at the end of the first semester.

### **Setting**

This study was conducted on the campuses of eight community colleges within the North Carolina Community College System (NCCCS) located in North Carolina. NCCCS is the third largest in the nation (North Carolina Community College System [NCCCS], 2011). The colleges are an example of the many open door community colleges that provide educational

opportunities to students of all ages and allow them to achieve a variety of goals. Credit, non-credit, post-secondary transfer, vocational, and leisure courses are available to meet the needs of the community. Fifty-eight community colleges are members of the NCCCS; fifty-five of these colleges offer an associate degree in nursing.

The eight associate degree nursing (ADN) programs are located in central North Carolina. The colleges are accredited through the Southern Association of Colleges and Schools (SACS) and are North Carolina Board of Nursing approved to award an Associate of Applied Science in nursing degree. Three of the ADN programs are fully accredited by the National League for Nursing Accrediting Commission (NLNAC). One program recently achieved candidate status through NLNAC and is awaiting full approval, another is completing their candidacy presentation. Candidacy is the first step toward NLNAC Accreditation (National League for Nursing Accrediting Commission [NLNAC], 2011). The remaining three programs have not initiated the accreditation process. The ADN programs are all housed in the Health Sciences Department at their affiliating college. The structures of the colleges differ slightly, but all have an approved Director of Nursing Education overseeing the program. All eight colleges accept generic students yearly for fall semester enrollment. One program has a dual enrollment and accepts generic students again for the spring semester. The program differences in terms of retention are outlined in the Table 2.

The researcher is known in the community college system and a member of the NCCCS Deans of Health Sciences group. To gain access to the students in the identified colleges, a description of the study was provided to the appropriate Director of Nursing Education, Dean and Vice President of Instruction at each college. Upon their approval, a letter of intent was sent to each President. This letter included the purpose of the study, sampling procedure, brief

description of the research design and method, ethical considerations, and intent to publish results. Return correspondence with permission was obtained from the President of each participating college. One college had an internal application process to conduct research on their campus. This application was completed and permission received, prior to implementation of this study.

Upon permission from each college, the researcher contacted the Director of Nursing Education to review the research process and method of collection. A timeline for data collection was established based on each college's orientation schedule. In addition, the researcher contacted the director of each nursing program at the end of the first nursing course of the first semester to assist in completion of an exit survey form to establish the status (continuation, failure, dropped out, or withdrew from the nursing program) of the students who participated in the study. The final grade of the first nursing course for each participating student was obtained. The exit form included information on why the student is exiting the program i.e., academic, personal, or institutional factors. A blank copy of the exit form was given to each director.

## **Sample**

All first semester, generic students admitted to the associate degree nursing programs between April and August were eligible to participate in the study. Inclusion criteria consist of all students that received official notification of acceptance into one of the eight generic associate degree nursing programs. Of the 439 generic nursing students that attended the nursing orientations, 439 completed the questionnaire and were included in the sample.

## **Ethical Considerations**

The Family Education Rights and Privacy Act (FERPA) of 1974 is a federal law that protects the privacy of student education records (Family Education Rights and Privacy [FERPA], 2008). Students have specific, protected rights regarding the release of such records and FERPA requires that institutions adhere strictly to these guidelines. Any record that contains personally identifiable information that is directly related to the student is an educational record under FERPA. Although information obtained from the survey instrument will not be placed in the student's educational record, it will contain student demographic characteristics and the student's college identification (ID) number. Therefore, it is important that the student's right to privacy is upheld and prior written consent obtained from each participating student. An identification number and code for each instrument administered were used to protect the confidentiality of the participants.

The researcher received approval from the University Institutional Review Board (IRB) prior to implementation of this study. There was minimal risk in this study and participation were voluntary. Study aims and potential benefits were explained to potential participants. Students also indicated voluntary agreement to participate by signing the consent form. A statement was included in the consent form indicating that by signing the consent form, the participants agree to authorize the nursing program to release information about the participants' academic standing at the end of the first nursing course and first semester. The director of the nursing program did not have access to any information linking the participants to the responses on the survey instrument and the demographic form. Confidentiality of the participants was maintained at all times. The data was stored in a locked cabinet in the researcher's office. All data will be destroyed after

three years by shredding the records. The only identifying information were the community college where the student is enrolled and the student's identification number.

### **Data Collection**

Students received official acceptance into the nursing program during the summer semester, prior to the start of the program. The nursing programs conducted mandatory orientation sessions for accepted students prior to the start of the semester. The focus of this orientation is to orient the students to program policies and register students for courses. Facilitated by the director of the nursing program, the orientation session is held on the college campus. All students must attend one of the orientation sessions. The researcher attended each orientation session offered at the eight colleges, enabling all students the opportunity to participate in the study. During this visit, the researcher obtained the institutional characteristics for each participating nursing program.

Mid-point in the orientation, the Director of Nursing Education at the participating college introduced the researcher. The researcher briefly discussed the purpose of the study and reviewed the informed consent form with the students. Informed consent included permission to contact the Director of Nursing Education at the end of the semester for student information regarding enrollment status and the exit survey form. Confidentiality was assured and maintained at all times. Individual student information obtained was not shared with the nursing director, nursing faculty, or participating college. None of the information obtained in the study was added to the student's educational record.

All students who attended the nursing orientation session were asked to participate in the study. Those students who gave voluntary consent to participate received the questionnaire.

Students completed the questionnaire in the same room as the orientation was being conducted. Although the questionnaire consists of four sections and the demographic information at the beginning of the survey, it was formatted to appear as one concise instrument to promote completion of the entire questionnaire. The estimated time to complete the questionnaire was 10 to 15 minutes.

At the conclusion of the first nursing course of the first semester, the researcher contacted the directors of the nursing programs for information regarding the enrollment status of the participants. This included all students who dropped, withdrew, or exited the nursing program due to failure. The researcher matched the enrollment status and final grade with the participants who completed the survey.

The exit survey was developed by the researcher as a method of collecting information on the enrollment status of the participants at the end of the first semester and additional program characteristics. The institutional factors part of the exit survey consists of questions related to the nursing program. Included in this section is: the number and educational qualifications of full-time and part-time nursing faculty, average age of full-time nursing faculty, and average years of longevity of full-time nursing faculty. Additional questions consist of grading scale utilized by the nursing program, tutoring sessions and mentoring program available to the student, accreditation status of the nursing program, and admission criteria information. These questions reflect recommendations from a previous study which identified the need for further investigation of program characteristics in high versus low performing programs (Cecil G. Sheps Center for Health Services Research, 2008).

## **Instrument**

The Dispositional, Situational, and Institutional Questionnaire was developed and piloted by Seago, Wong, Keane, and Grumbach. (2008). The questionnaire was pilot tested with two groups of English-speaking college students from various ethnic backgrounds. After review of the instrument and with permission from the developers, the demographic section of the survey was condensed and refined for this study. This instrument is appropriate for this study as it incorporates dispositional, situational, and institutional variables that may affect student retention in associate degree nursing students.

As this was a newly developed instrument, the questionnaire was piloted by first year nursing students currently attending one of the colleges in the sample (College 03). Twenty-eight students volunteered to complete the questionnaire. The purpose of this pilot was to review the questions for clarity and to determine the approximate amount of time it would take to complete the survey. The majority of the students completed the survey in twenty minutes. No comments were received on any question(s) that were unclear and overall format and ease of reading was apparent.

**Instrument development.** The questionnaire, developed by Seago et al. in 2002 was initially tested in 2002 with first- and second-year prelicensure nursing students attending four community colleges and two state universities in the California Central Valley. The response rate was 72%, with completion of 1106 usable surveys. These responses constituted the test group for scale development and psychometric analysis. A second group of nursing students were administered the survey in spring 2003. The response rate was 58%, with 581 of 1003 usable surveys. These responses served as a validation group for repeating psychometric testing in a sample similar to but independent of the test sample (Seago et al., 2008). Descriptive analyses of

the test group (n=796) and validation group (n = 581) produced similar results (Seago et al., 2008). The questionnaire contains four sections. The final section included demographic information, family background, employment and hours' work, transportation issues, home and family responsibilities, financial status, and previous college experiences.

The scales for the dispositional, situational, and institutional sections consists of Likert items scored on a 0-100 point scale, with 100 being the highest possible response score (e.g., items with a possible response range of 1 to 4 were recoded to 0, 33, 67, and 100) and item responses were recoded such that a higher score indicated a more positive response. The career values section has 18 items that are rank-ordered. Confirmatory factor analysis was performed by the developers to test whether the items loaded on the constructs and subscales within each area for which they were intended are consistent (Seago et al., 2008). The Kaiser-Meyer-Okin (KMO) value for all the constructs was greater than .56 (.6 suggested as the minimum value) and Bartlett's Test of Sphericity tests were all significant at  $p < .001$ , supporting the factorability of the correlation matrix (Pallant, 2007).

Principal components analysis with varimax rotation was used on the variables in the factor matrix. Correlation coefficients of .32 as the minimum loading of an item and Kaiser's criterion of an eigenvalue of 1 or more were the criteria used for retaining items. Internal consistency reliability was used based on Cronbach's alpha, an alpha reliability of .70 or greater for a subscale was considered reliable. Total explained variance for the subscales within the situational, career values, and institutional factors ranged from 62% to 76%. The overall explained variance for the subscales within the dispositional factors was 47% and 55%. The poorest overall scale alpha was for the situational factors at .60 and .64 for the two piloted groups (Seago et al., 2008).

Subscales with the constructs in the first section that met minimum criteria for construct validity, cross-loadings, and internal consistency reliability included the work issues and financial issues subscales, the diversity and faculty subscales, and job characteristics and work style subscales. The subscale math and science ability in the dispositional area was not found to be valid or reliable. (Seago et al., 2008). However, the ultimate use of the subscales in the instrument was their application as variables to predict nursing student attrition or graduation, therefore the items were not eliminated.

The development of this tool involved multiple phases with multiple versions. As stated, some evidence of construct validity and internal consistency reliability for subscales measuring concepts within several of the constructs was found. Several of the subscales met criteria for construct validity and internal consistency but not for cross-loadings. Many items thought to load on subscales within the constructs did not meet criteria for factor loading or cross-loadings among the scales, however may have been useful as single items in predicting ability in analyzing factor of student success (Seago et al., 2008). Utilizing multiple versions of an instrument was problematic when replicating the psychometric analysis for the current sample. However, there is a lack of published validation studies of survey instruments for research on educational experiences and retention of nursing students. As this was a newly developed tool, it benefited from additional testing on student samples, as well as utilizing the subscales for further refinement. Therefore, all factors and subscales were utilized and reliability was tested for the current sample.

**Definition of variables.** There were three general areas as predictors of student success: dispositional and career values factors, situational factors, and institutional factors (Seago et al., 2008). The dispositional section consists of 15 items that measure academic aptitude and

abilities, motivation, emotional outlook, physical well-being, persistence and commitment. Included in this section were demographic characteristics (age, ethnicity, education, marital status, dependents, family members attended college, and parents working in health care). The career values section had 18 items that are rank-ordered to examine the importance of job characteristics, autonomy, caring, flexibility, and work style on choosing a future career/profession. There were 9 situational items that included financial issues, social support, lack of time or devotion, job responsibilities, and family needs. The final section consisted of 16 institutional items in the categories of social integration, faculty support, academic enrichment programs, and program characteristics (Seago et al., 2008). Table 1 presents an overview of the variables, theoretical constructs, operational definitions, survey item numbers, and scoring scale.

