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UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

THE RELATIONSHIP BETWEEN PERCEIVED ACADEMIC
SELF-EFFICACY, REMEDIATION, AND ACADEMIC
PERFORMANCE IN PRE-LICENSURE
BACCALAUREATE NURSING
STUDENTS

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

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College of Natural and Health Sciences
School of Nursing
Nursing Education

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This Dissertation by: Debra Jean Wilson

Entitled: *The Relationship Between Perceived Academic Self-Efficacy, Remediation, and Academic Performance in Prelicensure Baccalaureate Nursing Students*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in the College of Natural and Health Sciences in School of Nursing, Program of Nursing Education

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ABSTRACT

Wilson, Debra Jean. *The Relationship Between Perceived Academic Self-Efficacy, Remediation, and Academic Performance in Prelicensure Baccalaureate Nursing Students*. Published Doctor of Philosophy dissertation, University of Northern Colorado, 2014.

Nurse educators are faced with the daunting task of preparing students for professional practice as registered nurses. Students who are academically underprepared are often at risk for nursing course failure. There is a lack of consensus in the literature about predictors of success in nursing education. Most nursing education research has focused on the nursing licensure examination as the outcome measure. This focus occurs late in the curriculum and fails to address at-risk students who don't make it to graduation.

Remediation research has also focused on student performance on the licensure examination and interventions are often poorly described, making replication and validation difficult. Standardized testing packages are widely used in nursing education; many have remediation plans embedded in them that allow students to develop an individualized remediation plan based on examination performance. This resource is often underutilized. It is not clear why some students who struggle academically seek out learning opportunities while others do not. In this study, motivation for student learning was evaluated using Bandura's concept of perceived self-efficacy.

This research explored the relationship between perceived academic self-efficacy beliefs, academic performance, and remediation of pre-licensure baccalaureate nursing

students using a prospective, correlational design. Participants were recruited from six public, baccalaureate nursing programs. Data analysis included correlational analysis of the research variables using Pearson's r .

There was not a statistically significant relationship between self-efficacy beliefs and examination preparation ($r = .181$; $p = .0804$) or between remediation and subsequent examination performance ($r = .243$; $p = .135$). There was a statistically significant relationship between Remediation and Perceived Academic Self-Efficacy beliefs ($r = .341$; $p = .034$).

Limitations for this study include a small sample size and a high attrition rate. Participants also had difficulty in self reporting their study activities on the Examination Preparation Survey, which may have affected the trustworthiness of this measure. Further research is needed to evaluate the benefit of remediation in relation to student outcomes. There is an opportunity for collaborative research among nurse educators in an effort to ensure an adequate sample size for future research efforts. There is also a need to evaluate specific remediation activities to identify which activities provide the most benefit to at risk students.

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CHAPTER I

INTRODUCTION

Nurse educators are faced with the daunting task of preparing students for professional practice as registered nurses. Nursing students are sometimes academically unprepared for college, and as a result are at risk for nursing course failure in spite of rigorous pre-admission screening criteria. Students who are at risk for failure are often the least likely to seek additional help when needed; thereby increasing their potential for course failure (Heroff, 2009). Perceived self-efficacy is a concept that may help explain why at risk students fail to access the resources that could help them succeed.

Early identification of at risk students and implementation of interventions for students at risk of failure are essential to improve student outcomes and decrease nursing program attrition. Many nursing schools have implemented standardized testing programs which allow students to test their knowledge at several points in the curriculum in relation to the National Council for Licensure Examination for Registered Nurses (NCLEX-RN) content. This not only allows for early identification of at risk students, but also offers the opportunity to develop a remediation plan individualized to the students' learning needs. Success on the NCLEX-RN is important to both the nursing student and to the nursing school. Nursing graduates must pass the licensure examination before they can enter professional practice as registered nurses. Nursing programs are judged on the ability of their graduates to pass the NCLEX-RN on the first attempt.

National accrediting agencies and State Boards of Nursing monitor the first time pass rate on the NCLEX-RN as an indicator of quality (Beeman & Waterhouse, 2001; Daley, Kirkpatrick, Frazier, Chung, & Moser, 2003)

The present research explored the relationship between the academic self-efficacy beliefs of pre-licensure baccalaureate nursing students and remediation interventions for students at risk for academic failure. This first chapter introduces the study, identifies the problem, and presents the theoretical framework for nursing which guided the study.

Background and Significance

The nursing shortage is well documented in both the professional and public literature. It is anticipated that by 2025 there will be a shortfall of 260,000 registered nurses in the national nursing workforce (American Association of Colleges of Nursing [AACN], 2009). California is particularly hard hit by the nursing shortage. Workforce statistics are reported as the number of Registered Nurses (RN) per capita which allows comparison based on nurse density. Nationally, there are 825 registered nurses per 100,000 population; in California, the rate is dramatically lower at 653 per 100,000 population (California Nurse Education Initiative, 2010). California Institute of Nursing and Health Care (CINHC) developed a grading rubric using letter grades to evaluate the nursing workforce. The letter grades range from A (1112 Registered Nurses per capita) to F (463 or less Registered Nurses per capita). At 653 Registered Nurses per capita, California's grade is C- (CINHC, n.d.).

California nurse leaders have implemented a number of strategies aimed at increasing the number of practicing nurses. The California Institute for Nursing and Health Care has been instrumental in developing strategies for improving the nursing

shortage in California. The first goal in CINHC's master plan is to expand the capacity of California's nursing programs (CINHC, n.d.). The increase in nursing school enrollments is an important intervention, but fails to address the high attrition rates experienced in nursing programs.

High attrition rates are common in undergraduate nursing programs (Kinser, 2004). These rates vary among nursing programs. In a report prepared for the California Board of Registered Nursing, Waneka, Bates, and Spetz (2013) report an overall attrition rate of 14.5% for the 2011-2012 academic year. This represents students who have either dropped out of nursing school or were disqualified from their nursing program. Another 6.6% remain in their nursing programs, but are out of sequence due to a course failure (Waneka et al.). The number of nursing school graduates increased by 1.4% during 2011-2012 after the first decline in ten years during the 2010-2011 academic year. Strategies to decrease student attrition need to be combined with the efforts to increase educational capacity in California's nursing schools for the best results in improving California's nursing workforce. Nursing students withdraw from nursing programs for a variety of reasons; however, this research focused on those students who are at risk for academic failure.

There are significant financial and emotional implications related to course failure at all levels. Students must pay for additional semesters, experience a loss of income related to a delay in graduation, and they experience a decrease in self-esteem (Daley et al., 2003; Griffiths, Papastrat, Czekanski, & Hagan, 2004). Nursing faculty experience an increased workload as they attempt to incorporate repeat students into their courses. Nursing programs are impacted financially since school budgets are usually based on

student enrollment; fewer students results in less money to the program. In the current nursing shortage, the impact of course failure on the nursing profession cannot be ignored since each course failure represents a delay into professional practice. Clearly intervention is needed to decrease nursing school attrition; however, nurse educators must first identify those students at risk for failure.

Academic Predictors

Nursing programs are evaluated largely based on their students' success on the NCLEX-RN, so it is not surprising that the majority of nursing education research focuses on strategies to improve first time NCLEX-RN pass rates (Beeman & Waterhouse, 2001, Daley et al., 2003). While this research is valuable, it fails to address those students who do not make it to graduation due to course failure. Course failure is a complex phenomenon and can be related to both academic and non-academic factors. Academic factors include overall grade point average (GPA), course grades for science courses, nursing course grades, and entrance exam scores (Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Daley et al., 2003; Hardin, 2005). Non academic predictors include work status, age, and ethnicity (Alameida et al., 2011; Beeson & Kissling, 2001). While many predictors have been identified there has been little consensus on the effectiveness of these predictors in determining which students will be successful (Beeman & Waterhouse, 2001; Hardin, 2005)

Many nursing programs have developed admission criteria based on a combination of these predictors in an effort to recruit only the most qualified students (Crow, Handley, Morrison, & Shelton, 2004). The benefit of using these criteria is often skewed by issues such as grade inflation, and by students who repeat courses to achieve a

higher grade. Even after meeting rigorous application requirements, students often fail their nursing courses. Early identification of students who are at risk for failure combined with effective remediation strategies should allow students to remain in the nursing program, thus decreasing overall program attrition.

Remediation

Remediation is an attempt to improve a student's academic status; whether measured by a test score, a course grade, or a general increase in knowledge. The major focus of remediation research in nursing education has been in relation to performance on the NCLEX-RN examination (McGann & Thompson, 2008; Reinhardt, Keller, Summers & Schultz, 2012; Sifford & McDaniel, 2007).

Pennington and Spurlock (2010) conducted a systematic review of the literature to evaluate remediation interventions reported in the nursing education literature. Common interventions included the development of new courses to address the needs of at risk students, development of a remediation program, or development of a progression policy. In their review, they note a lack of clarity in describing remediation interventions as a major barrier to replication and validation (Pennington & Spurlock, 2010).

Reinhardt and associates (2012) also conducted a review of the literature to identify the best practices for remediation interventions prior to developing their own intervention. They found that effective remediation interventions should be structured, mandatory, individualized to meet the students' needs, and include test taking strategies that incorporate measures to reduce test anxiety (Reinhardt et al., 2012). Standardized testing packages can assist nursing faculty in not only identifying students who are at risk for failure, but also in developing an effective remediation plan for those students.

Standardized Testing

Standardized testing is used by many nursing programs to measure student progress in relation to potential NCLEX-RN success. This testing is used in a variety of ways. In some programs, testing is used as a predictor of success on the NCLEX-RN exam. In other programs, testing is used as a formative evaluation tool to evaluate progress in each nursing content area (Heroff, 2009). These tests are available in a computerized format, similar to that of the NCLEX-RN, which allows students to become comfortable with computerized testing (Heroff, 2009). Students receive immediate feedback on their performance with a detailed report that outlines areas in which further study is needed. Finally, faculty can use aggregate result data to evaluate the curriculum in terms of meeting NCLEX-RN content.

Three tests/testing packages are commonly used in nursing education: Educational Resources, Health Examination Systems, Incorporated (HESI), and Assessment Technologies Incorporated (ATI) (Holstein, Zangrilli, & Taboas, 2006). The HESI Exit Examination (E²) and the ATI Comprehensive Predictor are most commonly mentioned in the nursing literature. The accuracy of the Exit Examination as a predictor of NCLEX-RN success is well documented (Lavendera et al., 2011; Morrison, Adamson, Nibert & Hsia, 2004; Nibert, Adamson, Young, Lauchner, et al., 2006; Sifford & McDaniel, 2007). The Comprehensive Predictor Examination is also used to accurately predict NCLEX-RN success (Assessment Technologies, Incorporated, n.d.; Humphreys, 2008). Since these exams focus on the NCLEX-RN, they are generally given late in the nursing program. As previously discussed there is a need to identify at risk students earlier in the curriculum. The selection of a standardized testing package is made at the

program level, and is often subject to regional preferences. The Assessment Technologies Incorporated (ATI) package is commonly used in California nursing programs.

Assessment Technologies Incorporated (ATI). Assessment Technologies Incorporated has three products that are commonly used in nursing programs. The Test of Essential Academic Skills (TEAS) is frequently used as a pre-admission screening exam (Jacobs & Koehn, 2006). The Content Mastery Series (CMS) is a series of nine content-based examinations that use criterion reference cut scores to test the proficiency level of students for a particular content area (Kelley, 2007). These cut scores were set by a team of nursing content experts using the Anghoff and Bookman methods of standard-setting. Three levels of proficiency are identified in relation to NCLEX-RN mastery for that content area. Level 1 Proficiency is basic mastery. Students at this level have just met the standards for NCLEX-RN in this content area. Level 2 is the expected mastery level. Students at this level have a good understanding of the content area. Students at Level 3 proficiency have a better than expected understanding of the content area (Kelley, 2007).

Correlation studies show that there is a relationship between performance on the Content Mastery Series examinations and performance on the Comprehensive Predictor (ATI, n.d.). Students who scored at Level 2 proficiency on the Content Mastery Series exams were more likely to achieve a high score on the Comprehensive Predictor examination indicating a high likelihood to pass the NCLEX-RN (ATI, n.d.). If students can be identified as at risk using these content exams, early remediation could be implemented to promote successful completion of the nursing program, thus decreasing program attrition.