Table 1  
*Definitions for Variable*

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Math and science ability	Dispositional	Academic aptitude and abilities	1a, 1b, 1c, 1d, 1e	1=yes, 2=no
Confidence in future	Dispositional	Persistence/commitment	2a, 2b, 2c, 2d	1=definitely describes me, 2=somewhat describes me, 3=doesn't describe me
Confidence in ability	Dispositional	Academic aptitude and abilities	2e, 2f, 2g, 2h, 2i, 2j	1=definitely describes me, 2=somewhat describes me, 3=doesn't describe me

Table 1 (*continued*)

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Financial issues	Situational	Financial status	3a	1=definitely describes me, 2=somewhat describes me, 3=doesn't describe me
Financial issues	Situational	Financial status	3b	1=yes, 2=no
Financial issues	Situational	Financial status	3c	1=very little, 2=somewhat agree, 3=somewhat disagree, 4=strongly disagree
Social support	Situational	Social support	4a, 4b	1=strongly agree, 2=somewhat agree, 3=somewhat disagree, 4=strongly disagree
Missed class	Situational	Lack of time or devotion	5a, 5b	1=often, 2=sometimes, 3=rarely, 4=never
Work issues	Situational	Family and job responsibilities	5c	hours work
Work issues	Situational	Lack of time or devotion	5d	1=often, 2=sometimes, 3=rarely, 4=never
Peers	Institutional	Social integration	6a, 6b, 6c 6d	1=excellent, 2=very good, 3=fair, 4=poor

Table 1 (*continued*)

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Overall experience	Institutional	Social integration	7a, 7b	1=very satisfied, 2=somewhat satisfied, 3=somewhat dissatisfied, 4=very dissatisfied
Diversity	Institutional	College/program characteristics	8a, 8b, 8c	1=very satisfied, 2=somewhat satisfied, 3=somewhat dissatisfied, 4=very dissatisfied
Faculty	Institutional	Faculty support	9a, 9b, 9c, 9d, 9e, 9f, 9g	1=often, 2=sometimes, 3=rarely, 4=never
Job characteristics	Dispositional	Career values	10a, 10b, 10c	1=most important, 2=very important, 3=somewhat important, 4=not important
Autonomy	Dispositional	Career values	11a, 11b, 11c, 11d, 11e	1=most important, 2=very important, 3=somewhat important, 4=not important
Caring	Dispositional	Career values	12a, 12b, 12c, 12d	1=most important, 2=very important, 3=somewhat important, 4=not important

Table 1 (*continued*)

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Flexibility	Dispositional	Career values	13a, 13b, 13c	1=most important, 2=very important, 3=somewhat important, 4=not important
Work style	Dispositional	Career values	14a, 14b, 14c	1=most important, 2=very important, 3=somewhat important, 4=not important
Age	Dispositional	Demographic characteristics	D1	1=<25 years of age, 2=26-30, 3=31-40, 4=>40
Gender	Dispositional	Demographic characteristics	D2	1=female, 2=male
Ethnicity	Dispositional	Demographic characteristics	D4	1=White, 2=Black, 3=Hispanic, 4=Asian, 5=other
Name of college	Institutional	Program characteristics	D5	Participating college code
Started at college	Institutional	College characteristics	D6	1=Fall 2012, 2= Fall/Spring 2011, 3=Fall/Spring 2010, prior to 2010

Table 1 (continued)

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Related courses complete	Institutional	Program characteristics	D7	1=yes, 2=no
College taken related courses	Institutional	Program characteristics	D8	1=yes, 2=no, or what college
Typical course load	Dispositional	Academic aptitude and abilities	D9	1=1-2 courses, 2=3 courses, 3=>3
Number of developmental courses taken	Dispositional	Academic aptitude and abilities	D10	1=1 course 2=2 courses, 3=>2, 4=none
Educational background	Dispositional	Demographic characteristics	D12	1=HS diploma, 2=associate, 3=baccalaureate, 4=graduate
Family member attend college	Dispositional	Demographic characteristics	D13	1=yes, 2=no
Parents work in health care	Dispositional	Demographic characteristics	D14	1=yes, 2=no
Getting to school and clinical is a problem for me	Situational	Social support	D11	1=never, 2=always, 3=sometimes
Marriage-like relationship	Situational	Social support	D15	1=yes, 2=no

Table 1 (*continued*)

Variable subscale	Theoretical construct	Operational definition	Survey item number	Score scale
Dependents	Situational	Family and job responsibilities	D16	1=yes, 2=no
Family members dependent on you	Situational	Family and job responsibilities	D17	1=yes, 2=no
Living with others or alone	Situational	Social support	D18	1=others, 2=alone
People in household	Situational	Social support	D19	1=1, 2=2, 3=3-4, 4, >4
Household income	Situational	Financial status	D20	1=0-16,000, 2=16,001-35,000, 3=35,001-50,000, 4=over 50,000
Financial aid	Situational	Financial status	D21	1=very little, 2=some, 3=most, 4=all

### Dispositional Constructs

**Demographic characteristics.** Demographic data (D1, D2, D3, D4, D12, D13, D14) from the students included age, gender, student identification number, ethnicity, education, family members attended college, and parents working in health care.

Age- identified in years of age.

Gender- categorized as male and female.

Student identification number-as assigned to student by attending college.

Ethnicity- ethnicity categorized as White, Black, Hispanic, Asian, and other.

Educational background- categories of education included the highest earned degree to included previous diploma, associate, baccalaureate and graduate degree.

Family members attended college- categorized as yes and no.

Parents work in health care- categorized as yes and no.

**Academic aptitude and abilities.** Academic aptitude and abilities was measured by nine questions (1a, 1b, 1c, 1d, 1e, 2a, 2d, 2e, 2f). The items included; challenges ideas in class and asks questions, confidence in academic abilities, and difficulty with math and writing. Categories for responses included often and definitely, sometimes and somewhat, and rarely, never, and doesn't describe me. Two additional questions were added to the beginning of survey. One question (D10) asked for the number of developmental courses taken and one question (D9) about the student's typical course load.

**Motivation.** Motivation was measured by one question (2i) based on the students' response to the importance of getting good grades. Category responses included definitely, somewhat, and doesn't describe me.

**Emotional outlook and physical well-being.** Emotional outlook and physical well-being was measured by two questions (2c, 2g) based on students' response to self-reported energy and stamina and self-confidence. Categories for responses included definitely, somewhat, doesn't describe me.

**Persistence and commitment.** Persistence and commitment was measured by three questions (2b, 2j, 2h). Responses on looking forward to school and determination to graduate were included. Categories included definitely, somewhat, doesn't describe me.

**Career values.** The career value constructs section of the survey were defined as those job characteristics important to the student when selecting a career and may influence the student's determination to persist in a field of study. A total of eighteen questions determining job characteristics, autonomy, caring, flexibility, and work style were presented. Categories of responses included most important, very important, somewhat important, and not important.

### **Situational Constructs**

**Social support.** Social support was measured by five questions (4a, 4b, and 3 on beginning of survey). Questions on family support and encouragement, living with others, difficulty getting to school or clinical, and in a marriage-like relationship were included. Categories included strongly agree, somewhat agree, somewhat disagree, and strongly disagree. The four questions (D11, D15, D18, D19) on the beginning of the survey were yes and no, never and always, and others and alone.

**Financial status.** Financial status was measured by six questions (3a, 3b, 3c, D20, D21) based on responses to financial aid and adequacy. Categories included all, most, some, and very little. Household income ranges (0 to \$16,000, \$16,001 to \$35,000, \$35,001 to \$50,000, and over \$50,000) and if the student is receiving financial aid were the final questions in this category.

**Lack of time or devotion.** Lack of time or devotion was measured by three questions (5a, 5b) based on responses on misses class due to employment. Categories included often, sometimes, rarely, not employed.

**Job responsibilities.** Job responsibilities were measured by two question (5c, 5d) based on response to number of hours employed.

**Family needs.** Family needs were measured by two questions (D16, D17) at the beginning of the survey based on responses to home and family responsibilities and family members depend on you as categorized as yes and no.

### **Institutional Constructs**

**Social integration.** Social integration was measured by six questions (6a, 6b, 6c, 6d, 7a, 7b) based on responses to peers and overall college experience. Categories included excellent and very satisfied, very good and somewhat satisfied, fair and somewhat dissatisfied, and poor and very dissatisfied.

**Faculty support.** Faculty support was measured by seven questions related to the type or level of support provided by the nursing faculty (9a, 9b, 9c, 9d, 9e, 9f, 9g). Categories included often, sometimes, rarely, and never.

**College and program characteristics.** College and program characteristics were measured by three questions (8a, 8b, 8c) related to responses to support for racially and ethnically diverse faculty, sensitivity to people from various backgrounds, and teaching about ethnic and cultural diversity. Four additional questions (D5, D6, D7, D8) at the beginning of the survey determined completion of related courses and where student completed their related courses and attending college. Categories included very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied, as well as yes and no.

## **Data Analysis Plan**

Data were coded to ensure privacy of the participants during the data analysis. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 18. Data analysis began with checking the data set for errors and finding and correcting the errors in the data file. Once the data file was checked for accuracy, the next step involved manipulating the data into a form that can be used for analysis. This involved reducing or collapsing the number of categories of a categorical variable or collapsing continuous variables into categorical variables.

The next step was the descriptive phase of the data analysis. Descriptive statistical analysis was used to describe the characteristics of the sample. This included: number of students in the sample, the number and percentage of males and females, the range and mean of ages, education level, income ranges, the number and percentage of married and single students, the number and percentage of students with dependents, and the number and percentage of students from each institution.

Descriptive analysis of the sample and instrument was also performed using means, standard deviations, and ranges for continuous variables and frequencies and percentages to describe categorical variables. Bivariate descriptive statistics, such as contingency tables and correlations, were used to show two variable relationships (Polit and Beck, 2008). Inferential statistics was used to seek relationships between the variables.

Chi-square tests were used to explore the relationship between the categorical variables. This test compared the observed frequencies of cases that occur in each of the categories. The crosstabulation tables also provided the significant value, thereby revealing if there is a significant relationship between the two variables. Examining the effect size indicated the

association between the two variables (Pallant, 2007). Chi-square analysis was also used to examine the relationships between the categorical independent variables of age, education, ethnicity, gender, marital status, and dependents on the dependent variables of retained and not retained.

In addition, descriptive statistics for the variables were obtained to provide a description of the characteristics of each group (College 01, 02, 03, 04, 05, 06, or 07). Descriptive statistics provided summary statistics such as mean, median, standard deviation, and frequencies for the variables being examined (Pallant, 2007). Spearman rank order correlation was used to examine the relationships between the institutional characteristics and retention.

Correlation analysis was used to explore the relationship between the variables. Before performing a correlation analysis a scatterplot, which enables the researcher to check for violation of the assumptions of linearity and homoscedasticity were generated (Pallant, 2007). The scatterplot will provide the visual ability to check for outliers or data points that are either very high or very low, or away from the main cluster of points. The scatterplot will also tell whether the relationship between the variables is positive or negative. Once distribution of scores on the scatterplot and the relationship between the variables are established, the next step is to calculate the Pearson's correlation coefficients.

An instrument's reliability is a major criterion for assessing its quality and adequacy (Polit and Beck, 2008). The reliability of the Dispositional, Situational, and Institutional questionnaire was tested and re-tested, however it is recommended that this be done each time a research instrument is used. Therefore, it was important for a re-estimate of reliability with the sample population surveyed. Reliability testing to ascertain internal consistency of the research

instrument was performed. The most commonly used method for evaluating internal consistency is coefficient alpha or Cronbach's alpha (Polit and Beck, 2008). Additionally, an exploratory factor analysis was performed to determine if the reported Dispositional, Situational, and Institutional sub scales and item loadings were replicated in this study.

Further analysis was addressed for each research question below:

1. Is there a difference in the socio-demographic characteristics of associate degree nursing students who are retained after the first semester when compared to those that are not retained?

Chi-square test was used to evaluate the association of socio-demographic characteristics and retention at the end of the first semester.

2. Does the current study support the factor structure and psychometric properties reported in the original study (dispositional, career values, situational, institutional factors)?

Principal axis factor analysis with oblique rotation was conducted on the items from the instrument based on the properties reported in the original study.

3. Is there a difference between retained and not retained students on factors which are derived from the instrument?

One-way analysis of variance (ANOVA) was used to explore the relationship of the factors between retained and non-retained students.

4. How well does the combination of socio-demographic factors and derived factors predict student attrition at the end of the first semester?

Binary logistic regression for those variables which contributed significantly to the predictive ability of the model.

Logistic regression analysis provided information about the model as a whole and the relative contribution of each of the variables that make up the model. Logistic regression was used to test models to predict categorical outcomes with two or more categories. It provided an indication of the relative importance of each predictor variable or the interaction among the predictor variables (Pallant, 2007). Logistic regression also provided the odds ratio, which offered an estimate of relative risk, the risk for an outcome occurring given one condition versus the risk for it occurring given a different condition (Polit & Beck, 2008).

5. Is there a relationship between institutional characteristics and first semester retention rates of the associate degree programs in the study?

The relationship between institutional characteristics obtained by the exit survey and retention rates of the nursing programs in the study was investigated using Spearman rho correlation coefficient.

### **Limitations**

As in most studies, generalization was the major limitation of this study. Additionally, the sample was restricted to student retention at the end of the first semester. Retention each semester varies and some programs report a higher attrition at the end of the first year, rather than the end of the first semester. Currently retention rates are published in 3-year averages, as on-time program completion. Also, the study population is limited to ADN programs in NC. As provided in many of the research studies presented in the literature review, baccalaureate programs also face similar challenges.