Attrition in nursing schools is a problem that needs to be addressed as one mechanism to increase the nursing workforce. Currently, there is a lack of evidence supporting early predictors of students at risk for failure and little consensus on effective remediation strategies. Standardized testing packages offer an opportunity for early identification of at risk students and also offer an individualized remediation plan. Early identification of at risk students is an important intervention, but is only one part of the equation related to student success. It is unclear why students, who seem equally qualified for nursing school based on rigorous admission standards, have such varied performance outcomes. Bandura (1997) suggests that this is due to the student's perceptions regarding his or her ability.

Conceptual Framework

Why do students with equal academic ability vary in their academic outcomes/performance? Motivation relies on the student's perception of his/her ability to complete a task, as well as the belief that successful completion of the task will achieve the desired goal. Perceived Self-Efficacy (PSE) is the belief in one's ability to "organize and execute the courses of action" needed to achieve a goal (Bandura, 1997, p. 3). Perceived self-efficacy is often confused conceptually with self-concept and self-esteem, but these terms are not interchangeable. Self-concept is one's composite view of the self and is shaped by one's life experience and peer evaluation (Bandura, 1997). Self-esteem refers to one's overall sense of self-worth (Bandura, 1997). Self-Efficacy is the conception of one's capability to succeed in a specific activity (Bandura, 1997). Each individual has a variety of strengths and weaknesses so it is not surprising that one can have high self-efficacy in one area while experiencing low self-efficacy in another area.

For example, a college student could have high social/personal self-efficacy but experience low academic self-efficacy. For this reason, it is important that Self-Efficacy measures be tailored to the activity of interest (Bandura, 1997). Academic self-efficacy is the concept of interest for the present research. Academic self-efficacy was measured using the Perceived Academic Self-Efficacy Scale (PASES) (Havens, 2008).

Self-efficacy requires one to not only master the skills required to complete an activity, but also be able to adapt those skills in a variety of settings (Bandura, 1997). This concept is important in terms of this study since nursing actions are often situation based; that is, the appropriate action will vary based on the situation. Nursing students receive a strong foundation of knowledge in their prerequisite coursework and are then required to apply that information in a number of different settings. In many science based prerequisite courses, nursing students are expected to memorize and recall information in order to succeed. Nursing students, on the other hand, are expected to apply previously learned information to care for the ever-changing needs of their patients. When challenged in this way, student confidence may falter.

Influences for Self-Efficacy Beliefs

Perceived self-efficacy is influenced by four sources: 1) Enactive mastery experiences, 2) Vicarious experiences, 3) Verbal Persuasion, and 4) Physiologic/Affective states (Bandura, 1997). Each of these sources requires the student to interpret his/her responses in a way that promotes either high self-efficacy beliefs or low self-efficacy beliefs. Nurse educators have the opportunity to use these sources in their regular teaching as well as in planning remediation activities to bolster the self-efficacy beliefs of their students (Bandura, 1997).

Enactive Mastery Experiences. Enactive Mastery Experiences are the most influential source of self-efficacy beliefs (Bandura, 1997). Simply put, successfully performing a task increases one's sense of ability for that task. However, there are a number of factors that affect the degree to which mastery experiences contribute to self-efficacy beliefs. The student's perception of his/her abilities, the perceived difficulty of the task, the effort needed to succeed, and the individual's interpretation of the experience all affect the development of self-efficacy (Bandura, 1997). If the student has confidence in his/her ability to succeed, he/she will be more likely to attribute success up to this ability. This student will also be more likely to attribute failure to something other than his/her lack of ability (Bandura, 1997). Enactive Mastery involves not only learning a desired skill, but also developing the tools and strategies that are needed to complete the task. In this way, students learn coping strategies that aid in future learning situations (Bandura, 1997). Enactive mastery experiences are especially useful when there are objective measures that signal success. For example, nursing students learn many psychomotor skills in which the student is either able to successfully perform the task, or is not.

Vicarious Experiences. When an objective measure of success is lacking or the student has limited experience with a task, self-efficacy beliefs can be fostered through the use of social comparison. Vicarious experiences allow the individual to compare his or her performance with that of others. If the individual performs better than the comparison group, self-efficacy beliefs are improved. Conversely, if the individual's performance is below that of the group, self-efficacy beliefs are lowered. According to Bandura (1997) "the greater the assumed similarity, the more persuasive are the models'

successes and failures” (p. 87). The influence of modeling is not limited to the successful completion of a task. The attitude of the model in terms of coping strategies, attitude, and perseverance also affect the development of efficacy beliefs (Bandura, 1997).

Verbal Persuasion. Verbal persuasion has to do with the coaching role of the educator and how feedback is provided to the student (Bandura, 1997). Verbal persuasion alone is of limited benefit in improving self-efficacy beliefs, but can be used to reinforce other sources of influence. Realistic, positive reinforcement encourages the student to increase his or her effort, leading to a greater chance of success. Such coaching helps the student overcome his or her self-doubts. According to Bandura (1997), feedback should focus on the progress towards meeting the goal and the successful use of strategies that will help the student achieve success to optimize self-efficacy beliefs.

Physiologic/Affective States. The student’s ability to interpret and control physiologic and affective input is critical to the development of positive self-efficacy beliefs (Bandura, 1997). Physical signs of anxiety, such as a fast heart rate, can be interpreted either as a normal response or as a sign of a problem. The effect of these stressors on self-efficacy beliefs depends on 1) the degree of attention given to the response, 2) the perceived cause of the response, and 3) the intensity of the response (Bandura, 1997). Students who are able to control their reaction to physical and emotional stimuli will foster a higher level of self-efficacy than those who are unable to do so.

The development of self-efficacy beliefs is a complicated phenomenon that relies not only on the external influences of these sources of influence, but also on the

individual's interpretation of them. Of interest for this study was whether the student's Perceived Self Efficacy score was related to how he/she prepared for a standardized examination. In addition, remediation interventions should help strengthen PSE beliefs; students who are able to successfully complete a remediation plan should have greater confidence in their ability to succeed which will be useful in future courses.

Statement of the Problem

Remediation strategies aimed at improving student retention must be successful, must require limited faculty time, and must be cost effective. Standardized tests have been used to reliably predict student performance on the NCLEX-RN, but this fails to address those students who don't make it to graduation. Early identification of at risk students is needed, but no reliable indicators have been reported. Once a student is identified as 'at risk', remediation strategies should be implemented in an attempt to prevent course failure. Educational strategies aimed at decreasing student attrition have been reported, but vary by institution and lack a standardized format which makes validation with replication studies difficult.

Finally, with nursing programs in California facing severe budgetary constraints; the cost effectiveness of the intervention is an important factor. Interventions that require significant capital outlay by the institution are not likely to be implemented in the current fiscal climate. Standardized testing packages are costly, but are already widely used in California nursing programs. Remediation resources are included as part of these packages at no additional cost to the student or to the institution. Further research was needed to validate the effectiveness of these remediation materials related to nursing student success.

Purpose and Aims

The purpose of this study was to identify the relationship between the use of structured remediation materials, perceived academic self-efficacy beliefs, and student success in pre-licensure, undergraduate nursing programs. Remediation materials are readily available to students who purchase standardized testing packages, but are currently underutilized in many nursing programs. The aim of the present study was to test the relationship between self-efficacy beliefs and nursing student success. Evaluating the use of Assessment Technologies Incorporated (ATI) remediation materials in relation to self-efficacy beliefs also tested the assumption that students with high self-efficacy will seek out learning opportunities more readily than those with low self-efficacy.

Research Questions

- Q1 What is the relationship between the Perceived Academic Self-efficacy beliefs of pre-licensure, undergraduate nursing students, as measured by the Perceived Academic Self-efficacy Scale (PASES) and their use of ATI study materials prior to taking a standardized nursing exam?

The first question intended to determine the relationship between Perceived Academic Self-Efficacy beliefs and student utilization of study materials in preparation for a scheduled exam. The assumption was that the student is academically able to succeed; this question sought to determine the student's motivation to pursue resources to assure academic success. It is important to determine whether Perceived Academic Self-Efficacy plays a role in the student's use of testing resources. If such a relationship exists, teaching strategies to foster improved Academic Self-Efficacy beliefs will benefit undergraduate nursing students.

- Q2 For students identified as at risk for failure (those who score less than Level 2 proficiency on a standardized nursing examination), what is the

relationship between the use of a structured remediation plan and subsequent performance when retaking the standardized nursing exam?

Intuitively, remediation should benefit students. The question is, does it help enough? Remediation materials are available to all students enrolled in the ATI Content Mastery Series. These materials, while readily available, are underutilized in many nursing programs. In the present research, students were assisted in developing a remediation plan using existing materials and were then retested to assess the benefit of remediation.

Q 3 What is the relationship between successful completion of the remediation plan and the subsequent Perceived Academic Self-Efficacy score?

The final question addresses the long-term benefit of this intervention in terms of Perceived Academic Self-Efficacy. Does successful remediation foster the student's perception of his/her ability to succeed?

Operational Definitions

At risk

Students were identified as 'at risk' for failure if they score less than Level 2 proficiency on a standardized nursing examination. Level 2 proficiency indicates that the student meets the NCLEX-RN standards for the content area. The Level 2 cut score for the Adult Medical Surgical exam is 64.4% (ATI, n.d.).

Self-Efficacy

Perceived Academic Self-Efficacy was measured using the score obtained from the 22-item Perceived Academic Self-Efficacy Scale (PASES) (Havens, 2008).

Remediation

The remediation plan was developed based on the student's performance on the proctored Content Mastery Series examination. Using the Individual Performance Profile, the student generated an on-line focused review that included access to reading materials, remediation templates, and media resources for the content areas for all questions that were missed on the Content Mastery Series examination.

Summary

While many solutions have been proposed by nursing leaders, the retention of nursing students is an often overlooked mechanism for increasing the nursing workforce. Educational strategies aimed at the retention of nursing students needed to be more closely evaluated as part of the solution to both the current and potential nursing shortage. Remediation materials are readily available to students who purchase standardized testing materials, but there is a lack of evidence to support a meaningful improvement in student performance after using these materials. Faculty workload and budgetary constraints must also be considered in developing an intervention aimed at improving student retention. In the following chapter, a more in-depth review of the literature in relation to identifying at risk students, remediation practices, and standardized testing will be presented.

CHAPTER II

REVIEW OF LITERATURE

The previous chapter provided an overview of the issues facing nurse educators related to high student attrition in nursing programs and introduced the present research study that attempted to identify the relationship between the use of structured remediation materials, perceived academic self-efficacy beliefs, and student success in undergraduate nursing programs. This chapter provides a comprehensive review of the literature related to the key concepts of Perceived Self-Efficacy, Predictors for Success, Remediation, and Standardized Testing related to nursing education.

Cognitive Theories of Motivation

An assumption of the present research is that nursing students are academically prepared to meet the challenges of nursing school and are capable of success. That assumption is based on the rigorous pre-admission screening process that nursing students undergo prior to being accepted to nursing school. However, motivation theories may help to explain why equally qualified students have such varied academic outcomes. Rather than focusing on behavior, cognitive motivation theories focus on the thought processes that influence behavioral outcomes. Three of the cognitive theories have a slightly different focus in terms of explaining motivation. Self-determination theory is concerned with “why” motivation develops. Attribution theory is concerned with “how” motivation is developed. Self-efficacy theory focuses on the perceived ability to succeed as the motivating force (Eccles & Wigfield, 2002).

Self-determination Theory

Self-determination theory focuses on the reasons that individuals engage in a course of action. Ryan and Deci (2000) investigated the social contexts in which motivation occurs. Their research focused on identifying conditions that not only foster motivation but also those conditions that act as barriers to motivation. Self-determination theory proposes that humans have three basic needs that must be met to assure well being, and foster the tendency for growth (i.e. learning). These three needs are competence, relatedness and autonomy (Ryan & Deci, 2000). *Competence is the need to be successful in what one does.* The perception that one can be successful prompts the added effort to persist in an activity. *Relatedness has to do with relationships; the need to fit in.* If the social group values an activity, there is an incentive to pursue the activity. *Autonomy is the feeling of being self-directed, or in charge of the situation.* Motivation is influenced by our ability to meet each of these basic needs (Ryan & Deci, 2000).