## **Summary**

This chapter described the research design, setting and sample, ethical considerations, description of the instrument, data collection procedures, data analysis plan, and limitations for the study. The purpose of this study was to examine the relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina. The study utilized exploratory factor analysis in order to identify factors associated with retention. Descriptive statistics, chi-square, one-way analysis of variance (ANOVA), and correlational analysis were used to answer the research questions.

## CHAPTER 4: Findings

This chapter presents the findings of the study. The purpose of this study was to examine the relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina. In addition, the study examines the relationship between institutional factors and retention rates. Descriptive statistics of the study sample and the instruments and the analysis of each research question are presented.

### Characteristics of the Sample

A total of 439 nursing students comprised the study sample. Eight community college nursing programs participated in the study. College 7 comprised the largest number of students 82 (18.7%) and college 4 the smallest number of students 37 (8.4%). All students present at the nursing orientation sessions at the 8 colleges participated and completed a questionnaire.

Table 2

#### *Program Retention Characteristics*

Attending college	Number admitted	Total program enrollment	3-year on-time completion rate (2008-2010)	3-year on-time completion rate (2009-2011)	First semester drop out rate % (N)
College 01	49	80	36.2%	38.2%	22.4 (11)
College 02	48	150	37.9%	42.9%	8.3 ( 4)
College 03	59	105	59.6%	70.9%	35.6 (21)
College 04	37	80	50.4%	41.3%	21.6 ( 8)
College 05	47	120	75.7%	66.7%	12.8 ( 6)

Table 2 (continues)

	Number admitted	Total program enrollment	3-year on-time completion rate (2008-2010)	3-year on-time completion rate (2009-2011)	First semester drop out rate % (N)
College 06	69	90	37.3%	38.1%	14.5 (10)
College 07	82	300	78.0%	67.7%	15.9 (13)
College 08	48	96	60.5%	66.7%	31.3 (15)

*Note.* 3-year on-time completion is defined as graduating within the prescribed semester sequence required by the nursing education program in which the student is enrolled (NCBON, 2010). 3-year on-time completion rates are published on the NCBON website.

\*averages based on 2009-2011 figures.

### Research Question #1

Is there a difference in the socio-demographic characteristics of associate degree nursing (ADN) students who are retained after the first semester when compared to those that are not retained?

Descriptive statistics were used to examine the socio-demographic characteristics of the participants. Chi-square test was used to evaluate the association of socio-demographic characteristics and retention at the end of the first semester. Significance was set at the .05 level. Socio-demographic characteristics consisted of the following: ethnicity, gender, related courses complete, typical course load, number of developmental courses, highest degree earned, parent attended college, marital status (married or in a significant relationship), financially dependent children, other family members financially dependent, and received financial aid. As shown in Table 3, several variables were significantly different between the retained and the non-retained

students. Ethnicity, related courses complete, number of developmental courses, and other family members financially dependent all reached statistical significance.

Table 3

*Socio-Demographic Characteristics of Retained (N=351) and Not Retained Students (N=88)*

Characteristic	Total % (N)	Retained % (N)	Not retained % (N)	$X^2$	$p$	Phi
<b>Ethnicity</b>						
White	76.3 (335)	82.4 (276)	17.6 (59)	5.23	.022	.11
Non-White	23.7 (104)	72.1 ( 75)	27.9 (29)			
<b>Gender</b>						
Male	12.1 ( 53)	81.1 ( 43)	18.9 (10)	0.05	.819	.01
Female	87.9 (386)	79.8 (308)	20.2 (78)			
<b>Related courses complete</b>						
Yes	74.5 (327)	82.9 (271)	17.1 (56)	6.82	.009	.13
No	25.5 (112)	71.4 ( 80)	28.6 (32)			
<b>Course load</b>						
1-2 courses	30.3 (133)	74.4 ( 99)	25.6 ( 34)	5.41	.067	.11
3 courses	30.5 (134)	85.8 (115)	14.2 ( 19)			
>3 courses	39.2 (172)	79.7 (137)	20.3 ( 35)			
<b>Developmental courses</b>						
None	54.0 (237)	84.0 (199)	16.0 ( 38)	10.01	.018	.15
1 course	20.1 ( 88)	81.8 ( 72)	18.2 ( 16)			
2 courses	10.9 ( 48)	66.7 ( 32)	33.3 ( 16)			
>2 courses	15.0 ( 66)	72.7 ( 48)	27.3 ( 18)			
<b>Highest degree</b>						
High school	63.2 (277)	78.0 (216)	22.0 ( 61)	2.69	.262	.08
Associate degree	15.8 ( 69)	79.7 ( 55)	20.3 ( 14)			
≥Bachelor	21.0 ( 92)	85.9 ( 79)	14.1 ( 13)			

Table 3 (continued)

Parent attend college						
Yes	65.6 (288)	80.2 (231)	19.8 ( 57)			
No	31.9 (140)	79.3 (111)	20.7 ( 29)			
Don't know	2.5 ( 11)	81.8 ( 9)	18.2 ( 2)	.074	.963	.01
Married or Significant Relationship						
Yes	58.3 (256)	81.3 (208)	18.8 (48)			
No	41.7 (183)	78.1 (143)	21.9 (40)	.643	.423	.04
Children Financially Dependent						
Yes	48.5 (213)	79.8 (170)	20.2 (43)			
No	51.5 (226)	80.1 (181)	19.9 (45)	.005	.942	.003
Other Family Members Financially Dependent						
Yes	5.9 ( 26)	57.7 ( 15)	42.3 (11)			
No	94.1 (413)	81.4 (336)	18.6 (77)	8.55	.003	.14
Received Financial Aid						
Yes	48.5 (213)	78.9 (168)	21.1 (45)			
No	51.5 (226)	81.0 (183)	19.0 (43)	.302	.583	.03

## Research Question #2

Does the current study support the factor structure and psychometric properties reported in the original study (dispositional, situational, institutional factors, and career values)?

An exploratory factor analysis was performed on the 58 items from the Dispositional, Situational, and Institutional survey to determine if the reported subscales and item-loadings would be replicated in this study sample. Seago et al. (2008), reported that the measurement instrument was conceptually designed around four constructs labeled dispositional, situational, institutional, and career values. The instrument was administered to a test group (N = 796) and a validation group (N = 581). The dispositional construct factored into two subscales (confidence

in future and confidence in ability); the situational construct into four subscales (financial issues, social support, missed class, and work issues); the institutional construct into four subscales (peers, overall experience, diversity, and faculty); and the career values constructed into five subscales (job characteristics, autonomy, caring, flexibility, and work style). Before scoring or analysis of the items, the responses were manipulated so that all item responses were transformed and could be scored on a 0-100 point scale, with 100 being the highest possible score (e.g., items with a possible response range of 1 to 4 were recoded to 0, 33, 67, and 100) and item responses were recoded such that a higher score indicated a more positive response (Seago et al., 2008).

Since the current study included substantially more African Americans and White students, much fewer Latino students, and no Filipino students compared to Seago's et al. (2008) test group and validation group, the factor structure of the measurement instrument was determined for the current study. Principal axis factoring and oblique rotation were chosen for the factor analysis. Principal axis factor analysis was chosen because this approach is used to discover whether there is a smaller set of unobserved (latent) variables or constructs underlying the variables measured. Oblique rotation (correlations among factors) was chosen rather than a varimax (uncorrelated factors) because in the social sciences we generally expect some correlation among factors since self-reported behaviors and attitudes rarely function independently of each other (Costello & Osborne, 2005). Horn's (1965) parallel analysis was used to determine the number of factors to extract. Parallel analysis involves comparing the size of eigenvalues generated by the data with those obtained from a randomly generated set of the same size. Only those eigenvalues that exceed the corresponding values from the random data set are retained. The Kaiser-Meyer-Olkin (KMO) measure was utilized to assess whether the items

share any common factors. The KMO values was .803, exceeding the recommended value of .6 (Kaiser, 1970, 1974) and Barlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix (Pallant, 2007).

Principal axis factor analysis revealed the presence of 12 factors with eigenvalues exceeding 1.0. These 12 factors explain a total of 61% of the variance. The number of factors to be retained is always based on some rule. One common rule is to use a Scree plot, which plots successive eigenvalues against their ordinal position, to identify a change in the shape in the plot to determine which components to be retained. Kaiser's criterion, or the eigenvalue rule is a common technique. This rule suggests that only factors with an eigenvalue of 1.0 or greater are retained for further investigation. The eigenvalue of a factor represents the amount of total variance explained by that factor. However, both of these methods tend to overestimate the number of components (Pallant, 2007). A technique that overcomes these limitations is called parallel analysis (Horn, 1965; Pallant, 2007). The parallel analysis involves extracting eigenvalues from random data sets that parallel the actual data set with regard to the number of cases and variables, and then comparing the first eigenvalues from the actual data with the corresponding first value from the random results generated by parallel analysis. Components are retained if the corresponding eigenvalue from the actual data is greater than the eigenvalue from the random data. A parallel analysis was used to determine the number of components or factors to extract from the Dispositional, Situational, and Institutional (DSI) survey. Based on this analysis, 11 factors were retained for further investigation. Table 4 displays the results of the parallel analysis.

Table 4

*Results of Parallel Analysis*

Factor	Actual eigenvalue from PAF	Random eigenvalue from parallel analysis	Decision
1	7.760	1.7438	accept
2	5.195	1.6810	accept
3	3.215	1.6335	accept
4	2.630	1.5812	accept
5	2.286	1.5348	accept
6	2.198	1.4979	accept
7	1.725	1.4610	accept
8	1.661	1.4276	accept
9	1.546	1.4962	accept
10	1.471	1.3657	accept
11	1.380	1.3341	accept
12	1.276	1.3081	reject

Once the number of factors were determined and extracted, the next step was to rotate the factors to improve the meaningfulness and interpretation of the generated factors. The goal of rotation is to achieve a simple structure, where each variable loads strongly on only one component, and each component is represented by a number of strongly loading variables (Pallant, 2007). After running the oblique rotation, the pattern matrix was analyzed for factors and items loading on the factors. These results are presented in Table 5.

Table 5

*Pattern Matrix for PCA with Oblimin Rotation of Eleven Factor Solution of DSI Items*

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
9d. assist study skills	<b>.779</b>	.006	-.060	.029	.011	-.001	.064	.001	.010	-.033	-.004
9a. advice and guidance	<b>.772</b>	-.044	-.009	.082	.049	.038	-.003	.003	-.004	.066	.032
9c. emotional support/ encouragement	<b>.733</b>	.038	.061	.038	-.050	.002	-.036	.069	-.025	-.039	.017
9g. help achieve professional goals	<b>.707</b>	.040	-.053	-.040	.022	.045	.048	.089	.001	.018	-.002
9e. feedback about academic work	<b>.702</b>	.009	.052	-.084	.006	-.002	.055	.077	.040	.031	-.010
9f. intellectual challenge/ stimulation	<b>.604</b>	-.028	-.018	-.107	.042	.032	-.044	.119	.021	.002	.050
9b. respect	<b>.571</b>	-.008	.101	.003	.051	.011	-.098	-.015	-.055	-.058	.002
11b. working independently	-.003	<b>.718</b>	-.004	.024	-.046	.099	.096	.034	-.081	-.068	-.042
11a. freedom	-.087	<b>.606</b>	.089	.008	.015	.051	.135	.059	.006	-.084	-.070

Table 5 (continued)

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
11d. supervising others	.038	<b>.537</b>	.071	-.058	.047	-.024	.112	-.049	.023	.059	-.153
11e. having a lot to say	.010	<b>.531</b>	.042	-.081	.137	-.001	-.008	.003	.012	-.088	-.153
11c. opportunity to travel	.041	<b>.561</b>	.020	.003	-.001	.002	.064	-.051	.059	-.010	-.152
4a. family encourages me to succeed	.150	-.187	.087	-.052	-.042	.090	.105	-.012	-.092	-.147	-.172
2h. professors think good student	-.069	-.014	<b>.762</b>	.022	.033	-.025	-.010	.132	-.070	-.063	.017
2f. classmates think I'm a good student	-.049	-.024	<b>.729</b>	.024	.004	.025	-.083	.074	.011	-.085	-.039
2i. think I am a good student	.073	.119	<b>.711</b>	-.071	-.001	.042	-.030	-.019	.020	.069	.043
2e. confident in academic ability	.002	.158	<b>.633</b>	.016	-.070	.042	.005	.064	.078	.031	.120
2b. energy and stamina	.033	-.010	<b>.464</b>	-.093	.080	-.018	-.017	.013	.001	.193	-.028
2d. confident will graduate	.104	.014	<b>.417</b>	.038	.006	-.021	.049	-.040	-.034	-.065	.000

Table 5 (continued)

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
2j. getting good grades important	.108	-.108	<b>.389</b>	.028	.029	-.074	.044	-.027	-.040	.039	-.025
2g. confidence in writing skills	-.026	-.009	.271	.027	-.067	.069	-.021	.013	-.173	.033	.058
4b. friends supportive to succeed	.052	-.189	.251	-.071	-.064	.130	.099	.016	-.093	-.156	-.137
2c. expected to go to college	-.071	-.122	.172	-.052	.145	.036	.050	.037	.089	-.134	-.049
adequate living aid	.033	-.044	-.016	<b>-.926</b>	-.058	-.016	-.072	-.096	-.006	.060	-.023
adequate tuition aid	.082	-.013	-.052	<b>-.849</b>	-.074	-.052	.058	-.012	-.057	.107	.041
3a. difficult to afford	-.083	.064	-.030	<b>-.585</b>	.026	.013	-.035	.065	-.051	-.116	.039
12c. making a difference	.018	-.081	-.025	.042	<b>.878</b>	-.055	-.023	-.005	-.004	.066	.034
12b. making a contribution	.012	-.054	-.023	.065	<b>.842</b>	.036	-.049	-.005	-.047	.075	.032
12a. interesting work	.040	.160	-.001	-.021	<b>.556</b>	.095	.004	.024	-.007	-.068	.084
12d. interacting with others	.073	.058	-.029	-.015	<b>.455</b>	.015	.076	.021	-.025	-.091	-.072

Table 5 (continued)

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
6c. classmates friendliness	-.004	-.108	.025	-.038	-.024	<b>.793</b>	-.051	.024	.078	-.089	-.018
6a. classmates academic skills	.021	.139	-.022	.054	.048	<b>.784</b>	.030	-.026	-.009	.142	.026
6d. classmates support of other students	.049	-.137	-.031	.006	.016	<b>.782</b>	.024	.031	.015	-.057	-.016
6b. classmates preparation for class	-.004	.127	-.062	.035	.011	<b>.709</b>	.028	.009	-.045	.077	.013
10b. good income potential	-.095	.030	.004	-.070	-.013	.034	<b>.938</b>	-.003	.009	.024	.097
10a. good starting income	.012	.107	-.038	.011	-.014	.008	<b>.796</b>	.007	.004	.019	.014
10c. job security	.072	.017	.005	.121	.036	.033	<b>.482</b>	.088	-.078	-.027	.004
8b. teach ethnic/cultural diversity	.019	.016	.029	.033	-.048	.041	-.033	<b>.847</b>	-.020	-.026	-.029
8a. support racially/ethnically diverse faculty	.054	.040	-.034	-.036	-.021	-.035	.031	<b>.844</b>	.033	.000	.046

Table 5 (continued)

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
8c. sensitivity to other backgrounds	-.023	-.092	.038	.060	.034	-.013	.026	<b>.719</b>	-.068	-.051	-.021
7a. sense of community on campus	.205	.035	-.004	-.037	.064	.110	.028	<b>.475</b>	.075	.127	-.050
7b. career counseling and advising	.260	.067	-.006	-.058	.022	.051	.133	<b>.452</b>	.079	.204	-.039
job interfere	-.030	-.006	-.001	-.107	.018	.003	.078	.056	<b>-.727</b>	.097	-.024
job hours	-.015	-.019	-.075	.009	.027	-.021	.049	-.013	<b>-.723</b>	.082	-.047
5a. missed class due to employment	.077	.031	.070	-.070	.007	-.015	-.058	-.004	<b>-.426</b>	-.193	.053
5b. missed class due to family	.042	.038	.060	-.096	.099	.058	-.165	.077	-.220	-.017	.029
13b. ability to take time off	.013	.177	-.048	-.036	.122	.014	.189	-.054	.077	<b>-.547</b>	-.040
13a. flexible work hours	-.025	<u>.364</u>	-.047	-.061	.101	.042	.083	-.054	.053	<b>-.504</b>	-.017
13c. not feeling pressure	.031	.263	.003	-.009	.050	-.007	.080	-.031	.014	<b>-.405</b>	-.245

Table 5 (continued)

Item	Pattern coefficient components										
	1	2	3	4	5	6	7	8	9	10	11
2a. look forward to school	.023	.045	.259	-.058	.143	.018	.033	-.024	-.033	.285	-.043
14b. avoiding physical contact	.026	-.109	.080	.034	-.002	-.030	.067	.006	-.026	-.149	<b>.795</b>
14c. most colleagues same sex	.022	-.055	-.005	-.075	.069	.005	.053	-.019	.024	-.037	<b>.747</b>
14a. working with same background	.050	-.155	.105	-.007	-.033	.013	-.048	-.044	.004	.189	<b>.551</b>

Based on the pattern matrix and assessment of coefficient alpha, 11 factor scores were computed. There were 7 items (2a- look forward to going to school, 2c- always expected that I would go to college, 2g- confident in writing skills, 4a- family encourages me to succeed, 4b- friends supportive, 5a- missed class due to employment, and 5b- missed class due to family obligations) that did not load on any subscale. The major differences found were that the Dispositional construct (DC), confidence in future subscale, Situational construct (SC) and missed class were not supported by the current study sample. These 11 factors and corresponding alphas are displayed in the table below.

Table 6

*Factor Extraction and Corresponding Construct*

Factor	Alpha	Mr	Corresponding Seago Construct and Subscale
1	.89	.54	IC Faculty
2	.80	.45	CV Autonomy
3	.79	.35	DC Confidence in ability
4	.82	.60	SC Financial issues
5	.75	.46	CV Caring
6	.85	.59	IC Peers
7	.79	.56	CV Job Characteristics
8	.85	.54	IC Diversity and overall experience combined into one subscale
9	.72	.58	SC Work issues
10	.74	.50	CV Flexibility
11	.73	.52	CV Work style

*Note.* Mr = average item intercorrelations.

Overall, most of Seago et al. (2008) subscales were supported by the current study group. All study group subscales or factors had alphas greater than the recommended value of .70. In addition all of the study group subscales met Seago et al. (2008) minimum criteria for construct validity, cross-loadings, and internal consistency reliability. In their study groups, only the diversity and faculty subscales, job characteristics and work style subscales met the minimum criteria. Thus, the measuring instrument worked better for this current study sample.

### **Research Question #3**

Is there a difference between retained and not retained students on factors derived from the instrument items?

A one-way analysis of variance (ANOVA) was used to explore the relationship of the 11 subscales and the 7 items that did not load on any factor between the retained and not retained students. In regard to the 11 subscales, there was a significant difference for the retained students in Career Values (CV)- autonomy,  $F(1, 437) = 5.7, p = .018$ , Dispositional Construct (DC)- confidence in ability,  $F(1, 437) = 7.0, p = .008$ , and Career Values (CV)- flexibility,  $F(1, 437) = 11.3, p = .001$ . Despite reaching statistical significance, the actual difference in mean scores between the groups was small. The effect size, calculated using eta squared, was .01, .02, and .03 respectively. Post-hoc comparisons using the Tukey HSD test indicated the mean score for the retained students in CV- autonomy ( $M = 45.85, SD = 23.17$ ) was significantly different from the not retained students ( $M = 52.49, SD = 24.34$ ), DC- confidence in ability for the retained students ( $M = 94.46, SD = 10.30$ ) and the not retained students ( $M = 90.99, SD = 13.46$ ), and the CV- flexibility for the retained students ( $M = 59.84, SD = 25.84$ ) and the not retained students ( $M = 69.98, SD = 23.03$ ). Therefore, retained students were less likely to value autonomy in their

job, more likely to have higher confidence, and less likely to value flexibility when compared to non-retained students.

Three of the items that did not load on any factor reached statistical significance. Item 4a-family encourages me to succeed was higher for the retained students,  $F(1, 437) = 4.7, p = .03$ . Retained students were more likely to have supportive friends,  $F(1, 437) = 5.1, p = .02$ , and less likely to miss class due to family obligations,  $F(1, 437) = 4.4, p = .04$ . The effect size, calculated using eta squared was .01 for each item, interpreted as a small effect. Post-hoc comparisons using the Tukey HSD test indicated that retained students were more likely to have a family that encouraged them to succeed ( $M = 96.5, SD = 11.94$ ) when compared to the non-retained students ( $M = 93.23, SD = 15.23$ ). Support from friends was also higher for the retained students ( $M = 95.66, SD = 12.28$ ) when compared to non-retained students ( $M = 92.09, SD = 16.71$ ). However, retained students rarely or never missed class due to family obligations ( $M = 75.06, SD = 22.5$ ) when compared to the non-retained students ( $M = 69.48, SD = 21.63$ ). Table 7 displays these results.

Table 7

*Differences Between Retained and Not Retained Students on Instrument Items*

Factor or Item	Retained			Not Retained		
	M	SD	N	M	SD	N
CV Autonomy	45.85	23.17	351	52.49	24.34	88*
DC Confidence in ability	94.46	10.30	351**	90.99	13.46	88
CV Flexibility	59.84	25.84	351	69.98	23.03	88**
Family encourages me	96.50	11.94	351*	93.23	15.23	88
Friends supportive	95.66	12.28	351*	92.09	16.71	88
Rarely missed class due to family obligations	75.06	22.50	351*	69.48	21.63	88

Note. \*  $p < .05$ ; \*\*  $p < .01$ .

#### **Research Question #4**

How well does the combination of socio-demographic factors and derived factors predict student attrition at the end of the first semester?

Binary logistic regression was performed to assess how well the combination of socio-demographic factors and derived factors predict attrition at the end of the first semester. First we explored how well the socio-demographic factors predicted attrition. The variables which were entered into the model were those that were significant in the univariate analysis and included ethnicity (White or non-White), completed all related courses (yes or no), remedial courses taken (none/one or 2 or more), and other family members financially dependent (yes or no). The overall model was significant,  $X^2(4, N = 439) = 26.29, p < .001$ , indicating that the model was able to distinguish between students who responded and were not retained at the end of the first semester. These statistics provide an estimate of the variance in the dependent variables that can be predicted from the combination of the four variables. In the current study sample, the variance predicted ranges from 5.8% (Cox and Snell R square) and 9.2% (Nagelkerke R squared).

As shown in Table 8, three of the variables made a unique statistically significant contribution to the model (completed related courses, remedial courses taken, and other family members financially dependent). The strongest predictor of attrition was having financially dependent family members. Based on the odds ratio, students not retained were 3.1 more likely to have family members financially dependent on them compared to retained students. Students not retained were 2.3 times more likely to not have completed all their related courses compared to retained students and non-retained students were 2.1 times more likely to have taken 2 or more remedial courses compared to retained students.

Table 8

*Logistic Regression Predicting Likelihood of Attrition at the End of the First Semester*

	B	S.E.	Wald	df	p	Odds Ratio (unadjusted)	Odds Ratio	95.0% C.I. for Odds Ratio	
								Lower	Upper
Ethnicity	.42	.28	2.25	1	.13	1.81	1.52	.88	2.61
Related courses complete	.83	.27	9.58	1	.00	1.94	2.29	1.35	3.86
Remedial courses taken	.75	.26	8.08	1	.00	2.13	2.11	1.26	3.52
Family members dependent	1.14	.45	6.55	1	.01	3.20	3.13	1.31	7.48
Constant	-2.05	.20	100.17	1	.00		.13		

There were 3 factors derived from the Seago, et al. (2008) instrument that were significant (CV autonomy, DC confidence in ability, and CV flexibility) and 3 items that did not load on any factor (family encourages, friends supportive, and missed class due to family/home obligations). The only significant finding that predicted attrition at the end of the first semester was CV flexibility. However, it was not a strong predictor of attrition. The odds ratio suggests that those that are not retained are only 1 times more likely to value flexibility.

Adding all the predictors together in one model explained 10.6% (Cox and Snell R square) and 16.7% (Nagelkerke R squared) of the variance of attrition at the end of the first semester. Table 9 displays all predictors in one model.