Self-determination theory also evaluates motivation based on its origin. Humans are naturally curious, and seek out learning opportunities. Motivation that is the result of this natural curiosity is labeled intrinsic motivation. When the individual performs an activity simply because he/she enjoys doing it, he/she is intrinsically motivated. This type of motivation is strongest, but is also short-lived. Extrinsic motivation occurs when there is some type of external factor urging us to act. Extrinsic motivators can become internalized, when we learn to appreciate the value of the activity for ourselves (Ryan & Deci, 2000).

There is a continuum of extrinsic motivation with four levels of regulation ranging from external to integrated regulation. The first regulatory style is external

regulation, which describes behaviors that are carried out based on either the expectation of a reward, or the fear of a punishment. The second regulatory style is introjected regulation. In this style, the individual is motivated to act by their need to feel worthwhile, either by avoiding guilt or by demonstrating competence in an activity. The third regulatory style is identified regulation, a more autonomous style in which the individual recognizes the personal value of an action or behavior. The last extrinsic regulatory style is closely related to intrinsic motivation, but still relies on external outcomes rather than inherent enjoyment. Integrated regulation occurs when the individual accepts the activity or behavior as personally important to him or her. In the educational setting, students are generally motivated through extrinsic sources (Ryan & Deci, 2000).

In their research, Ryan and Deci (2000) demonstrated that more autonomous, internalized motivation led to better coping skills, performance, and engagement. The focus of their research is on the identification of the type of motivation and the effect of the motivator on performance. The key for educators is to promote more autonomous regulation for extrinsically motivated behaviors like studying. Ryan and Deci tie this in to the three basic psychological needs of relatedness, competence and autonomy. The need to belong to a group helps to encourage internalization of motivation. Activities that are valued by the group will become important to the individual seeking membership in that group. The individual is also more likely to engage in activities that he or she feels competent to do. Finally, the ability to make decisions about one's actions, to feel self-directed, facilitates the internalization of motivation. Self-determination is useful in determining the quality of motivation in a given situation, and may offer some insights on

classroom management to promote integrated regulation. It does not offer the ability to assess the individual student in terms of their motivational processes, which limits its usefulness in the proposed research.

Attribution Theory

Attribution theory describes how the individual explains his or her performance and how that attribution affects future performance expectations. There are three dimensions of causality; the locus of causality, causal stability and causal control (Weiner, 2010). The ways in which these three dimensions are interpreted by the individual determine future expectancy of success or failure and whether efforts will be continued toward meeting the goal.

Locus of causality identifies the cause of an outcome and can be either internal or external. An outcome, either success or failure, can be the result of internal factors such as ability and effort or the result of external factors such as task difficulty and luck (Weiner, 2000). There are both positive and negative emotions associated with internal locus of causality. A positive outcome that results from an internal locus will result in pride and increased self-esteem (Weiner, 2000; Weiner 2010). A negative outcome that results from an internal locus will result in shame or guilt (Weiner, 2000).

The second dimension, stability, relates to how easily something can be changed. Stable forces are fairly consistent and are not likely to change, which means that the individual has little control over them (Weiner, 2000). When failure is attributed to a stable cause, hopelessness develops. Unstable forces are comparatively easy to change. This allows the individual to modify his or her behavior for a more successful outcome, which instills hope (Weiner, 2010).

Affective responses are also regulated by the perception of causal control, or the degree to which the cause of the outcome can be controlled. Positive outcomes that are attributed to an internal, controllable cause will result in pride (Weiner, 2000). Negative outcomes that are attributed to an internal, controllable cause, like lack of effort, will result in guilt (Weiner, 2000). Negative outcomes that are attributed to an internal, uncontrollable cause, like lack of aptitude, will result in shame (Weiner, 2000). These emotional responses, along with the expectancy of success determine future behavior. Attribution theory is useful in identifying how cause is assigned by the individual, but attribution styles are not readily changed, making attribution theory of little use in the short term for improving academic outcomes of at risk nursing students.

Social Cognitive Theory: Self-efficacy

According to Bandura (1993), motivation to act is the result of self-efficacy beliefs. Self-efficacy beliefs influence the actions taken through four processes: cognitive, motivational, affective, and selection processes.

Cognitive processes. As reported by Bandura (1993), the influence of our cognitive processes begins with the goals that we set for ourselves and the degree of persistence we have in meeting those goals. Those with high self-efficacy will set more ambitious goals for themselves, and develop a plan to meet that goal using all available resources. Ability can be viewed as either acquirable or innate. Those who believe that ability can be developed will work harder to achieve the goal, and will be less likely to be deterred by difficulty. Those who believe that ability is inherent, that is they either have the ability or they don't, experience a decrease in self-efficacy beliefs when problems arise. Self-efficacy beliefs are fostered when feedback is provided in terms of progress to

a goal rather than in actual performance. In other words, when one sees one's progress towards meeting a goal, self-efficacy is enhanced. When feedback on performance is framed in such a way to focus on these achievements personal ability is reinforced and efficacy beliefs are enhanced. Finally, self-efficacy beliefs shape feelings of control both at the personal level and in control of the environment. Persons with high self-efficacy are more creative in overcoming obstacles and in finding ways to modify their environment when challenges arise (Bandura, 1993).

Motivational processes. Self-efficacy beliefs contribute to motivation through the goals that are set for oneself, the effort expended to meet that goal, the degree of perseverance in meeting the goal, and resilience when failure occurs (Bandura, 1993). The concept of self-efficacy is present in other motivation theories. For example, self-efficacy beliefs influence the causal attributions described in attribution theory (Weiner, 2000). Those with high self-efficacy will attribute failure to internal, unstable locus causes such as deficient effort. Those with low self-efficacy will attribute failure to stable causes such as low ability.

Affective processes. Those with high self-efficacy beliefs, Bandura (1993) explains, focus on their strengths and are able to control anxiety and fear when facing challenges. Individuals with high self-efficacy are able to control the negative thoughts associated with stressful situations and avoid panic. As a result the physiological responses to stress are controlled as well. Academic self-efficacy is affected by past academic performance. When eroded, students suffer from achievement anxiety. Bandura (1993) suggests that this achievement anxiety is best managed through building a strong sense of efficacy. Students who are taught self-regulative skills for managing

academic tasks will develop a strong sense of efficacy, especially when combined with measures to control negative thought patterns.

Selection processes. Self-efficacy beliefs can be high in one area, but not in all areas. For example, a person can have high personal self-efficacy, but low academic self-efficacy. One engages in an activity based on the belief that he or she is capable of accomplishing it. Activities that are believed to be beyond the ability of the individual will be avoided. This is important in the educational setting since life-altering decisions like career choices are made based on one's perceived ability to be successful in a particular endeavor (Bandura, 1993).

Measuring Self-Efficacy Beliefs

Self-efficacy measures have been used to evaluate performance in a number of domains including education, health, and sports (Eccles & Wigfield, 2002). Bandura (1993) cites a number of studies that demonstrate the relationship between perceived self-efficacy and academic performance in school aged children; however, the population of interest for this study is adult nursing students. Self-efficacy is domain specific; requiring a measurement scale related to the task at hand (Bandura, 2006). Havens (2008) evaluated the academic self-efficacy of 60 at risk college freshmen to determine whether there was a relationship between their academic self-efficacy beliefs and their persistence in college. Havens developed and used the Perceived Academic Self-Efficacy Scale (PASES) to measure academic self-efficacy beliefs (Havens).

Havens was unable to demonstrate a statistically significant relationship between self-efficacy beliefs and student persistence, but suggests that any effect may have been masked by the small sample size. The PASES tool was found to be a reliable measure of

perceived academic self-efficacy beliefs (Havens, 2008). Since academic self-efficacy is the domain of interest for this study, the PASES tool was used to measure academic self-efficacy. Self-efficacy is a variable identified in several nursing and nursing education research studies.

Perceived Self-efficacy in Nursing/Nursing Education

Self-efficacy beliefs influence both educational and occupational outcomes. Logsdon, Foltz, Sheetz and Myers (2010) evaluated the relationship between self-efficacy beliefs of perinatal nurses and their patient teaching about post-partum depression. Dependent variables included demographics, self esteem and stigma associated with mental illness. The independent variable was self-efficacy beliefs related to teaching patients about post partum depression. Self-report questionnaires were completed by 43 perinatal nurses. Correlation analysis was done to determine which dependent variables were associated with self-efficacy beliefs. Predictors of self-efficacy beliefs were observing other nurses teaching (vicarious experiences) ($r = .31$, $p = .04$), supervisor expectations ($r = .41$, $p = .009$), and self-esteem ($r = .35$, $p = .001$) (Logsdon, et al., 2010). This research is of interest because it supports Bandura's (1997) premise of vicarious experience as a source of self-efficacy beliefs. However, there was no attempt to identify the relationship between self-efficacy for teaching and the behavioral outcome of providing the patient education. Further research is needed to determine whether an increase in self-efficacy beliefs produces an increase in the desired behavioral outcome.

Swenson-Britt and Reineck (2009) used the Nursing Research Self-efficacy scale to evaluate the effect of a 'Reading Research Publications' course on the research self-efficacy of critical care nurses. Seventeen intensive care nurses volunteered to take the

course and participate in the research. Researchers used a pre-test/post-test design to evaluate self-efficacy scores before and after the intervention. Significant increases were noted in three of the four subscales: quantitative methods ($p = .000$), using theory ($p = .004$), and using evidence ($p = .007$) (Swenson-Britt & Reineck, 2009). Although the sample size is small, this study demonstrates the benefit of educational interventions, such as remediation, in increasing self-efficacy beliefs.

Larsen and Zahner (2011) evaluated the self-efficacy beliefs of public health nurses following an on-line preceptor development course using a pre-test/post-test quasi-experimental design. Public health nurses often function in the preceptor role, teaching undergraduate nursing students in the clinical setting. Most of these nurses have received little training for this role. Although they may be excellent nurses, they are not experienced in the teaching role. The initial sample was 133 preceptors, but only thirty one of the preceptors completed all of the requirements for data analysis. Self-efficacy was tested before the intervention, immediately after the intervention, and three months following the intervention. Self-efficacy scores were significantly increased at both post intervention evaluations ($p = .000$). In this study, self-efficacy scores and knowledge of preceptor role scores were compared; no relationship was identified between these scores (Larsen & Zahner, 2011). Self-efficacy beliefs were independent of the preceptors' knowledge of the role. Self-selection for participation and the small sample size may have influenced the results, but this study also demonstrates the effect of educational strategies in increasing self-efficacy beliefs.

McLaughlin, Moutray, and Muldoon (2007) conducted a longitudinal study of 350 nursing students to examine the relationship between self-efficacy beliefs and

academic performance. Occupational self-efficacy and academic self-efficacy were measured at the beginning of the nursing program. Academic data were evaluated at the end of the program and compared to the self-efficacy measures. A 12% attrition rate was reported. They found no statistically significant difference in the self-efficacy scores of those who completed the program and those who did not. Occupational self-efficacy was associated with higher final grades (McLaughlin et al., 2007). This study benefitted from a large sample size; since the author's goal was to identify predictors of academic performance no attempt was made to identify students at risk and no interventions were implemented to improve student self-efficacy beliefs.

Goldenberg, Andrusyszyn and Iwasiw (2005) completed a descriptive study to evaluate the self-efficacy beliefs of 22 third year nursing students following a health teaching simulation exercise. The researchers developed a 63-item Baccalaureate Nursing Student Teaching-Learning Self-efficacy Scale to measure the SE beliefs of the participants. Self-efficacy was evaluated both before and after the simulation experience. The self-efficacy scores were compared using paired t-tests. Self-efficacy scores were significantly higher ($p=.001$) after the simulation intervention (Goldenberg et al., 2005). Again, self-efficacy beliefs were improved using an educational intervention.