Table 9

*Logistic Regression of All Predictors of Attrition at the End of the First Semester*

	B	S.E.	Wald	df	p	Odds Ratio (unadjusted)	Odds Ratio	95.0% C.I. for Odds Ratio	
								Lower	Upper
Ethnicity	.22	.30	.53	1	.47	1.81	1.25	.69	2.25
Related courses complete	.94	.28	11.14	1	.00	1.94	2.55	1.47	4.43
Remedial courses taken	.83	.27	9.14	1	.00	2.13	2.29	1.34	3.93
Family members dependent	1.07	.47	5.13	1	.02	3.20	2.92	1.16	7.37
CV autonomy	.00	.01	.00	1	.95	1.01	1.00	.99	1.01
DC confidence- ability	-.02	.01	2.26	1	.13	.97	.98	.96	1.01
CV flexibility	.02	.01	7.14	1	.01	1.02	1.02	1.00	1.03
Family encourages	-.02	.01	3.23	1	.07	.98	.98	.96	1.00
Friends supportive	-.01	.01	.49	1	.48	.98	.99	.97	1.01
Missed class due to family/home obligations	-.01	.01	1.68	1	.20	.99	.99	.98	1.00
Constant	1.41	1.25	1.26	1	.26		4.08		

**Research Question #5**

Is there a relationship between institutional characteristics and first semester retention rates of the associate degree programs in the study?

The relationship between institutional characteristics and retention rates of the nursing programs in the study was investigated using Spearman rho correlation coefficient. Correlations of drop rates with derived program variables included, ratio of number of students at the end of

the first semester to total program enrollment, ratio of full-time faculty to total enrollment, ratio of full-time faculty to enrollment at the end of the first semester, ratio of full-time faculty to total number full-time and part-time faculty, and ratio of full-time MSN degreed faculty to total number of full-time faculty. A limitation related to the analysis of this question was the small sample size ( $N = 8$ ), therefore there was no significant relationship between any of the institutional factors and retention at the end of the first semester.

Table 10

*Spearman Rank Order Correlation Between Drop Rate and Derived Program Variables ( $N = 8$ )*

Program variables	Spearman rho	<i>p</i>
Ratio of number of students at end of first semester to total program enrollment	.335	.417
Ratio of full-time faculty to total enrollment	.079	.853
Ratio of full-time faculty to enrollment at end of the first semester	.383	.349
Ratio of full-time faculty to total full-time faculty and part-time faculty	.229	.586
Ratio of full-time MSN faculty to total full-time faculty	.061	.885

### Summary

This chapter presented the findings of the study. Characteristics of the study sample and an analysis of each research question was presented.

## **CHAPTER 5: DISCUSSION, CONCLUSIONS, RECOMMENDATIONS, IMPLICATIONS**

### **Overview**

Student retention in ADN programs differs widely and the reasons for high attrition are not well understood. Retention rates are an important indicator used in measuring program effectiveness. From the fifty-five associate degree programs in the North Carolina Community College System (NCCCS), the aggregate 3-year (2009-2011) on-time completion rate is 58%. Although strategies were implemented to increase admission requirements, thereby attracting more qualified applicants, these rates still persist. Students spend a great deal of time and money meeting admission requirements and taking courses to qualify for the limited number of seats available in ADN programs. The loss of a student due to academic failure or other factors can lead to emotional disappointment, financial deficit, and many times the loss of a future nurse. Gaining an understanding of the relationship between student characteristics and institutional factors that affect student retention is essential toward retaining students.

This study examined whether there was a relationship between socio-demographic, dispositional, situational, and institutional factors reported by the student during orientation and student retention at the end of the first semester and if combinations of these factors predict student attrition. In addition the relationship between institutional characteristics and first semester retention rates was examined. This chapter provides an overview of the major findings in the study. The chapter concludes with implications of the study findings for associate nursing education.

## Discussion of Findings

The sample population in the study closely paralleled the state statistics for gender and ethnicity of ADN nursing students (NCBON, 2008). The majority of students in this study (87.9%) were female compared to ADN nursing students across all community colleges (90.5%) and White (76.9%) compared to 80% as reported by the NCBON study (2008). The largest percentages of students (21.9%) were between 22 and 25 years, followed by 19.4% of students between 26 and 30 years of age. This finding is consistent with the national average age of the community college student which is 28 years (American Association of Community Colleges [AACC]) and the state average which is 29 years of age (AACC, 2012; NCBON, 2008). A majority (58%) of the students were married or in a marriage-like relationship and 49% had children. Thirty-three percent of the students reported a household income over \$50,000. Most students (74.5%) had completed all their related courses, with 30% taking only one or two courses within a semester. Just over half of the students (54%) were not required to take any developmental courses prior to taking college-level courses.

A significant relationship was found between ethnicity and retention at the end of the first semester. Of the 104 students that were non-White, 28% were not retained compared to 18% of the White students. This supports earlier research findings that found minority students are at higher risk for attrition (Jeffreys, 2007b; Pence, 2011). Generally speaking, all students encounter challenges associated with nursing school however research indicates that there are some academic and social experiences unique to students of color, particularly African American nursing students (Jeffreys, 2007b; Pascarella & Terezini, 1991; Tinto, 1975). According to the NLN (2012), minority students comprised 24% of nursing students enrolled in basic RN programs in 2011. Although there has been an increase in enrollment of minority students in the

past decade, attrition continues to be a problem. Previous research tracking students upon program entry to graduation noted the support provided by nurse educators may influence retention of minority students within a nursing school (Jeffreys, 2007b). Without a doubt, all students would benefit from faculty support and the importance of this support is well documented in the literature (Jeffreys, 2007b; Ramsburg, 2007; Rogers, 2010; Shelton, 2003). Although the data did not find a relationship between institutional support and retention, evidence from other studies (Jeffreys, 2007b; Ramsburg, 2007; Rogers, 2010; Shelton, 2003) suggests this might be an important factor in minority retention.

There was a significant relationship between whether a student completed their related courses and retention. In this study sample, 83% of the retained students completed their related courses prior to taking their core nursing courses. Associate degree nursing (ADN) programs offer students the ability to enter into the nursing program when they meet minimum admission requirements. Most students begin taking their related courses or general education courses while they are waiting for acceptance into the nursing program. The majority of ADN programs utilize a competitive admission process and provide points for related courses completed and some programs award points for the grade received on those courses. The premise being that students will have a decreased course load, thereby more time and effort to dedicate to their nursing courses. In the current study related courses included fifteen hours of general education courses with at least one course from each of the following: humanities/fine arts, social/behavioral sciences, natural sciences/mathematics, and six credit hours of communications. If a student had completed all of their related courses prior to the first semester of the nursing program, they were more likely to be retained compared to students that had not completed all the related courses.

This research finding supports earlier research that found a positive relationship between nursing program completion and pre-nursing GPA (Benda, 1991; Higgins, 2005; Jeffreys, 2007b; Sayles et al. 2003; Stickney, 2008; Symes et al. 2005). Two studies (Higgins, 2005; Symes et al. 2005) reported that grades earned in science courses were predictive of program completion. The findings of this study found completion of all related (including science courses) was a factor in the student's success at the end of the first semester. Community college students tend to have additional family and/or work obligations while enrolled in classes. Completion of related courses prior to entering the nursing program enables students to enroll in college on a part-time basis, thereby allowing time for family and/or work obligations. In fact, the majority of students (59%) enrolled in North Carolina community colleges are attending part-time (AACN, 2013). Additional studies (Fowler & Norrie, 2009; Jeffreys, 2002; Trotter & Cove, 2005; White, Williams, & Green, 1999) reported students' other life commitments such as work and family obligations were factors in students exiting the program or academic failure. The findings of this study reinforced that finding, as students who missed class due to family obligations were less likely to be retained at the end of the first semester.

Although there was a strong relationship between completion of related courses completed and retention, when examining the individual college nursing programs, this relationship was found in six of the programs but the pattern is reversed for two of the nursing programs. For example, at one of these colleges 43% of those who had completed all related courses were not retained compared to only 19% of those who had not completed these courses and the other college revealed 29% and 7% respectively. However, attrition occurs throughout the nursing program. This study examined first semester retention and nursing programs vary in

retention rates from semester to semester. Nursing programs with low attrition after the first semester may have higher attrition rates after the second semester.

The data from this study revealed a significant relationship between the number of developmental or remedial courses and retention. Students must complete all developmental or remedial courses prior to applying to a nursing program and they must meet minimum English and math prerequisites for college-level courses. The literature on developmental or remedial education focuses on remedial education at community colleges, participation in these courses, and the effects of remediation course on overall student outcomes. Studies (Bettinger & Long, 2005; Calcagno, Crosta, Bailey, & Jenkins, 2007; Fike, D. & Fike, R, 2008) revealed conflicting results based on student characteristics and sample population. Overall the results suggested that the more developmental courses a student was required to take, the less likely the student was to earn a degree (Bettinger & Long, 2005; Calcagno et al., 2007). Little is known about the causal effects of remediation on nursing student retention.

When considering the relationships between the number of developmental or remedial course taken, first semester course load, whether all related courses had completed and percent of students retained at the end of the first semester, the findings of this study were inconsistent. Students in the study sample who took 1 to 2 developmental courses, a course load of 3 courses (9-11 credit hours), and did not complete all related courses prior to taking nursing courses were less likely to be retained. The percent not retained ranged from a low of 10.3% (in the group of students with 1 to 2 developmental courses taken, a course load of 3 courses, having all their related courses completed) to a high of 50% (in the group of students with more than 2 developmental courses taken, a course load of 1 to 2 courses, and not having completed all their

related courses). This further supports the complex issue of retention and why it is so difficult to predict retention factors in associate degree nursing programs.

Previous research suggests that there is a positive relationship between support from family and friends and successful matriculation through a nursing program (Bowden, 2008; Hegge et al., 1999; Higgins, 2004; Jeffreys, 2002; Loke & Chow, 2007; Robinson & Niemer, 2010). This study supports this finding. Support from family and friends had a positive relationship with retention. Students who never or rarely missed class due to family obligations were more likely to be retained at the end of the first semester and students that had family members dependent on them for financial support were less likely to be retained.

This study found a relationship between retained students and the student's confidence in their ability to succeed. Attributes of self-confidence are persistence and self-efficacy. Several studies (Andrew, 1998; Hegge et al., 1999; McLaughlin et al., 2007; Williams, 2010) found a relationship between self-efficacy and academic performance and retention. McLaughlin et al. (2007) concluded that self-efficacy predicted students' academic performance, thereby enhancing student success. Andrew (1998) found that confident students were more successful in academic performance compared to less confident students. This study reinforced these findings.

In this study, the non-retained students identified autonomy and flexibility in their career/profession as more important than the retained students. Although not determined in this study, students who enter a nursing program must adhere to rules and policies, as well as a schedule that offers little flexibility. As students' progress in the program and gain knowledge and skills, they gain autonomy and flexibility. However, the first semester of the nursing

program is prescriptive and students who are unable to follow this schedule may be less likely to be retained.

### **Conceptual Model**

The conceptual model of associate degree nursing student's transition into a nursing program and social integration into college provided a theoretical framework to examine the relationship of student, academic, and institutional factors and retention at the end of the first semester. The overall model partially supported predicting retention at the end of the first semester. Students who were more confident in their abilities and supported by friends and family were more likely to be retained.

Integration is the incorporation of individuals into a community and the feeling by individuals that they fit into the community in which they are a part of (Tinto, 1987). Student data were based on responses prior to entry into the nursing program. For many students, this was their first experience at the college where they were entering the nursing program. Integration into the college and the program had not been established, therefore student responses may have been based on their experiences at other colleges. Following student progression throughout the program may be useful in determining if the student becomes more integrated into the program and makes use of available resources and support they persist and are more likely to graduate.

Many nursing students devote considerable time and resources to meet competitive admission requirements. When making the decision to apply for admission to a nursing program the prospective student must feel the outcome is worth pursuing and is attainable. Upon admittance, the decision to persist through graduation is influenced by the student's belief of

whether success is possible and whether the benefits of continuing in the program outweigh the costs involved along the way. According to Tinto (1987), in order for integration to occur, the student must have adequate interactions with other individuals within the educational community, and must believe that their abilities, goals, and values are similar to others within the institution. This study found that students who were more confident in their ability were more likely to be retained at the end of the first semester. This is consistent with the literature on nursing student retention and confidence in achieving academic success. When a student has the internal resources that drive them to persist and make use of adequate external support, they continue and are academically successful (Shelton, 2012).