Predictors of Success in Nursing Education

Nurse educators recognize the need to identify at risk students as a measure to decrease student attrition due to course failure, and as a measure to ensure success on the National Council for Licensure Examination for Registered Nurses (NCLEX-RN). The majority of nursing education research has focused on the latter. The assumption underlying this research is that NCLEX-RN performance can be predicted but there is a

lack of consensus on which variables offer the best predictive ability. This lack of consensus is related to the large number of variables that affect student performance and to the variation in educational practices across the country. A standardized, universal measure of nursing student performance is needed.

Academic Predictors

Intuitively, it makes sense that academic variables best predict student performance on the NCLEX-RN. Researchers have attempted to identify which academic variables best predict success on the NCLEX-RN. Barkley, Rhodes, and Dufour (1998) used a combination of course grades and National League of Nursing (NLN) achievement tests to develop a predictive model, the Risk Appraisal Instrument. Data were collected from the academic records of 81 baccalaureate nursing students. Statistically significant relationships were found between four of the NLN achievement tests and NCLEX-RN success: the Adult Medical-Surgical ($r = .5873$), Psychiatric ($r = .5221$), Obstetrics ($r = .5173$), and Pediatric ($r = .4238$) achievement tests (Barkley et al., 1998). Course grades were also significantly related to the NCLEX-RN; the number of C grades was strongly related to performance on the NCLEX-RN. The more C grades received, the higher the likelihood of NCLEX-RN failure (Barkley et al., 1998).

Barkley and associates' (1998) Risk Appraisal Instrument is a nine item questionnaire based on student course grades and NLN achievement scores. The Risk Appraisal Instrument was developed using a trial and error method, the authors suggest implementation of more robust statistical evaluation (Barkley et al., 1998). Earlier identification of students at risk would be helpful in terms of decreasing student retention. The correlation between the number of C grades and NCLEX-RN performance could

provide earlier identification of risk. In addition, this study demonstrates the potential benefit of using content-specific examination scores as a predictor of risk for academic failure, but more research is needed.

The relationship between course grades and NCLEX-RN performance was supported in studies by Beeson and Kissling (2001) and Beeman and Waterhouse (2001). In the former study, a predictive model was developed and tested using a large sample of 505 baccalaureate nursing graduates. Beeson and Kissling (2001) demonstrated that the number of C grades increased the student's chance for NCLEX-RN failure. Beeman and Waterhouse (2001) evaluated predictor variables using discriminant analysis. They report that 93.3% of their participants were correctly categorized by their model. Again, C grades had the highest influence on NCLEX-RN performance. In both studies, the predictive models were tested on students in one school of nursing, limiting the usefulness to other nursing programs. As with the study by Barkley and his associates (1998), predictive variables were not available until the senior year of the nursing program. Identification of at risk students needs to be made earlier in the course of study.

Non-Academic Predictors

Non-academic predictor variables are more difficult to validate often due to the small number of men and non-white participants in nursing research studies (Haas, Nugent, & Rule, 2004). As a result, there is little consensus reported as to the relationship between age, gender and ethnicity and NCLEX-RN performance. Many authors report no relationship between age, gender and performance on the NCLEX-RN (Alameida et al., 2011, Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Daley et al., 2003).

Haas and associates (2004) found both gender and ethnicity influenced NCLEX-RN performance. In their study, men failed more often than women. In addition, they found a significant relationship between ethnic origin and NCLEX-RN performance, but noted that the small number of non-white participants may have influenced this finding (Haas et al., 2004). Based on these studies, there is no evidence to support the predictive ability of non-academic variables related to nursing student success.

Standardized Tests as Predictors

Standardized tests are commonly being used in nursing education; one use of these exams is to predict readiness for the NCLEX-RN. Test results are used to guide remediation, and to guide progression policies. There are a number of studies that use the HESI Exit Examination as a predictor of NCLEX-RN success. Nibert, Young, and Adamson (2006) report a high degree of accuracy in predicting NCLEX-RN performance across many types of degree programs. In their fourth validation study, they report a predictive accuracy of 98.3% for the Registered Nurse exam and a predictive accuracy of 99.41% for Practical Nurses with an overall predictive accuracy of 98.6% (Nibert et al, 2006). One strength of this study is that it used a very large sample size (n=6800) and included Bachelor of Science in Nursing (BSN), Associate Degree in Nursing (ADN) and Practical Nurse (PN) graduates.

Lavendera and associates (2011) used the HESI Exit Examination as a predictor of NCLEX-RN performance; however, they also used Nursing GPA and D/F grades as predictor variables. They evaluated these variables both independently and together to determine the best predictor for NCLEX-RN success. The sensitivity, specificity, and predictive value were more accurate when all three variables were used as opposed to the

HESI Exit Examination alone. The negative predictive value (predicted successes that passed the NCLEX-RN) was 95% for the Exit Examination alone and 96% when all three indicators were used. The positive predictive value (predicted failures who failed) was 20% for HESI Exit Examination as opposed to 24% for all three indicators (Lavendera et al., 2011).

Daley and associates (2003) used an ex post facto design to compare the predictive value of the HESI Exit Examination to the Mosby Assess Test. They found that the HESI Exit Examination was a better predictor. One benefit of the HESI Exit Examination is that it is a computer based test, which allows students to get immediate feedback on their performance. The Mosby Assess Test is paper and pencil, and must be sent to the publisher for evaluation. One limitation of this study is that there was no effort to determine what students did to prepare for the NCLEX-RN after taking the predictor examination. Students who scored poorly on the predictor might have been motivated to prepare for the NCLEX-RN; conversely, students who did well might not have felt the need to study (Daley et al., 2003).

The predictive value of the HESI Exit Examination is quite good, and as a result, many nursing programs use performance on this and other standardized tests to prevent students identified at risk from progressing to graduation. Some schools have reported an increase in NCLEX-RN performance based on these progression policies, while others have reported little to no change in pass rates (Spurlock & Hunt, 2008).

Spurlock and Hunt (2008) sought to evaluate the effectiveness of HESI Exit Examination as a predictor when they noted that NCLEX-RN pass rates were not improving in spite of the implementation of a stringent progression policy. Using a

retrospective design, exit exam scores were compared with NCLEX-RN results. Students were required to pass the HESI Exit Examination with a score of 850, the number of test repeats required to reach this score was also recorded. In their statistical analysis, the HESI Exit Examination was better able to predict success than failure; however, they found that a score of 900 was required to predict success. Furthermore, the only reliable predictor was the first attempt. Although students were able to score higher on subsequent attempts, this didn't affect the NCLEX-RN outcome (Spurlock & Hunt, 2008). The authors do not discuss what interventions, if any, were implemented between test attempts. This research does raise some concerns about progression policies that prevent students from graduating based on their performance on standardized tests alone.

While there are several studies that demonstrate the predictive ability of the HESI Exit Examination, there are not many studies that have evaluated the Assessment Technologies Incorporated (ATI) Comprehensive Predictor in relation to NCLEX-RN success. Alameida and associates (2011) sought to determine the relationship between ATI Comprehensive Predictor scores and NCLEX-RN performance. There is not a cut score recommended by ATI on this examination, scores are reported as predictive probability of passing the NCLEX-RN, so a second question addressed in this study was what scores was associated with first time NCLEX-RN success. A significant relationship was found between the ATI exam and NCLEX-RN performance. The mean predictive probability score associated with first time passage on the NCLEX-RN was 80.47 (SD 22.75). The mean predictive probability scores associated with failure was 36.34 (SD 28.26). These authors recommend the use of this test as a guide for remediation interventions rather than as a progression tool (Alameida et al., 2011).

Humphreys (2008) evaluated both the HESI Exit Examination and the ATI Comprehensive Predictor and found them to be reliable indicators of NCLEX-RN performance. Standardized test are valuable predictors of success on the NCLEX-RN, but they are administered too late in the nursing program. Standardized content examinations, which are usually administered earlier in the program, could potentially be useful to identify at risk students but further research is needed.

Standardized Testing in Nursing Education

Many nursing programs have expanded their use of standardized testing to include content examinations that can provide a formative assessment of student achievement. Little empirical evidence is available to guide faculty decisions regarding the use of these tests to predict student progression or remediation.

Nibert, Young, and Britt (2003) surveyed 158 nursing program administrators to evaluate their use of progression policies, their benchmarks for remediation, and their remediation practices. All of the programs surveyed used the HESI Exit Examination to evaluate student preparation for the NCLEX. About one third of those responding (30.2%) reported that their program had a progression policy in place; controlling student progression by either preventing graduation, by preventing course completion, or by denying NCLEX eligibility. Although most programs used 85 as their benchmark score, the reported range was 77 to 90. Few programs required remediation, although 88.89% required retesting (Nibert et al, 2003).

Spurlock (2006) raises several concerns about using a single indicator, such as an exit examination, in a way that profoundly affects a student's educational trajectory. Several authors have reported on the reliability of the HESI Exit Examination as a

predictor for the NCLEX-RN; but Spurlock states that the test is more accurate at predicting success than at predicting failure. A second concern is that the examination is given late in the nursing program. Students who are allowed to progress through an entire nursing program can be unfairly prevented from graduation based on the results of a single test (Spurlock, 2006).

Morrison and associates (2004) provide a description of the examinations available through HESI, how they were developed, and their reliability statistics. Using the NCLEX-RN blueprint, the questions on HESI examinations are written and evaluated by nurse educators. Test questions are evaluated in terms of difficulty, which is considered when the examinations are scored. In addition to the HESI exit exam, there are eight specialty examinations available to RN students. These 50 item examinations measure content-specific nursing knowledge based on a testing blueprint developed by HESI nurse educators. The reliability coefficients for these exams ranged from 0.86 to 0.99 (Morrison et al., 2004).

The predictive ability of the HESI Exit Examination is the focus of much research. These authors report 96.36% - 98.46% accuracy in predicting NCLEX-RN success and 96.4-100% accuracy in predicting NCLEX-RN failure (Morrison et al., 2004). These authors state there is an increase in the use of HESI specialty examinations (Morrison et al., 2004); but there is no literature that details this practice or its effectiveness. Using these content examinations as early predictors of risk for failure could answer Spurlock's (2006) concerns about basing student decisions on a single examination given late in the nursing program, especially if the specialty examination score is used to trigger remediation for students who score below the benchmark.

Holstein and associates (2006) describe how their school of nursing implemented a testing/remediation plan using ATI materials. Students take the Test of Essential Academic Skills (TEAS) prior to admission; the results of the examination are used as part of the admission criteria. Once admitted to the program, students take the appropriate Content Mastery Series examinations. If the student does not meet the benchmark score on the Content Mastery Series exam, he/she must complete a self-directed remediation plan. Once remediation is completed, the student takes a non-proctored computerized test. This process is repeated until the student can achieve a score of 90% on the non-proctored examination. Finally, students take the Comprehensive Predictor examination. Students are required to pass this examination at the 65th percentile, which has a 90% predictive probability of passing the NCLEX-RN (Holstein et al., 2006).

Holstein et al. (2006) report that if the student fails to reach that benchmark, he/she is required to complete a non-proctored examination until a score of 90% is reached. The non-proctored examinations provide the student with rationales for the correct answers which help develop the student's critical thinking process (Holstein et al., 2006). Pre-implementation NCLEX-RN rates are provided by the authors, but no statistical information is provided by these authors to support the benefit of these interventions. The authors also do not identify the benchmark used for the Content Mastery Series exams; there is no way to know when the remediation intervention is triggered.

Heroff (2009) describes the implementation of a progression policy used at a rural community college, implemented due to a decrease in the school's NCLEX-RN pass rate

during the 2004-2005 academic year. The school already had a testing plan in place using the ATI Content Mastery Series examinations, but had not previously enforced a passing score. Students are required to take two non-proctored examinations and score 90% prior to taking the proctored examination. A remediation contract is implemented for students who fail to achieve the benchmark score of Level 2 proficiency on the proctored examination. The student develops his/her remediation plan based on the Individual Performance Profile provided by ATI. Failure to achieve Level 2 proficiency on the proctored exam results in an incomplete grade. The student has until the second week of the next school term to clear this incomplete grade; failure to do so results in a failing grade for the course (Heroff, 2009).

Heroff (2009) found that in the initial implementation, faculty met individually with students to implement the remediation contract, which resulted in an increased faculty workload. Students also expected the faculty to ‘teach’ their remediation. The policy was revised so that contracts were signed at the beginning of each academic year instead of after each course. No students were lost from the program as a result of the implementation of this progression policy (Heroff, 2009). As in the previous study, no data to support effectiveness of this intervention is provided.

Jacobs and Koehn (2006) describe the implementation of a testing program at a Midwestern university. Faculty at this university agreed to replace previous paper and pencil tests with ATI testing products. The Test of Essential Academic Skills examination replaced the previous screening entrance examination; the Comprehensive Predictor replaced the previously used exit examination. In addition, the faculty implemented the Content Mastery Series examinations in the appropriate content areas.

The students are required to remediate if they fail to score in the 60th percentile. Students are provided with a detailed contract which specifies the requirements for remediation. The student is responsible for developing the study plan and for taking a non-proctored examination. Students must score 90% on the non-proctored examination to demonstrate that remediation is complete. If the student fails to complete the remediation, he/she receives an incomplete grade for the course which prevents progression to the next semester. The progression policy was implemented for all students in the program. The first cohort of students who took all of the Content Mastery Series examinations had not yet taken the NCLEX-RN, so pass statistics were not available for these students. The authors do report a pass rate of 92% for the class who benefitted from partial implementation of the content examinations. The pass rate had previously been reported as an average of 86% (Jacobs & Koehn, 2006).

ATI (n.d.) recognizes the need for earlier identification of at risk students as a measure to decrease attrition in nursing schools. In their research, the relationship between the Content Mastery Series examinations and the Comprehensive Predictor examination was evaluated to determine whether the Content Mastery Series examinations could be used to predict performance on the Comprehensive Predictor. ATI researchers analyzed data from 2440 RN students who had taken all nine Content Mastery Series examinations and the Comprehensive Predictor. Correlations were calculated using the percentage score on the Content Mastery Series examinations and the Comprehensive Predictor (ATI, n.d.).

Assessment Technologies Incorporated (n.d.) found that correlations on these examinations were highest for the Adult Medical Surgical examination ($r = .577$) and

lowest on the Community Health examination ($r=.376$). Benchmarks are usually set using the ATI proficiency levels, so a comparison was also made, using Level 2 proficiency as the benchmark, between the number of successes on the Content Mastery Series examinations and the score on the Comprehensive Predictor. The mean Comprehensive Predictor score was highest for students who passed all nine Content Mastery Series examinations with level 2 proficiency; mean scores dropped an average of 2.45 points for each examination that was not passed at level 2 proficiency. Following analysis of the relative weight of each examination in predicting performance on the Comprehensive Predictor examination, the Adult Med-Surgical ($R^2=14.9\%$), Nutrition ($R^2=13.9\%$), and Maternal-Newborn ($R^2=12.9\%$) examinations were found to have the highest contribution to the Comprehensive Predictor score (ATI, n.d.).

It is noted that all examinations except Community Health made a “substantial” impact on the Comprehensive Predictor score (ATI, n.d.). This data supports the use of the Content Mastery Series examinations to identify students at risk for academic failure. Implementation of remediation strategies for these students could help decrease program attrition.

Remediation Interventions in Nursing Education

Not surprisingly, like the predictors of success, remediation interventions are also related to performance on the NCLEX-RN. These interventions are often implemented at the end of the nursing program, which fails to address the needs of students who experience early course failure. A common remediation intervention is the development of a course for students identified as at risk.

Sifford and McDaniel (2007), report the use of a two credit-hour course for students who scored less than 850 on the HESI Exit Examination. Course topics included test taking strategies, interventions to cope with test anxiety, and practice taking NCLEX style questions. Students were given the HESI Exit Examination again at the end of the semester. Sifford and McDaniel report a significant increase in test scores following this intervention. The mean score prior to the intervention was 735.62 and increased to 810.17 following the intervention, demonstrating the benefit of remediation as an intervention. Other authors have reported the addition of a similar type of class for all senior nursing students, not just those identified as at risk (Bonis, Taft, & Wendler, 2007; Frith, Sewell, & Clark, 2008).

McGann and Thompson (2008) used semester grade point average to identify at risk students. Students who fell below the program standard of a 2.67 grade point average were allowed to enroll in a remedial course rather than withdrawing from the nursing major. The grade point average requirement was established based on past experiences with student performance on the NCLEX-RN. Using a combination of qualitative and quantitative methods, these authors evaluated the risk factors faced by senior nursing students who fell below the program grade point average requirement of 2.67 (McGann & Thompson, 2008).

McGann and Thompson (2008) reported three important interventions in this study. First, students were enrolled in a course designed for at risk students, and offered test taking strategies, learning styles inventory, and content review. Students were required to write weekly journal entries based on a prompt provided by the faculty. Second, students were asked to develop an Individualized Plan for Improvement that

included problem identification, goal setting, and evaluation activities. Finally, students were assigned a faculty mentor who met with the student weekly. The faculty mentor assisted the student in reviewing and revising the individualized improvement plan (McGann & Thompson, 2008).

Outcomes from McGann and Thompson's study following this intervention were an increase in the semester grade point average and an NCLEX-RN pass rate of 87% (2008). No attempt was made to correlate predictor variables with NCLEX-RN success. In the analysis of qualitative data, students gained confidence through the development of the Individualized Plan for Improvement. Many were able to gain insight into their risk factors through this reflective activity (McGann & Thompson, 2008). This study would have been strengthened with better statistical support for its effectiveness, but does demonstrate benefit of intervention for at risk students. These students were in their senior year of nursing school.

Reinhardt et al. (2012) developed a remediation course following review of the literature to identify best practices for remediation. In their review of the literature, they identified common components to a remediation plan including a specialized course led by faculty and an individualized plan based on the student's learning needs. Test taking strategies which included coping with test anxiety was also included in many of the remediation plans. These authors used these findings to implement their own course. Students repeated the standardized test at the end of the course and most went on to pass the NCLEX-RN on the first attempt. In each of these studies, remediation interventions were provided during the final year of nursing school; NCLEX-RN preparation should begin much earlier in the nursing program for the best results (Heroff, 2009).

Pennington and Spurlock (2010) completed a systematic review of remediation interventions reported in the literature. To be included for review, the studies had to be dated after 1994 when the NCLEX-RN examination was changed to the computerized format, include pre licensure programs, and focus on remediation interventions. This resulted in eight studies evaluated in the systematic review. None of the studies reviewed used an experimental design. Half of the studies evaluated a new course that was developed to improve student outcomes. All of the studies reviewed used the NCLEX-RN as their primary outcome measure; most of them used a standardized test as a secondary outcome measure. Common problems identified in these studies, were small sample sizes, lack of demographic information, and unclear descriptions of the interventions used (Pennington & Spurlock, 2010). This lack of clarity makes it almost impossible to replicate interventions in order to validate the benefit of a particular remediation strategy.

In summary, at risk students are not currently identified until their final year of the nursing program, and their at risk status is based on their predicted performance on the NCLEX-RN. This practice misses an opportunity to identify at risk nursing students in the first year of nursing school, before they experience a course failure. Early identification and implementation of remediation could potentially improve student outcomes and reduce program attrition. Standardized testing programs commonly in use in nursing education could be valuable in identifying at risk students early in their educational trajectory. These programs also offer individualized remediation materials that could foster nursing student success.

Self-efficacy beliefs can be fostered through Enactive Mastery experiences such as the proposed remediation intervention. There is evidence to support improved self-efficacy beliefs following such an intervention, but there is a gap in the literature regarding performance improvement. The present research evaluated the relationship between perceived academic self-efficacy beliefs, remediation and academic performance in undergraduate prelicensure nursing students. Chapter three presents the methodology used to evaluate this relationship.

CHAPTER III

METHODOLOGY

Research Design

The purpose of the present study was to identify the relationship between perceived self-efficacy beliefs, remediation, and academic performance in pre-licensure baccalaureate nursing students. This study was conducted using a prospective, correlational research design. A prospective design allows the researcher to identify the time relationship between variables, since the presumed cause is identified and tested prior to the presumed effect (Polit & Beck, 2008). Correlational research uses quantitative analysis to evaluate the relationship between variables, but does not test causality (Polit & Beck, 2008). In this study, the relationship between self-efficacy beliefs, remediation, and academic performance was evaluated.

This research sought to answer the following research questions:

- Q1 What is the relationship between the Perceived Academic Self-efficacy beliefs of pre-licensure, undergraduate nursing students, as measured by the Perceived Academic Self-efficacy Scale (PASES) and their use of Assessment Technologies Incorporated (ATI) study materials prior to taking a standardized nursing exam?
- Q2 For students identified as at risk for failure (those who score less than Level 2 proficiency on a standardized nursing exam), what is the relationship between the use of a structured remediation plan and subsequent performance when retaking the standardized nursing exam?
- Q3 What is the relationship between successful completion of the structured remediation plan and the subsequent Perceived Academic Self-Efficacy score?

Population

The population for this research was nursing students enrolled in pre-licensure, baccalaureate nursing programs at public colleges and universities in California. The California Board of Registered Nursing (BRN) reports annually on the demographic information of students currently enrolled in California nursing programs. According to the annual report by Waneka and associates (2013) 4,771 students are enrolled in a baccalaureate nursing program in a California public college or university. Not surprisingly, most of these students are female (81.2%). The majority of these students are less than 30 years of age (80.6%), 31-40 year olds make up 13.5% of the student population, and the remaining 5.9% are over 40 years of age. The ethnic background of these students is primarily Caucasian (40.5%); other ethnic groups include Asian (27.3%), Hispanic (14.3%), Filipino (11%), African American (2.7%), and Native American (0.6%) (Waneka et al., 2013).

Sample

The initial plan was to recruit students from a total of six public, pre-licensure baccalaureate nursing programs; three from Northern California and three from Southern California. However, one of the schools from the Southern California region was lost due to a scheduling difficulty. Geographically, Southern California included schools south of Fresno, California. The intention was to recruit a large, diverse sample for this research for the highest possible power and effect size. According to Polit and Beck (2008) as sample size of 118 was needed to achieve an effect size of .3 and a power of .80 at an alpha of .05. Actual sample data will be discussed in Chapter 4.

Inclusion criteria to participate in this research included admission in a pre-licensure, baccalaureate nursing program at a public university in California, and enrollment in a course in which the ATI Adult Medical-Surgical Nursing Content Mastery Series examination was to be administered during the Spring or Summer academic term. It was assumed that students admitted to a nursing program would be over 18 years of age and English speaking. Students who were-admitted following a course failure were excluded from this study, since prior course failure could impact self-efficacy beliefs. Students who were already licensed as registered nurses were also excluded from the study.

Setting

The study was conducted at five public California University campuses that offer pre-licensure, baccalaureate nursing programs. See Table 1 for the characteristics of each of the six schools selected for participation. An initial survey was sent to the dean or designee at each of the public, prelicensure baccalaureate nursing programs in California to verify that the program used the ATI Content Mastery Series as part of their curriculum, to determine in which term the Medical Surgical Content Mastery Series examination was to be given, and that access to students would be granted. This survey can be found in Appendix A. Once the pool of eligible nursing programs was identified, three programs were selected from Northern California and three programs were selected from Southern California. Institutional Review Board (IRB) approval was obtained at each of the participating universities prior to data collection.

Table 1
Characteristics of Participating Schools

<u>School Designation</u>	<u>Region</u>	<u>Campus size (Fall 2012)</u>	<u>Nursing Majors (Prelicensure)</u>	<u>Eligible Participants</u>
1	N	22, 565	395	80
2	N	16, 470	184	40
3	N	28, 539	315	80
4	S	36, 279	399	31
5	S	8,520	149	62
6	S	21,755	202	63

Ethical Considerations

Permission to perform research using human subjects was first obtained from the University of Northern Colorado (UNC) Institutional Review Board (IRB). This research was approved for expedited review since it posed minimal risks to participants, using non-invasive methods of data collection. Following approval at UNC, IRB approval was obtained from each of the participating universities. IRB approval letters can be found in Appendix B. All students who met the inclusion criteria were invited to participate in this study.