Transition theory also guided the conceptual framework for this study. Transition theory suggests that certain factors either facilitate or inhibit adaptation to a new situation (Meleis, 2010). According to Meleis (2010), a factor that may facilitate successful transition is developing confidence and coping. As previously stated, students who were more confident in their ability were more likely to be retained. As new nursing students enter the nursing program they are confident in their ability to succeed and as they transition through the first semester this confidence assists the student in coping with the demands of nursing school. Developing confidence leads to the development of strategies for managing and understanding the transition experience. This is also a time when students form relationships with their classmates. Their classmates play an important role in their transition process in providing support, encouragement, and the determination to confront and conquer challenges (Delaney & Piscopo, 2010). The first semester is a critical stage in the change process as it provides the student with the foundation for academic success and classroom connections in the nursing program. Transition theory suggest that students who make these connections early in the transition have

increased confidence and will be more likely to be successful in completion of a nursing program. Although the overall model was not predictive of retention, students who reported increased confidence in their ability were more likely to be retained at the end of the first semester. This suggests that confident students adapted better to the situation and acquired the necessary skills for continued success. However, since this was not a longitudinal study it was not possible to provide support to Tinto's model of college student departure and Meleis's Transitions theory.

### **Strengths and Limitations**

This study investigated the relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina. In addition, the study examined the relationship between institutional factors and retention rates. The sample size was adequate but a major limitation was the sample was restricted to student retention at the end of the first semester. Retention each semester varies and some programs may have a higher retention rate at the end of the first year (or later) rather than at the end of the first semester. This was revealed by one of the participating colleges reporting the highest attrition rate at the end of the first semester, however, their 3-year on-time completion rate was one of the highest. This may reflect a nursing program's philosophical differences in retention. For example, some nursing programs and faculty may allow students to ease into the rigor of the program, thereby their first semester retention is higher but by the end of program retention rates are lower. Colleges may have a four semester nursing program compared to a five semester program. Those nursing programs that have four semesters may need to transition students quicker to the rigorous demands of nursing school compared to the programs that have students

longer or over five semesters. Another limitation was the small number of colleges that participated in the study thereby providing an inadequate number in determining differences between institutions. Further investigation should include tracking the students in this study sample at the end of the each semester in the nursing program. This would provide additional insight between the relationship of institutional on-time completion rates and retention rates each semester.

Another limitation was that there was limited psychometric testing on the instrument used in this study. While the constructs identified in this study were similar to the original study, there were some differences and this may have been due to the differences in demographics from the original study. For example, the current study included substantially more African Americans and White students, much fewer Latino students, and no Filipino students compared to Seago's et al. (2008) test group and validation group. The instrument needs further testing with diverse groups of students. In addition, the instrument is fairly long and includes items that did not load on any factor. Further instrument development should focus on shortening and strengthening the utility of the instrument. Although limited psychometric testing has been completed on the instrument, the measuring instrument did work better for this current study sample.

A strength of the study was that actual data from students were collected prior to entry into the nursing program; this data can be collected longitudinally and prospectively. The Sheps Center study conducted for the NCCCS used secondary data to examine factors contributing to success of ADN programs in NC. Therefore, only institutional and dispositional factors were measured. The majority of research studies on student retention utilized secondary data with the emphasis on course grades and admission tests to predict student retention. Few studies examine student variables that may affect student retention prospectively.

The timeframe of the data collection may also have posed a limitation in this study. Information from the newly accepted nursing students was collected prior to entry into the nursing program. The student's knowledge of the program may have been altered due to not having started the nursing program and not having previous knowledge of the current institution they were attending. Administering the survey again mid-semester or as the student progresses in the program may be beneficial. Lastly, the study population was limited to ADN programs in NC. Although retention rates are lower in ADN programs compared to baccalaureate program, all programs and all levels of nursing education face similar challenges.

### **Implications and Recommendations**

The results from this study provide nurse educators and nurse administrators with a better understanding of the relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester.

**Nursing education.** Findings from this study can inform nurse educators as to the strategies and behaviors that facilitate retention of nursing students at the end of the first semester. Completing related courses prior to entry into the first semester of the nursing program reduces course load while enrolled in nursing courses. Therefore students may devote all their time and effort toward the rigorous demands of their first nursing course. This first nursing course includes class, lab, and clinical hours. Many students underestimate the nursing schedule and time involved in these activities. These courses also provide students with knowledge to better understand nursing concepts and apply this knowledge to the first nursing course. Many programs have a competitive admission process and apply additional points for completion of

related courses. Findings from this study reaffirm the importance of completing these courses prior to entry into a nursing program.

Nursing admission requirements necessitate that students are academically prepared for nursing courses. Therefore all students complete required developmental or remedial courses and meet the pre-requisites for college-level courses prior to applying to the nursing program. The number of developmental or remedial courses completed was found to have an impact on retention. Students who took one or more developmental courses were less likely to be retained at the end of the first semester. Rarely are nurse educators aware of the number of developmental or remedial courses a student completed as these courses are completed prior to entry into the program. Nurse educators should be aware of the student's entire academic journey. Early recognition of these students may provide students with additional support and resources needed to be successful. This study reinforces the importance of academic readiness prior to enrolling in a nursing program.

Student's confidence in ability to succeed was found to have a positive impact on retention in the first semester. Understanding self-confidence is important for nursing faculty so that attributes of confidence may be fostered throughout the nursing program. Also determined to have a positive impact on retention was encouragement and support students received from friends and family. Prior successes and experiences, support systems, and belief in positive achievements are attributes of self-confidence. Promoting such attributes among nursing students will benefit the student and the nursing program. The development of programs or expanded orientation programs or mentorship programs for accepted students can provide enhancement of skills and knowledge while building self-confidence. This extended orientation also offers

students the ability to make connections and enhances student integration into the college and the nursing program.

In this study, students were less likely to be retained if they had family members financially dependent on them or if they missed class due to family obligations. Understanding the additional obligations many community college students bring with them is important for nurse educators and nursing administrators. Whether a student must voluntarily withdraw from the program or due to academic failure, family obligations present additional demands on the student. Early recognition of at-risk students may provide students with additional support needed to be successful.

**Nursing research.** Findings from this study indicate the complexity in determining the relationship between multiple factors and nursing student retention. As this study utilized a newly developed instrument, further research and psychometric properties of the instrument need to be studied with different populations and geographical areas across the state with associate degree nursing students and baccalaureate nursing students. In addition, a condensed version of the instrument utilizing the items and factors found significant would strengthen the utility of the tool and provide further understanding between these factors and retention.

Further research is needed with multiple colleges participating to better understand institutional differences and retention rates. A larger college sample size would allow for a more comprehensive analysis and may reveal relationships that cannot be detected with smaller samples. This type of study would also allow for more generalizability of results and allow for exploration of institutional characteristics to see if these variables have an effect on student retention.

Longitudinal studies would be beneficial to determine the trajectory of these concepts over time and to see if the initial assessment at orientation is more predictive of graduation rates than first semester retention. Retention rates vary each semester and high attrition at the end of the first semester does not necessarily equate to low on-time completion rates.

Additional research to explore the relationship between the number of developmental or remedial courses and nursing student retention is needed. Also, additional studies to explore the student's value of autonomy and flexibility, not only at the beginning of the program but also upon graduation. Most professional nurses and employers would agree that autonomy and flexibility are essential attributes of the professional nurse. As the student progresses through the nursing program the importance of autonomy and flexibility may increase.

Qualitative studies to explore the complexity of factors that contribute to student retention could reveal aspects of the process beyond that studied by quantitative methods. Since one of the findings of this study was the relationship of family members financially dependent and non-retention, a qualitative study of students' perceptions of these obligations and stressors and how they impact the student role would lead to a greater understanding of the supports that could be provided to help students succeed. Additional studies exploring the impact of confidence on student retention would also be warranted. Investigating philosophical differences related to student retention among ADN programs would be beneficial. This study found such a variance between program on-time completion rates and retention at the end of the first semester. Further understanding of the philosophy of student retention across programs and institutions is needed.

## **Summary**

Understanding and predicting student retention is a challenge. This study represents a beginning understanding of the relationship between socio-demographic characteristics, dispositional factors, situational factors, and institutional factors and students' successful retention at the end of the first semester in associate degree nursing programs in NC. There are important implications for nurse educators when reviewing admission requirements and orienting new nursing students to the program and college. Nurse educators must be aware of the factors that provide support to students based on their individual background and characteristics. With the nursing shortage expected to worsen over the next several years, nursing programs must not only attract qualified students but also employ strategies to retain students and graduate competent professionals.

## REFERENCES

- American Association of Colleges of Nursing (2010, May). *Nursing shortage fact sheet*. Retrieved from <http://www.aacn.nche.edu/Media/pdf/nrsgshortagefs.pdf>
- American Association of Colleges of Nursing (2012). *Faculty Shortages in Baccalaureate and Graduate Nursing Programs*. Retrieved from <http://www.aacn.nche.edu/publications/pdf/05FacShortage.pdf>
- American Nurses Association (2010). *Nursing shortage indicators*. Retrieved from <http://www.nursingworld.org/nursingshortage>
- Andrew, S. (1998). Self-efficacy as a predictor of academic performance in science. *Journal of Advanced Nursing*, 27, 596-603.
- Ari, A. (2009). Connecting students to institutions: The relationship between program resources and student retention in respiratory care education programs. *Respiratory Care*, 54(9), 1187-1192.
- Attewell, P., Heil, S., & Reisel, L. (2010). Competing explanations of undergraduate noncompletion. *American Educational Research Journal*, 20(10), 1-22.  
doi:10.3102/0002831210392018
- Bandura, A. (1986). *Social Foundations of Thought and Action*. New Jersey: Prentice-Hall.
- Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55, 485-540.

- Benda, E. (1991). The relationship among variables in Tinto's conceptual model and attrition of bachelor's degree nursing students. *Journal of Professional Nursing*, 7(1), 16-24.
- Bettinger, E., & Long, B. (2005). Remediation at the community college: Student participation and outcomes. *New Directions For Community Colleges*, 129, 17-25.
- Bowden, J. (2008). Why do nursing students who consider leaving stay on their courses? *Nurse Researcher*, 15(3), 45-58.
- Brennan, G., & McSherry, R. (2010). Exploring the transition and professional socialization from health care assistant to student nurse. In A. Meleis (Eds.), *Transitions Theory: Middle-range and situation-specific theories in nursing research and practice* (pp. 38-51). New York: Springer Publishing Company.
- Brunsdon, V., Davies, M., Shevlin, M., & Bracken, M. (2000). Why do HE students drop out? A test of Tinto's model. *Journal of Further and Higher Education*, 24(3), 301-310.
- Calcagno, J., Crosta, P., Bailey, T., & Jenkins, D. (2007). Stepping stones to a degree: The impact of enrollment pathways and milestones on community college student outcomes. *Research in Higher Education*, 48(7), 775-801. doi: 10.1007/s11162-007-9053-8
- Cecil G. Sheps Center for Health Services Research (2008, October). *A study for associate degree nursing program success*. Chapel Hill, North Carolina: The Cecil G. Sheps Center for Health Services Research.

- Chick, N., & Meleis, A. (1986). Transitions: A nursing concern. In P. L. Chinn (Ed.), *Nursing research methodology: Issues and implementation* (pp. 237-257). Gaithersburg, MD: Aspen.
- Cross, K. P. (1981). *Adults as learners: Increasing participation and facilitating learning*. San Francisco: Jossey-Bass.
- Delaney, C. & Piscopo, B. (2010). There really is a difference: Nurses' experiences with transitioning from RNs to BSNs. In A.I. Meleis (Ed.), *Transitions Theory* (pp. 300-310). New York: Springer Publishing Company
- Ellis, S. (2006). Nurse entrance test scores: A predictor of success. *Nurse Educator*, 31(6), 259-263.
- Family Education Rights and Privacy Act. (2008). *Report of the updated FERPA: Basic Guidelines for Faculty and Staff A Simple Step-by-Step Approach For Compliance*. Retrieved from <http://www.nacada.ksu.edu/Resources/FERPA-Overview.htm>
- Fike, D. & Fike, R. (2008). Predictors of first-year student retention in the community college. *Community College Review*, 36(2). 1-18.
- Fowler, J. & Norrie, P. (2009). Development of an attrition risk prediction tool. *British Journal of Nursing*, 18(19), 1194-1200.