The researcher made arrangements to meet with potential participants prior to the scheduled administration of the ATI Medical Surgical Content Mastery Series examination. At this meeting, the researcher explained the purpose of the study and provided an overview of the activities participants would be asked to complete during the

study. Informed consent was provided both verbally and in writing (Appendix C) which outlined the voluntary nature of participation in the study, and of the participant's right to withdraw at any time. Two of the participating schools required minor, institution specific, changes to the consent documents. The consent documents can be found in Appendix C. Potential participants were given time to ask questions before signing the consent document. Minimal risks to students were expected, other than the potential anxiety related to poor academic performance. This anxiety was not anticipated to be any higher in the research participants than it was for nursing students in general. Student anonymity was assured by assigning each participant a five digit identification number. A master list was generated with both the student names and identification numbers, and stored separately from the data in a locked cabinet in the researcher's work office. Students were asked to black out their name on the ATI Individual Performance Profile and to write their identification number on the profile in order to assure their privacy. Most participants did not black out their names prior to mailing their reports and so the researcher did this upon receipt of the reports.

Instruments

The instruments used in the pre-remediation phase of this study included the Perceived Academic Self-Efficacy Scale (PASES), a demographic questionnaire, an examination preparation survey, and the ATI Individual Performance Profile. Following remediation, the PASES, the re-test ATI Individual Performance Profile, and a remediation questionnaire were used. See Table 2: Description of Measures. Copies of all instruments can be found in Appendix D.

Perceived Academic Self-Efficacy Scale

The Perceived Academic Self-Efficacy Scale (PASES) is a 22-item questionnaire that asks the student to rate his or her confidence in tasks that have been identified as important for academic success (Havens, 2008). Each item is given a score between 0 (I cannot do at all) and 100 (certain I can do). A mean score is derived by dividing the total score by the number of items on the instrument. Reliability statistics were reported by Havens (2008) using coefficient alpha .90 and split-half coefficient .96 indicating that this is a reliable measure of academic self-efficacy.

Demographics

Participants were asked to self-report demographic information using a questionnaire. Age, gender, ethnicity and marital status data were used to describe the sample.

Pre-Examination Preparation

Students were asked to identify what study materials were used in preparation for taking the Content Mastery Examination, and how much time (in minutes) was spent in preparation for the examination.

Individual Performance Profile

The Individual Performance Profile is generated following every Assessment Technologies Incorporated examination. The Individual Performance Profile provides the student with a detailed report that includes his or her proficiency level, total score (percentage) as well as performance in subcategories. The Topics to Review section

identifies content areas that need further study. This report is used to generate the on-line focused review which is the basis of the ATI remediation plan.

Remediation Questionnaire

Students were asked to complete a six item Remediation Questionnaire. This is a self-report of their remediation activities using a scale from 0 (didn't do at all) to 100 (completed). This questionnaire was developed by the researcher using the remediation activities that the students were asked to complete after accessing their Individual Performance Profile. A mean score was computed by dividing the total score by the number of items on the survey. This score indicated how much of the remediation was actually completed. A higher score indicates a more thorough completion of the structured remediation plan.

Table 2
Description of Measure

Variable	Description
Academic Self-Efficacy	Perceived Academic Self-efficacy Scale (PASES) is a 22 item scale which asks students to assess their confidence in meeting academic challenges. Each item is rated on a scale from 0 (I cannot do at all) to 100 (Certain I can do). A mean score is computed by dividing the total score by the number of items. A higher score indicates a stronger sense of academic self-efficacy.
Pre-Examination Preparation	The demographic questionnaire contains 7 items which detail the type and amount of preparation prior to the CMS examination. Total # of minutes spent in preparation (demographic questionnaire)
Academic Performance	Total percentage score on the ATI Medical Surgical Content Mastery Series examination.
Remediation	Remediation Questionnaire is a 6 item survey which asks students to rate their remediation activities. Each item was included in the instructions for completing remediation. Each item is rated from 0 (I didn't do at all) to 100 (I completed all). A mean score is computed by dividing the total score by the number of items. The higher the score, the more complete the remediation.

Data Collection

An overview of the data collection plan is presented in Table 3. The researcher made contact with the designated representative from each school of nursing to arrange the logistics for data collection, including arranging for computer access for the repeat administration of the Content Mastery Series examination. Approval to recruit students was granted by the dean or designee at each nursing program. Access to the students was

arranged at the convenience of the individual course instructor. In most programs, this was either at the beginning or end of a regularly scheduled class meeting. The instructor was provided with an overview of the research plan, copies of the research instruments, and the inclusion and exclusion criteria. The researcher visited each school twice; the first visit was prior to the first administration of the Content Mastery Series examination to collect baseline data. Students were asked to complete a demographic questionnaire, the examination preparation survey, and the PASES. Students were also provided with the benchmark cut score for the Content Mastery Series examination and written instructions for completing remediation, if needed. The proctored Content Mastery Series examination was administered by the nursing program faculty or designee as part of the normal curriculum. Students were provided with a self-addressed, stamped envelope and were asked to mail their Individualized Performance Profile to the researcher. Students were given a two-week time frame to complete their remediation. Once the students completed their remediation, the researcher was to visit each school to oversee the retest, administer the PASES, and a questionnaire about the remediation experience. In schools that required remediation and retesting, the researcher did not make a second visit, rather follow up forms were completed electronically. To assure that data were accurately linked between pre-test and post-test, each student was assigned a five digit number and all documents were labeled with that number.

Table 3
Data Collection Plan

Phase	Activities
Preliminary	Send out School Survey Collect results Defend Proposal Select Participating Schools Submit IRB to UNC and to participating Schools
Initial Contact (All Students)	Introduce study to Students Obtain Consent Provide Remediation Instructions Provide Self Addressed Stamped Envelope to Participants (To mail exam results) Administer Instruments: *Demographic Questionnaire * Exam Prep Questionnaire *PASES
Standardized Test (All Students)	ATI, Inc. Adult Medical Surgical Nursing Content Mastery Series Examination
Follow-up (At risk Students)	Administer Instruments: *Remediation Questionnaire *PASES * Re-test Adult Medical Surgical Examination

Data Analysis

Participants who had missing data were contacted by email and asked to submit any missing documents. Those who failed to do so were removed from the final database prior to data analysis. Data were entered into the Statistical Package for the Social Sciences (SPSS; Version 20). A significance level of .05 was used for all correlation analyses.

Descriptive Analysis

The demographic characteristics of the sample were described using means, standard deviations, and frequency distributions as appropriate. Frequency distributions and percentages were used for categorical variables. Means and standard deviations were used for continuous variables. See Table 3: Data Analysis.

Bivariate Analysis

- Q1 What is the relationship between the Perceived Academic Self-efficacy beliefs of pre-licensure undergraduate nursing students, as measured by the Perceived Academic Self-efficacy Scale (PASES) and their use of ATI study materials prior to taking a standardized nursing exam?

Data for the first question included the mean score on the PASES and the pre-examination preparation questions from the Examination Preparation survey. Pre-examination preparation was recorded in minutes. Preparation time was compared using the product-moment of correlation coefficient (Pearson's r). Pearson's r is used to evaluate the relationship between two variables at the interval or ratio scale, which is appropriate for this data (Polit & Beck, 2008).

- Q2 For students identified as at risk for failure (those who score less than Level 2 proficiency on a standardized nursing exam), what is the relationship between the use of a structured remediation plan and subsequent performance when retaking the standardized nursing exam?

Data for the second question included the change in score on the Content Mastery Series examination following remediation and the mean score on the Remediation Questionnaire. This data is also at the interval level of measure, so once again, the Pearson's r was used to evaluate the relationship between these variables.

- Q3 What is the relationship between successful completion of the remediation plan and the subsequent Perceived Academic Self-Efficacy score?

The third question evaluated the change in score on the PASES to the change in score on the Content Mastery Series examination following successful remediation. This data is at the interval level and was also evaluated using the Pearson's r (See Table 4).

Table 4
Data Analysis

Question	Data	Data Level	Statistical Test
Q1	PASES Mean	Interval	Pearson's r
	Total Minutes of Preparation	Interval	
Q2	CMS score change	Interval	Pearson's r
	Remediation Survey Mean	Interval	
Q3	CMS score change	Interval	Pearson's r
	PASES Mean Score change	Interval	

In this study, the relationship between Perceived Academic Self-Efficacy, Remediation, and Academic Performance of prelicensure, baccalaureate nursing students was evaluated using a prospective, correlational design. Participants were recruited from five public baccalaureate nursing programs in California. The results of this study are presented in Chapter Four.

CHAPTER IV

RESULTS

Sample Selection and Response Rate

The purpose of this study was to identify the relationship between self-efficacy beliefs, remediation and academic performance for pre-licensure baccalaureate nursing students in California. Participants were recruited from six public prelicensure nursing programs across California. A summary of the participation details by school is presented in Table 5. A total of 356 students were identified as eligible for participation (i.e. were enrolled in a course in which the Assessment Technologies Incorporated (ATI) Adult Medical Surgical Nursing examination was given as part of the regular curriculum). Of those eligible for participation, 152 (42.7%) students initially agreed to participate in the study. Students were asked to complete most of the pre-examination research instruments at the time of recruitment; however, some students requested to mail the Examination Preparation instrument with their examination results since they had not yet had time to study for the examination. About one-third of the participants failed to return their examination results as instructed in spite of multiple emails from the researcher. Four students formally withdrew from the study after completing the ATI test; two other students were excluded due to a prior nursing course failure. Participants with incomplete data ($n = 52$) were removed from the database prior to statistical analysis, leaving a total of 94 participants with complete data for analysis. A response rate of 26.4% was computed by dividing the actual number of participants ($n = 94$) by the total number

of eligible participants (n=356). It should be noted that the researcher was not able to recruit students from one of the six schools due to a scheduling conflict which negatively impacted the overall response rate.

Forty-six (48.9%) of the 94 participants were identified as at-risk and in need of the remediation intervention. Of those identified as at risk 39 (84.8%) completed the remediation and retested. A post hoc power analysis was done to evaluate the implications of the decrease in sample size on the study results. At a confidence level of .05 with an effect size of .30 the power for the analysis of the first research question (n=94) was .84. At a confidence level of .05, with an effect size of .30 the power for the remaining research questions (n=39) was .46. The researcher in this study made every effort to recruit an adequate sample size; however, this study was plagued with poor follow through by the participants. These recruiting and follow through issues are discussed more thoroughly in Chapter Five.

Table 5
Summary of Participation by School

School	1	2	3	4	5	6
Potential Participants	80	40	80	31	62	63
Consent	36	11	43	13	49	0
Q1 Complete	6	9	23	9	47	0
Incomplete	23	2	19	2	0	0
Withdrew	1	0	1	2	0	0
Excluded	0	0	0	0	2	0
Needed Retest	1	4	3	2	36	0
Retest Completed	0	0	3	0	36	0

Descriptive Analysis

Data analysis will begin with a descriptive analysis of the research variables including the sample demographics and the research tools. Categorical data is reported in frequencies and percentages. Continuous data is reported using the mean and standard deviation. Table 6 provides the sample demographic characteristics for region, gender, age, relationship status and ethnicity.

Sample Demographics

Region. Participants were recruited from six nursing programs across California in an attempt to adequately represent the diverse ethnic, gender, and age characteristics of undergraduate nursing students. Of the eligible participants, 200 students attended a Northern California school and 156 students attended a Southern California school. This difference can be explained by the difference in class sizes in the region. Northern California class sizes were higher (mean of 66.7 students) as compared to Southern California (mean of 52 students). In this study there were more students from Southern California ($n = 56$, 59.6%) as opposed to Northern California ($n = 38$, 40.4%). Students from the researcher's institution were from the Southern California region and had a higher participation rate than that of other institutions.

Gender Not surprisingly, 85.1% ($n = 80$) of the participants were female while only 14.9% ($n = 14$) were male. This is congruent with the demographics of California nursing programs as reported by Waneka and associates (2013).

Age. Participants ranged in age from 18 years to 51 years. The median age of participants was 23 years. Approximately 81 percent of students were less than 30 years old ($n = 76$). Only 7.4% ($n = 7$) were over forty years old, see Figure 1.

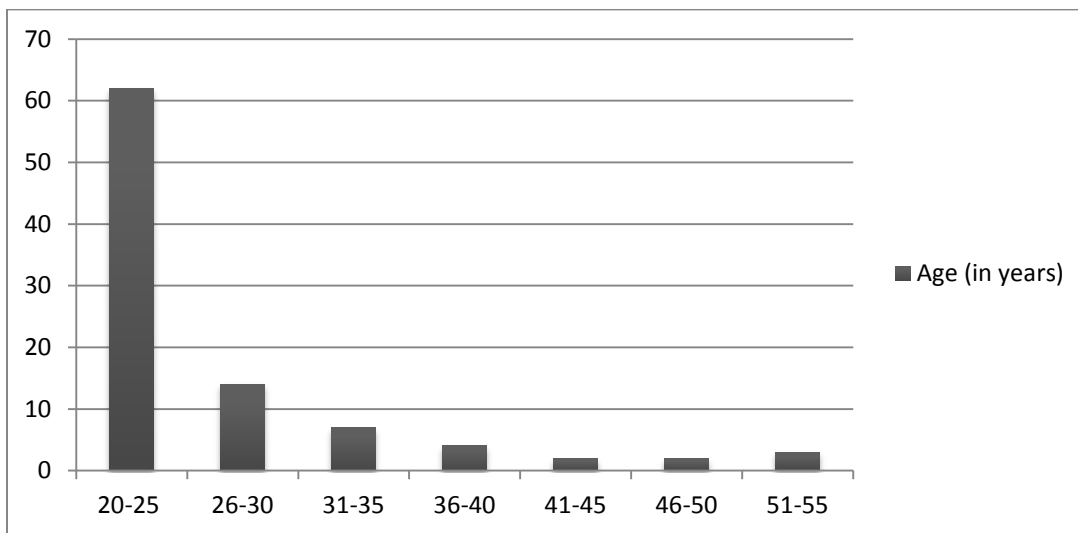


Figure 1. Age of Participants

Relationship Status. Participants were given three options to report their relationship status: Single, Married or In a Relationship. Almost 61% ($n = 57$) of participants reported being either Married or In a Relationship. The remaining participants ($n = 37$) reported being single.

Ethnicity. The most commonly reported ethnic group was Caucasian ($n = 51$), followed by Asian ($n = 22$) and Hispanic ($n = 14$). The remaining ethnic groups were represented by four or less participants each, see Figure 2. There were no African American participants. This ethnic distribution is fairly representative of California nursing students (Waneka et al, 2013). There is an identified need to increase the ethnic diversity of the nursing workforce in California; these limitations are discussed further in

Chapter Five. Table 6 provides the sample demographic characteristics for region, gender, age, relationship status and ethnicity.

Table 6
Demographic Characteristics of Sample

Characteristic	Percentage of Sample	Number of Participants
<u>Region</u>		
North	40.4%	38
South	59.6%	56
<u>Gender</u>		
Male	14.9%	14
Female	85.1%	80
<u>Age (in years)</u>		
20-25	66.0%	62
26-30	14.9%	14
31-35	7.4%	7
36-40	4.3%	4
41-45	2.1%	2
46-50	2.1%	2
51-55	3.2%	3
<u>Relationship Status</u>		
Single	39.4%	37
Married	25.5%	24
In a relationship	35.1%	33
<u>Ethnicity</u>		
Asian	23.4%	22
Hispanic	14.9%	14
Caucasian	54.2%	51
Multi-Ethnic	1.1%	1
Filipino	1.1%	1
Pacific Island	4.2%	4
Native American	1.1%	1

Research Instruments

Perceived Academic Self-Efficacy Scale. The Perceived Academic Self-Efficacy Scale (PASES) (Havens, 2008) was given to all participants as a baseline measure of their academic self-efficacy beliefs. A mean score was derived for each participant and a higher score indicated a higher level of academic self-efficacy. The PASES was given twice during the study; pre examination scores were labeled as PASES 1 and post remediation scores were labeled as PASES 2. The mean score for the PASES 1 was 80.2 (SD 10.3). The mean score for the PASES 2 was 81.9 (SD 10.2).

Reliability coefficients were computed for both the PASES 1 and the PASES 2 using Crohnbach's Alpha. Crohnbach's alpha for the PASES 1 was 0.891 which is generally considered to be a good value. Crohnbach's alpha for the PASES 2 was 0.914 which is considered to be an excellent value.

Examination Preparation Survey. Participants were asked to self-report their study activities prior to the administration of the ATI Adult Medical Surgical Nursing examination. Many participants had difficulty quantifying this. The researcher had to seek clarification from many participants who simply wrote in that they had studied 'a lot'. Participants reported as little as 0 minutes to as many as 29,400 minutes (mean 3494 minutes, SD 5446.7). The wide range in scores is explained by difference in how students perceived their examination preparation. Some participants counted all of their reading and study activities as preparation for this examination while others focused on the time period immediately prior to the examination administration. Figure 3 shows the detailed study activities reported by participants.

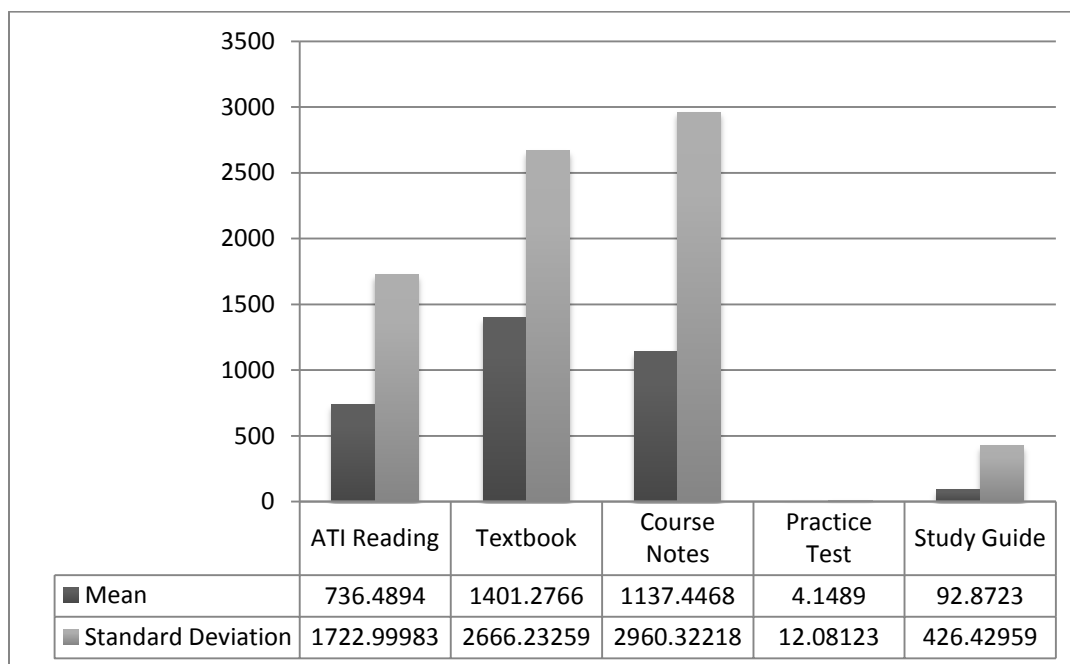


Figure 2. Comparison of Examination Preparation Survey Subscores

Remediation Survey. The Remediation Survey is a six item survey intended to measure the degree to which participants completed the remediation intervention. This survey is scored in the same manner as the PASES with a mean score derived for each participant. Higher scores indicate a more thorough remediation experience. Overall, remediation scores were low (mean 50.3, SD 18.9). Cronbach's Alpha for the Remediation survey was computed at 0.71 indicating adequate reliability for this instrument. Figure 4 provides a more detailed view of the remediation activities reported by participants in this study.

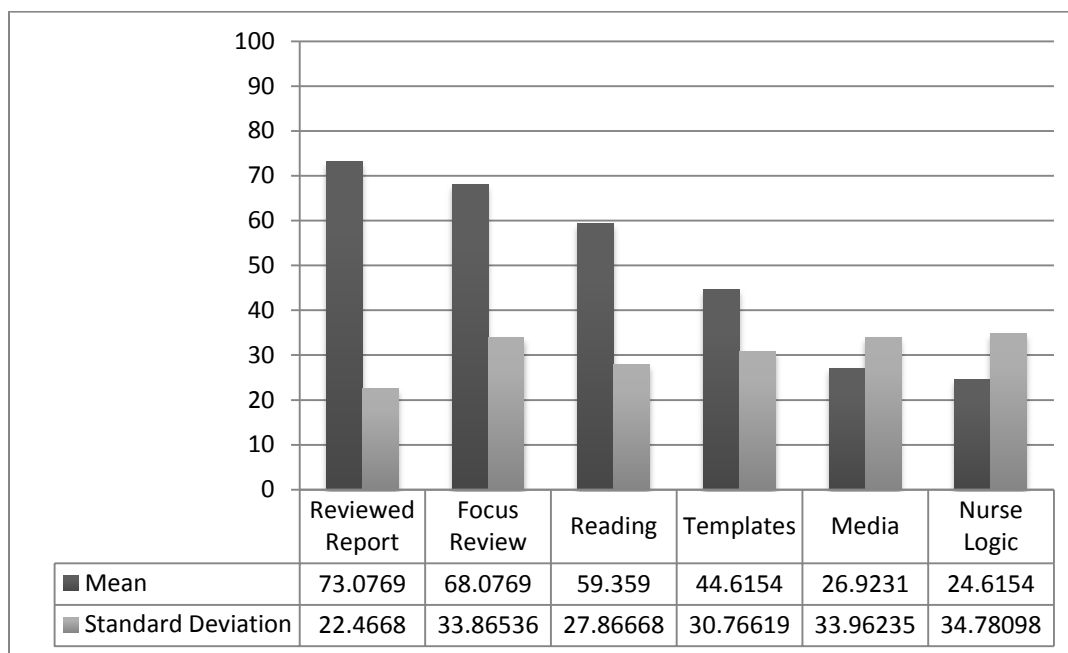


Figure 3. Comparison of Remediation Survey Subscores.

Assessment Technologies Incorporated Adult Medical Surgical Nursing Content Mastery Series Examination. The ATI Adult Medical Surgical Nursing Examination was given twice during this study. All participants took the examination as a measure of their academic performance; this score is labeled ATI1. The mean score for the ATI1 was 65.48 (SD 9.1). The cut score for Level 2 proficiency is 64.4%.

Students who scored less than Level 2 proficiency were identified as at risk, completed the remediation intervention and then repeated the ATI examination; this second score is labeled ATI2. The mean score for ATI2 was 64.15 (SD 7.1). It is not surprising that the ATI2 mean is lower than the ATI1 since all participants in this group were identified as at-risk due to low examination scores.

Bivariate Analysis

The purpose of the present research was to identify the relationship between perceived academic self-efficacy, remediation, and academic performance in prelicensure baccalaureate nursing students. Pearson correlations were used to evaluate these relationships; a confidence level of .05 was used to evaluate the significance of these relationships in terms of the research questions.

Relationship between Self-efficacy beliefs and Examination Preparation

- Q1 What is the relationship between the Perceived Academic Self-efficacy beliefs of pre-licensure undergraduate nursing students, as measured by the Perceived Academic Self-efficacy Scale (PASES) and their use of ATI study materials prior to taking a standardized nursing exam?

The relationship between perceived academic self-efficacy and examination preparation was to be evaluated by comparing the mean score on the PASES1 with the total number of minutes calculated on the Examination Preparation Survey. Analysis of the data revealed that the relationship between these variables, as reported, was not linear making the correlation test inappropriate. The Examination Preparation data were converted to the cubic root of the total minutes of preparation, resulting in a linear relationship between these two variables, which allowed correlation analysis. There was a small, positive relationship between PASES1 and Examination preparation ($r = .181$; $p = .0804$; $n = 94$). The p-value is more than .05, but is less than .10. At the significance level of .05, there is not enough evidence to support a relationship between the PASES1 score and Examination Preparation (on the cube root scale).

Relationship between Remediation and Academic Performance

- Q2 For students identified as at risk for failure (those who score less than Level 2 proficiency on a standardized nursing exam), what is the relationship between the use of a structured remediation plan and subsequent performance when retaking the standardized nursing exam?