Health Resources and Services Administration (2010, September). *The registered nurse population: Findings from the 2008 national sample survey of registered nurses.*

Retrieved from <http://bhpr.hrsa.gov/healthworkforce/rnsurvey/2008/>

Health Resources and Services Administration (2004). *The North Carolina health*

*workforce: Highlights from the health workforce profile.* Retrieved from

<http://bhpr.hrsa.gov/healthworkforce/reports/statesummaries/northcarolina.htm>

Hegge, M., Melcher, P, & Williams, S. (1999). Hardiness, help-seeking behavior, and social support of baccalaureate nursing students. *Journal of Nursing Education, 38*(4), 179-182.

Higgins, B. (2004). Relationship between retention and peer tutoring for at-risk students. *Journal of Nursing Education, 43*(7), 319-321.

Higgins, B. (2005). Strategies for lowering attrition rates and raising NCLEX-RN® pass rates. *Journal of Nursing Education, 44*(12), 541-547.

Hopkins, T. (2005). Early identification of at-risk nursing students: A student support model. *Journal of Nursing Education, 47*(6), 254-259.

Jeffreys, M. (2002). Students' perceptions of variables influencing retention. *Nurse Educator, 27*(1), 16-19.

Jeffreys, M. (2007a). Nontraditional students' perceptions of variables influencing retention.

*Nurse Educator*, 32(4), 161-167.

Jeffreys, M. (2007b). Tracking students through program entry, progression, graduation, and

licensure: Assessing undergraduate nursing student retention and success. *Nurse*

*Education Today*, 27, 406-419. doi: 10.1016/j.nedt.2006.07.003

Johnson, C. W., Johnson, R., Kim, M., & Mckee, J. C. (2009). Personal background preparation

survey for early identification of nursing students at risk for attrition. *Journal of Nursing*

*Education*, 48(11), 606-613. doi:10.3928/01484834-20090716-06

Karp, M. M., Hughes, K. L., & O'Gara, L. (2008). An exploration of Tinto's integration

framework for community college students. *Journal of College Student Retention:*

*Research, Theory & Practice*, 12(1), 69-86.

Loke, A. & Chow, F. (2007). Learning partnerships: The experience of peer tutoring among

nursing students. *Journal of Nursing Studies*, 44(2), 237-244.

McCubbin, I. (2003). An examination of criticisms made of Tinto's 1975 student integration

model of attrition. Retrieved from University of Glasgow Web site:

<http://www.psy.gla.ac.uk/~steve/localed/icubb.pdf>

McLaughlin, K., Moutray, M., & Muldoon, O. (2007). The role of personality and self-efficacy

in the selection and retention of successful nursing students: A longitudinal study. *Journal*

*of Advance Nursing*, 61(2), 211-221. doi: 10.1111/j.1365-2648.2007.04492.x

- Meleis, A. I., Sawyer, L. M., Im, E., Messias, D., & Schumacher, K. (2000). Experiencing transitions: An emerging middle-range theory. *Advances in Nursing Science, 23*(1), 12-28.
- Retrieved from <http://search.ebscohost.com.jproxy.lib.ecu.edu/login.aspx?direct=true&db=rzh&AN=2000060332&site=ehost-live>
- Meleis, A. I. (2010). *Transitions theory: Middle-range and situation-specific theories in nursing research and practice*. New York: Springer Publishing Company.
- Metzner, B. S., & Bean, J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in Higher Education, 27*(1), 15-38.
- Mulholland, J., Anionwu, E. N., Atkins, R., Tappern, M., & Franks, P. J. (2008). Diversity, attrition and transition into nursing. *Journal of Advanced Nursing, 64*(1), 49-59.
- Newton, S. E., & Moore, G. (2009). Use of aptitude to understand bachelor of science in nursing student attrition and readiness for the national council licensure examination-registered nurse. *Journal of Professional Nursing, 25*(5), 273-278.
- National League for Nursing (2012). *Annual Survey of Schools of Nursing, Fall 2011*. Retrieved from <http://www.nln.org/research/slides/index.htm>
- National League for Nursing Accrediting Commission (2011, December). *Resources for Nursing Programs*. Retrieved from [http://www.nlnac.org/resources/resources\\_NA.htm](http://www.nlnac.org/resources/resources_NA.htm)
- North Carolina Board of Nursing (2010, September). *2007-2009 Nursing Education Program On-time Completion Rates*. Retrieved from <http://www.ncbon.com/content.aspx?id=1090>

- North Carolina Board of Nursing (2011, September). *2008-2010 Nursing Education Program On-time Completion Rates*. Retrieved from <http://www.ncbon.com/content.aspx?id=1090>
- North Carolina Community College System (2011, March). *The North Carolina Community College Fact Book*. Retrieved from <http://www.nccommunitycolleges.edu/Publications/docs/Publications/fb2005.pdf>
- North Carolina Institute of Medicine, Task Force on the North Carolina Nursing Workforce Report. (2007). Report of the updated NCIOM Task Force on the North Carolina Nursing Workforce. Retrieved from [http://www.nciom.org/docs/nursing\\_workforce\\_update.pdf](http://www.nciom.org/docs/nursing_workforce_update.pdf)
- O'Donnell, H. (2009). The emotional impact of nursing student attrition rates. *British Journal of Nursing*, 18(12), 745-754.
- Pallant, J. (2007). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows*. New York, NY: Open University Press.
- Pascarella, E. T. (Ed.). (1982). *Studying student attrition*. San Francisco: Jossey-Bass.
- Pascarella, E. T., Duby, P. B., & Iverson, B. K. (1983). A test and reconceptualization of a theoretical model of college withdrawal in a commuter institution setting. *Sociology of Education*, 56(2), 88-100. Retrieved from <http://search.ebscohost.com.jproxy.lib.ecu.edu/login.aspx?direct=true&db=eric&AN=EJ285979&site=ehost-live>
- Pascarella, E. T., & Terezini, P. (1991). *How college affects students: Findings and insights from twenty-five years of research*. San Francisco: Jossey-Bass.

- Pence, P. (2011). Predictors of retention among undergraduate students attending associate-degree nursing programs in Illinois. *Teaching and Learning in Nursing, 6*, 131-138. doi: 10.1016/j.teln.2011.01.004
- Phillips, B. C., Spurling, S., & Armstrong, W. A. (2002). *Associate degree nursing: Model prerequisites validation study. California community college associate degree nursing programs*. San Francisco: The Center for Student Success, A Health Care Initiative Sponsored Project. Retrieved from <http://www.eric.ed.gov/PDFS/ED473283.pdf>
- Polit, D.F., & Beck, C.T. (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Philadelphia, PA: Lippincott Williams & Wilkins.
- Prymachuk, S., Easton, K., & Littlewood, A. (2008). Nurse education: Factors associated with attrition. *Journal of Advanced Nursing, 65*(1), 149-160. doi: 10.1111/j.1365-2648.2008.04852.x
- Ramsburg, L. (2007). Strive for success: A successful retention program for associate of science in nursing students. *Teaching and Learning in Nursing, 2*, 12-16. doi: 10.1016/j.teln.2006.10.005
- Robinson, E., & Niemer, L. (2010). A peer mentor tutor program for academic success in nursing. *Nursing Education Perspectives, 31*(5), 286-289.
- Robshaw, M., & Smith, J. (2004). Keeping afloat: Student nurses' experiences following assignment referral. *Nurse Education Today, 24*(7), 511-520.

- Rogers, T. (2010). Prescription for success in an associate degree nursing program. *Journal of Nursing Education, 49*(2), 96-100. doi: 10.3928/01484834-20091022-03
- Sayles, S., Shelton, D., & Powell, H. (2003). Predictors of success in nursing education. *The ABNF Journal, 23*(4), 116-120.
- Schumacher, K., & Meleis, A. (2010). Transitions: A central concept in nursing. In A. Meleis (Eds.), *Transitions Theory: Middle-range and situation-specific theories in nursing research and practice* (pp. 38-51). New York: Springer Publishing Company.
- Seago, J. A., Wong, S. T., Keane, D., & Grumbach, K. (2008). Measuring attributes of success of college students in nursing programs: A psychometric analysis. *Journal of Nursing Measurement, 16*(3), 184-200. Retrieved from <http://search.ebscohost.com.jproxy.lib.ecu.edu/login.aspx?direct=true&db=rzh&AN=2010143703&site=ehost-live>
- Shelton, E. (2003). Faculty support and student retention. *Journal of Nursing Education, 42*(2), 68-76.
- Shelton, E. (2012). A Model of Nursing Student Retention. *International Journal of Nursing Education Scholarship, 9*(1), 1-16. doi: 10.1515/1548-923X.2334
- Stickney, M. (2008). Factors affecting practical nursing student attrition. *Journal of Nursing Education, 47*(9), 422-425.
- Symes, L., Tart, K. & Travis, L. (2005). An evaluation of the nursing success program. *Nurse Educator, 30*(5), 217-220.

Tinto, Vincent (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89-125.

Tinto, Vincent (1987). Leaving college: rethinking the causes and cures of student attrition. Chicago, Illinois: The University of Chicago Press.

Tipton, P., Pulliam, M., Beckworth, C., Illich, P., Griffin, R., & Tibbitt, A. (2008). Predictors of associate degree nursing students' success students. *Southern Online Journal of Nursing Research*, 8(1). Retrieved from [http://snrs.org/publications/SOJNR\\_articles2/Vol08Num01Art02.html](http://snrs.org/publications/SOJNR_articles2/Vol08Num01Art02.html)

Transition. (2005). In *Merriam-Webster.com*. Retrieved December 18, 2011, from <http://www.meriam-webster.com/dictionary/transition>

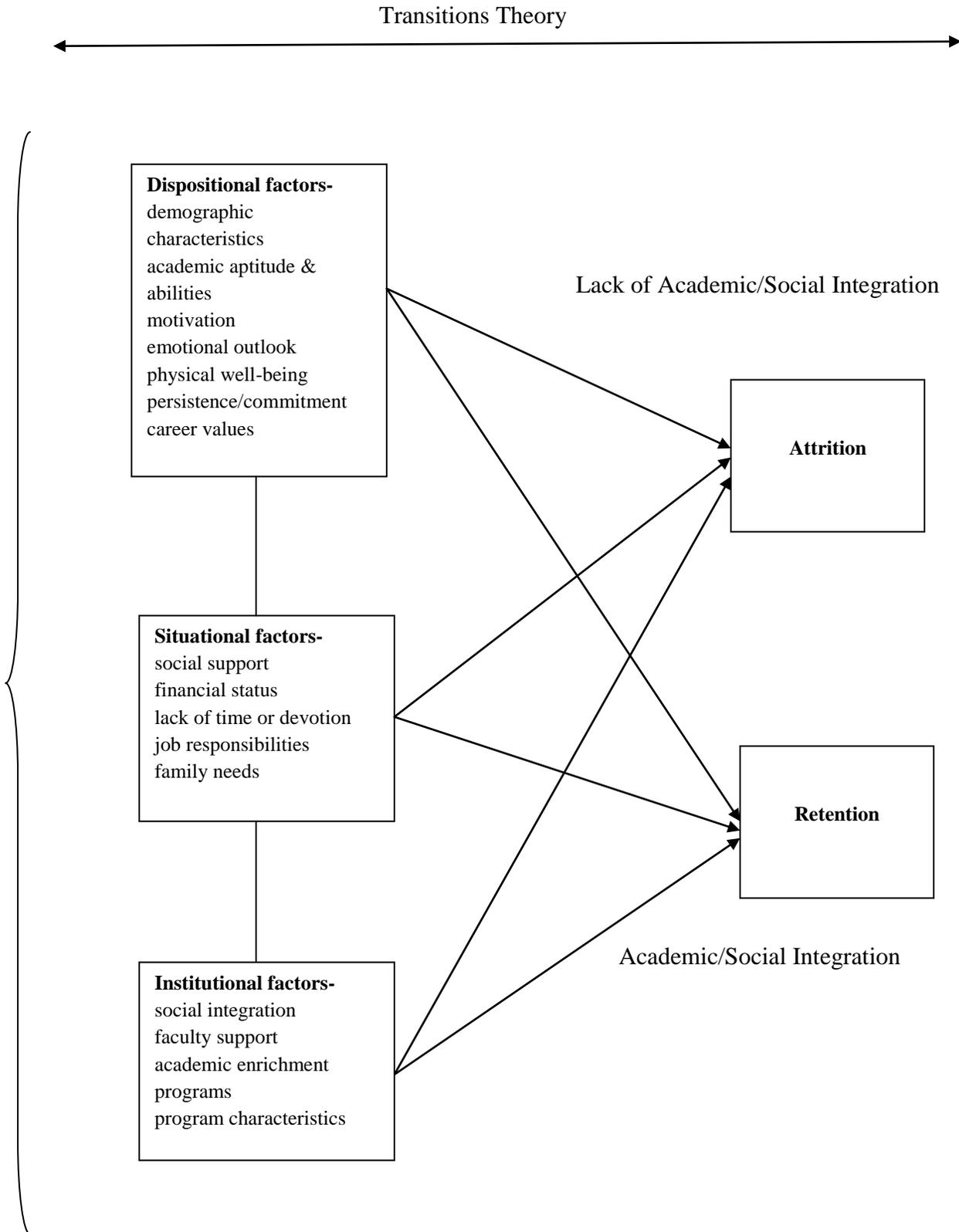
Trotter, E. & Cove, G. (2005). Student retention: An exploration of the issues prevalent on a healthcare degree programme with mainly mature students. *Learning in Health and Social Care*, 4(1), 29-42.

U.S. Department of Health and Human Services (2002). *Projected supply, demand, and shortages of registered nurses: 2000-2020*. Retrieved from [http://www.ahcancal.org/research\\_data/staffing/Documents/Registered\\_Nurse\\_Supply\\_Demand.pdf](http://www.ahcancal.org/research_data/staffing/Documents/Registered_Nurse_Supply_Demand.pdf)

U.S. Labor Bureau (2010). *Occupational outlook handbook, 2010-2011 edition*. Retrieved from <http://www.bls.gov/oco/ocos083.htm>

- White, J., Williams, W., & Green, B. (1999). Discontinuation, leaving reasons and course evaluation comments of students on the common foundation programme. *Nurse Education Today, 19*, 142-150.
- Wieland, D., Altmiller, G., Dorr, M., & Wolf, Z. (2010). Clinical transition of baccalaureate nursing students during preceptored, pregraduation practicums. In A. Meleis (Eds.), *Transitions Theory: Middle-range and situation-specific theories in nursing research and practice* (pp. 38-51). New York: Springer Publishing Company.
- Williams, M. (2010). Attrition and retention in the nursing major: Understanding persistence in beginning nursing students. *Nursing Education Research, 31*(6), 362-367.
- Zeitlin-Ophir, I., Melitz, O., Miller, R., Podoshin, P., & Mesh, G. (2004). Variables affecting the academic and social integration of nursing students. *Journal of Nursing Education, 43*(7), 326-329.

Figure 1. Associate Degree Nursing Student Retention Model



# APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

Page 1 of 1



EAST CAROLINA UNIVERSITY  
University & Medical Center Institutional Review Board Office  
4N-70 Brody Medical Sciences Building · Mail Stop 682  
600 Moye Boulevard · Greenville, NC 27834  
Office 252-744-2914 · Fax 252-744-2284 · [www.ecu.edu/irb](http://www.ecu.edu/irb)

## Notification of Initial Approval: Expedited

From: Social/Behavioral IRB  
To: [Linda Smith](#)  
CC: [Martha Engelke](#)  
Date: 5/31/2012  
Re: [UMCIRB 12-000762](#)  
Student Retention

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 5/30/2012 to 5/29/2013. The research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

The approval includes the following items:

Name	Description
<a href="#">Dispositional, Situational, &amp; Institutional Questionnaire</a>   <a href="#">History</a>	Surveys and Questionnaires
<a href="#">Dissertation Chpts 1-3</a>   <a href="#">History</a>	Study Protocol or Grant Application
<a href="#">Exit survey</a>   <a href="#">History</a>	Surveys and Questionnaires
<a href="#">Informed Consent Participants</a>   <a href="#">History</a>	Consent Forms
Permiision Letter from Colleges (Template)	

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418  
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418 IRB00004973  
East Carolina U IRB #4 (Behavioral/SS Summer) IORG0000418

## APPENDIX B: COLLEGE 01 APPROVAL LETTER

To: Linda Smith  
From: Institutional Review Board (IRB)  
Cc: Dr. Lisa Chapman, Executive Vice President of Instruction *LMC*  
Jon Matthews, Dean of University Transfer and Health Sciences  
Date: April 23, 2012

**Project Title: Student Retention in Associate Degree Nursing Programs**

IRB#: 005-2-6-12-4

Dear Ms. Smith,

The project listed above has been reviewed by the CCCC IRB for Human Participant Research, and is approved for one year. **This protocol will expire on April 23, 2013 and will need continuing review before that date.**

NOTE:

1. You must provide an area for your participants' to sign/initial for consent. Submit and use this revised consent form or the form approved by your host IRB.
2. This board complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. The Federal Worldwide Assurance (FWA) number for this institution is pending.
3. Any changes to the protocol and supporting documents must be submitted and approved by the IRB prior to implementation.
4. If any unanticipated problems occur, they must be reported in writing to this IRB within five (5) business days.
5. Your approval for this study lasts for one year from the review date. If your study extends beyond that time, including data analysis, you must obtain continuing review from the IRB. CCCC IRB will retain this protocol for a period of 5 years after the date of this letter.
6. Upon completion of your research, submit your findings to the IRB of this institution for distribution and review.

Sincerely,

  
Vadrin Colvin-King, IRB Chair

## APPENDIX C: COLLEGE 02 APPROVAL LETTER

### INFORMED CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

Upon permission from the college, the researcher will contact the Dean/Chair/Director of Nursing Education to review the research process and method of collection. A timeline for data collection will be established based on each college's orientation schedule. Orientation to the nursing program usually occurs in the summer semester, prior to the start of the fall semester. The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Finally, the researcher will contact the Dean/Chair/Director of Nursing Education at the end of the first semester to identify if those students who participated in the study were successful at the end of the first semester and progressing in the program.

#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program.

By signing this informed consent form, the college agrees to participate in this study.

Wanda Maggart      Wanda S Maggart      5/10/12  
Name (PRINT)                      Signature                      Date

## APPENDIX D: COLLEGE 03 APPROVAL LETTER

### Informed Consent to Participate in Research

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Additionally, this consent allows the researcher to contact the Director of Nursing Education at the end of the first semester to share the academic standing of the willing participants.

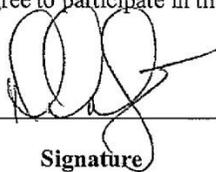
#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program. This research may lead to best practices in student retention, thereby increasing the number of nurse graduates entering the health care workforce.

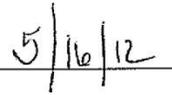
By signing this informed consent form, you agree to participate in this study.



Name (PRINT)



Signature



Date

## APPENDIX E: COLLEGE 04 APPROVAL LETTER

### Informed Consent to Participate in Research

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

Upon permission from the college, the researcher will contact the Dean/Chair/Director of Nursing Education to review the research process and method of collection. A timeline for data collection will be established based on each college's orientation schedule. Orientation to the nursing program usually occurs in the summer semester, prior to the start of the fall semester. The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Finally, the researcher will contact the Dean/Chair/Director of Nursing Education at the end of the first semester to identify if those students who participated in the study were successful at the end of the first semester and progressing in the program.

#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program.

By signing this informed consent form, the college agrees to participate in this study.

Alexis B. Welch                      Alexis B. Welch                      04-11-12  
Name (PRINT)                                      Signature                                      Date

## APPENDIX F: COLLEGE 05 APPROVAL LETTER

### Informed Consent to Participate in Research

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

Upon permission from the college, the researcher will contact the Dean/Chair/Director of Nursing Education to review the research process and method of collection. A timeline for data collection will be established based on each college's orientation schedule. Orientation to the nursing program usually occurs in the summer semester, prior to the start of the fall semester. The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Finally, the researcher will contact the Dean/Chair/Director of Nursing Education at the end of the first semester to identify if those students who participated in the study were successful at the end of the first semester and progressing in the program.

#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program.

By signing this informed consent form, the college agrees to participate in this study.

DAN MANNING

Name (PRINT)



Signature

5/11/2012

Date

## APPENDIX G: COLLEGE 06 APPROVAL LETTER

2012-04-30 12:40

>>

P 2/2

### Informed Consent to Participate in Research

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

Upon permission from the college, the researcher will contact the Dean/Chair/Director of Nursing Education to review the research process and method of collection. A timeline for data collection will be established based on each college's orientation schedule. Orientation to the nursing program usually occurs in the summer semester, prior to the start of the fall semester. The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Finally, the researcher will contact the Dean/Chair/Director of Nursing Education at the end of the first semester to identify if those students who participated in the study were successful at the end of the first semester and progressing in the program.

#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program.

By signing this informed consent form, the college agrees to participate in this study.

Wanda H. Capps

Linda W. Capps

4-30-12

Name (PRINT)

Signature

**APPENDIX H: COLLEGE 07 APPROVAL LETTER**

6 / 5 / 2012  
Date Submitted

\_\_\_\_\_  
File Number

**Exempt Protocol Summary Form**

Student Retention in Associate Degree Nursing Programs in North Carolina

**Title of Research Project**

Linda Smith  
Dean, Health, Wellness & Human Services  
Johnston Community College  
(919) 209-2024 ldsmith@johnstoncc.edu

Principal Investigator/Project Director      Department      Phone Extension      Email address

Dr. Martha Engelke  
Associate Dean for Research and Scholarship, Dissertation Chair  
ECU College of Nursing  
(252) 744-6453 engelkem@ecu.edu

Faculty Supervisor      Department      Phone Extension      Email address

Co-investigator/Student Investigator      Department      Phone Extension      Email address

Anticipated Funding Source: NA

Projected Duration of Research: 1 year months      Projected Starting Date: June 2012

Other organizations and/or agencies, if any, involved in the study: ECU, School of Nursing (PhD)

Exempt under code (see definitions on page one – check one)    1     2     3     4     5     6

**SUMMARY ABSTRACT: Please supply the following information below: BRIEF description of the participants, the location(s) of the project, the procedures to be used for data collection, whether data will be confidential or anonymous, disposition of the data, who will have access to the data. Attach copy of the Informed Consent Form and/or the measures (questionnaires) to be used in the project.**

SEE ATTACHED RESEARCH DESIGN

**RESPONSIBILITIES OF THE PRINCIPAL INVESTIGATOR:**

- Any additions or changes in procedures in the protocol will be submitted to the IRB for written approval prior to these changes being implemented
- Any problems connected with the use of human subjects once the project has begun must be communicated to the IRB Chair
- The principal investigator is responsible for retaining informed consent documents for a period of three years after the project.

Linda Smith  
Principal Investigator Signature

6/5/12

\_\_\_\_\_  
Co-Investigator/Student Signature (if appropriate)

## APPENDIX I: COLLEGE 08 APPROVAL LETTER

### Informed Consent to Participate in Research

Title of Research Study: Student Retention in Associate Degree Nursing Programs  
in North Carolina

Principal Investigator: Linda Smith

Institution/Department or Division: East Carolina University PhD in Nursing

---

#### Why is this research being done?

The purpose of this study is to examine the relationship between dispositional factors (academic characteristics, motivation, emotional outlook, physical well-being, and past performances), situational factors (social support, financial status, time commitments, job responsibilities, and family needs), and institutional factors (social integration, faculty support, academic enrichment programs, and program characteristics) and students' successful retention at the end of the first semester in associate degree nursing programs in North Carolina.

#### What are the risks?

There is minimal risk in this study and participation will be voluntary for all participants. The researcher will receive approval from East Carolina University Institutional Review Board (IRB) prior to implementation of this study. Informed consent to participate will be obtained and participation is voluntary. Anonymity and confidentiality of all participants will be maintained at all times.

#### What is the college's involvement?

Upon permission from the college, the researcher will contact the Dean/Chair/Director of Nursing Education to review the research process and method of collection. A timeline for data collection will be established based on each college's orientation schedule. Orientation to the nursing program usually occurs in the summer semester, prior to the start of the fall semester. The researcher will attend the orientation session(s) and prior to or midpoint of the orientation session, willing participants will complete the questionnaire. There will be no interruption to classroom instruction. Finally, the researcher will contact the Dean/Chair/Director of Nursing Education at the end of the first semester to share the academic standing of those students who participated in the study.

#### What are the benefits?

At the conclusion of this study, the researcher will provide all participating colleges the findings of the data analysis. This information will provide nurse administrators and faculty quantitative data analysis that will assist in understanding factors leading to attrition, thereby facilitating strategies to improve retention in the nursing program.

By signing this informed consent form, the college agrees to participate in this study.

Patricia A. Peffer Patricia A. Peffer, MSN, MSA, RNC-OB 4/28/12  
Name (PRINT) Signature Date