The relationship between remediation and academic performance was evaluated using the mean score from the Remediation Survey compared to the change in examination performance on the ATI examination ($ATI2 - ATI1$). At a confidence level of .05, there was not a significant relationship ($r = .243$; $p = .135$; $n = 39$) between these variables.

Relationship between Remediation and Self-efficacy Beliefs

- Q3 What is the relationship between successful completion of the remediation plan and the subsequent Perceived Academic Self-Efficacy score?

Successful remediation was measured using the change in performance on the ATI examination ($ATI2 - ATI1$). This was compared to the change in the PASES score following remediation ($PASES2 - PASES1$). A positive, significant relationship ($r = .341$; $p = .034$; $n = 39$) was identified between these two variables. Participants who successfully completed the remediation plan, as evidenced by an increased score on the ATI examination also had an improvement in their self-efficacy beliefs. This relationship is statistically significant at a confidence level of .05. A summary of these results is presented in Table 7.

Table 7
Data Analysis Summary

Question	Data for Analysis	<i>r</i>	<i>p</i>	<i>n</i>
1	PASES 1 Examination Preparation Survey	.181	.0804	94
2	ATI 2 – ATI 1 Remediation Survey	.243	.135	39
3	ATI 2 – ATI 1 PASES 2 – PASES 1	.341	.034	39

Performance Comparison by Demographic Variables

The research questions for this study did not seek to evaluate the impact of demographic factors in terms of self-efficacy beliefs or student performance. For informational purposes, a general comparison was made between the demographic variables and performance on the research instruments. The mean and standard deviation was computed for each research instrument in relation to each of the demographic variables. These results are presented in Table 8.

Perceived Academic Self Efficacy Scale

Gender did not seem to influence scores on the PASES. Although the mean score for female participants was slightly higher at PASES1, there was no difference at PASES2. In terms of age, older students scored higher on the PASES 1, but that trend didn't persist to the PASES2. Hispanic and Caucasian participants scored the highest on the PASES1; however, at PASES 2, only the Hispanic students scored higher. The remaining groups performed similarly. Relationship status showed some influence on both PASES 1 and PASES 2. At PASES 1 participants who were Married or In a

Relationship scored higher than their single counter parts. At PASES 2, on those In a Relationship scored higher.

Examination Preparation

Comparison of Examination Preparation scores is of limited value due the large variability in this data. In some groups, the standard deviation is much larger than the mean score. In general, those with the highest reported study time were female, married, over fifty years of age, and Hispanic.

Assessment Technologies Incorporated Examination

Gender and ethnicity seemed to have the greatest influence on the ATI examination results. Female participants scored slightly higher than males on both the ATI1 and ATI2. Caucasian students also scored higher at both ATI1 and ATI2. The influence of age is less clear. At ATI 1, older participants score higher on the examination. At ATI2, this trend continued except for those over the age of fifty. Further discussion about the influence of these variables is presented in Chapter Five

Remediation Survey

Male participants reported a higher score on the remediation survey than did their female counterparts. Higher scores were also reported by those participants in the 31-40 year old age group, Asian participants, and either Single or In a Relationship.

Summary

This research sought to identify the relationship between Perceived Academic Self-efficacy beliefs, Remediation and Academic Performance in prelicensure, baccalaureate nursing students. Data collection was negatively impacted by poor follow

through by participants resulting in a smaller than desired sample size. A significant relationship was not identified between self-efficacy beliefs and examination preparation, or between remediation and academic performance. A significant relationship was identified between successful remediation and self-efficacy beliefs. Further discussion of the results of this research is presented in Chapter Five.

Table 8
Performance Comparison

Variable	PASES1 Mean (SD)	ExPrep Mean (SD)	ATI1 Mean (SD)	Remed Mean (SD)	PASES2 Mean (SD)	ATI2 Mean (SD)
Gender						
Male	79.8(8.98)	2528.57 (4419.64)	64.83 (10.91)	52 (16)	82 (10)	63 (10)
Female	80.23 (10.65)	3659.25 (5643.76)	65.6 (8.83)	49 (21)	82 (11)	64 (7)
Age						
18-30	79.9 (10.67)	3295.66 (4918.08)	63.83 (8.67)	50 (19)	83 (10)	64 (7)
31-40	78.65(7.26)	3750 (8658.6)	71.92 (7.60)	68 (12)	70 (2)	71 (0)
41-50	80.5 (10.63)	2565 (2880.38)	73.33 (7.66)	38 (*)	70 (*)	72 (*)
51-60	92.07 (8.3)	8720 (7338.75)	73.3 (10.59)	10 (*)	95 (*)	64 (*)
Ethnicity						
Asian	75.58 (10.34)	2779.09 (3378.12)	61.66 (9.26)	56 (18)	80(8)	61 (8)
Hispanic	82.08 (9.96)	4196.43 (7141.18)	62.31 (8.1)	49 (21)	90 (8)	61 (5)
Caucasian	82.0 (10.03)	3721.57 (5738.97)	68.49 (8.34)	45 (20)	80 (12)	68 (6)
All others	77.39 (10.83)	2572.86 (5915.79)	61.91 (9.76)	46 (23)	81 (10)	63 (6)

Table 8 Continued

Performance Comparison

Variable	PASES1 Mean (SD)	ExPrep Mean (SD)	ATI1 Mean (SD)	Remed Mean (SD)	PASES2 Mean (SD)	ATI2 Mean (SD)
Relationship Status						
Single	78.73(11.32)	3404.59(5577.81)	63.52(8.95)	50(19)	81(12)	63(5)
Married	80.68(9.05)	4103.75(6637.17)	68.8(9.04)	42(20)	81(11)	66(6)
In a Relationship	81.41(10.27)	3141.82(4468.42)	65.21(8.89)	55(20)	86(7)	65(9)

* only one reported score in this category

CHAPTER V

DISCUSSION

This study sought to evaluate the relationship between the Perceived Academic Self-efficacy beliefs, remediation, and academic performance of Prelicensure nursing students. Ninety-four Prelicensure baccalaureate nursing students from public universities in California completed data for the first phase of this research. Data analysis failed to identify a significant relationship between self-efficacy beliefs and time spent preparing for a standardized nursing examination. Thirty nine (41.5%) of these participants were identified as at risk, based on the results of a standardized test, and completed data for the second phase of this research. A significant relationship was not identified between remediation efforts and academic performance. However, a significant relationship was identified between successful remediation and self-efficacy beliefs. Students who completed the remediation plan and improved their score on the standardized examination also increased their self-efficacy beliefs. These results indicate that nursing faculty can help to improve the self-efficacy beliefs of nursing students through the use of learning activities that provide enactive mastery experiences. Whether this outcome will actually benefit student performance will require further research. The purpose of this chapter is to discuss the findings of this study, the study limitations, and to offer suggestions for future research.

Self-efficacy Beliefs and Academic Preparation

Bandura (1993) identified perceived self-efficacy beliefs as an important concept in student achievement. According to Bandura, those with high perceived self-efficacy beliefs position themselves for success by seeking out needed resources. Past nursing education research provides support for interventions aimed at increasing self-efficacy beliefs, but fails to demonstrate an actual improvement in performance outcomes (Goldenberg et al, 2005; Larsen & Zahner, 2011; Logsdon et al., 2010; Swenson-Britt & Reineck, 2009). The present research hoped to demonstrate a relationship between the Perceived Academic Self-Efficacy beliefs of baccalaureate nursing students and their use of study materials in preparation for a standardized test. The hypothesis was that participants with higher self-efficacy beliefs would spend more time studying and would use a greater number of resources.

Challenges related to the Examination Preparation Instrument

Participants were asked to evaluate the amount of time, in minutes, they spent in study activities using the Examination Preparation Survey. The study activities identified on this tool included traditional study methods as well as Assessment Technologies Incorporated (ATI)-specific study activities. It seemed reasonable to have students self-report their study time as a measure of not only the quantity, but also the quality of study time. In reality, the use of this tool was problematic for the participants. Two common problems were encountered during data collection and may have influenced the study results. The first problem was that participants had difficulty in quantifying their study time. At one school, multiple attempts were made to clarify results for participants who simply wrote “a lot” instead of reporting time in minutes. For some participants, it was

easier to quantify their study time in hours, which was then converted to minutes by the researcher. Self-report is widely used in nursing research and is generally considered to be a useful tool to measure concepts that cannot be objectively measured. The accuracy of the measure can be influenced by the honesty of the participant, or when there is confusion regarding the measure (Polit & Beck, 2004). Participants in this study were not deliberately dishonest, but their difficulty in quantifying their study time negatively impacts the trustworthiness of this tool as a measure of examination preparation.

The second, but related problem was the wide range of study time reported by participants. Participants reported as little as zero minutes to as many as 29,400 minutes. There was a difference in perception regarding what constituted 'examination preparation.' Some participants reported only the study time that was completed in the immediate pre-examination period. Others reported their study time for the entire school term. This wide range of results complicated data analysis and required conversion of the value to the cubic root. This difference in perception was not related to the self-efficacy beliefs of the participants. It would be reasonable to assume that participants with higher self-efficacy beliefs would be more likely to look at the 'big picture' in terms of their study habits and include reading and study time for the entire term. This relationship was not demonstrated with the participants in this study. Perhaps a better measure of examination preparation would have focused on the quality of the study experience rather than the quantity.

Data were collected on the individual subscores of the Examination Preparation Survey; however, no analysis was made about the effectiveness of a particular study activity, or in the relationship to self-efficacy beliefs. Reading the text book and

reviewing the course notes were the most commonly reported study activities. These activities should be expected of all nursing students and as a result do not suggest a higher than normal effort to ensure success. Study activities that demonstrate a higher level of effort in preparation for the examination include reading the ATI book, taking the practice test, and developing a study guide based on those results. These higher level activities were not frequently used by participants in this study. Combining the expected study habits with the higher level of study habits failed to distinguish which participants really demonstrated a higher level of effort in their examination preparation. Unfortunately, the relationship of these sub scores was not compared to either the self-efficacy scores or to the examination performance since the importance of this relationship was not identified in the original research plan.

Remediation and Academic Performance

The data in this study did not support a statistically significant relationship between remediation, as measured by the Remediation Survey, and improved performance on the standardized examination. Several factors likely contributed to this, and more research is needed to evaluate the effectiveness of this remediation intervention. The small sample size is of concern in terms of the reliability of these results; however, the greater concern is the attrition of participants that resulted in the small sample size. Of the 152 participants that agreed to enroll in this study, only 94 participants actually completed the research instruments. This is an attrition rate of 38%. While most participants simply failed to return their research documents without giving a reason, it can be assumed that many who failed to respond did so after learning that they fell below the benchmark examination score. The remediation intervention required time

that these participants did not wish to spend. Remediation was not required for most participants and did not offer any immediate benefit in terms of course success and so was not identified as a valuable use of the participants' time. Even among those who completed the remediation intervention, participants reported completing approximately half of the required remediation (mean 50.3, SD 18.9). As with the Examination Preparation Survey, sub score data were collected, but was not evaluated in terms of participant outcomes. Interventions such as the completion of the Nurse Logic Tutorial, which focuses on test taking strategies, were not used by most participants in this research. This is congruent with findings from previous researchers who found that at-risk students were not likely to participate in optional learning experiences (Heroff, 2009).

Remediation and Self-Efficacy Beliefs

A statistically significant relationship was identified between successful remediation and improvement in self-efficacy beliefs in spite of the small sample size. This supports the findings of other researchers who demonstrated that self-efficacy beliefs could be fostered through educational interventions (Goldenberg et al., 2005; Larsen & Zahner, 2011; Logsdon et al., 2010; Swenson-Britt & Reineck, 2009). Completing the remediation intervention may have fostered the development of positive self-efficacy beliefs through Enactive Mastery. According to Bandura (1997), Enactive Mastery has the greatest influence on the development of self-efficacy beliefs. Participants who completed the remediation intervention and subsequently improved their examination score were able to bolster their beliefs in their ability to succeed academically. The remediation intervention included a module on test taking strategies,

further enhancing the Enactive Mastery experience through the development of tools and strategies that help to ensure success.

Limitations

The limitations of this research have already been briefly addressed in this discussion, but will be addressed more fully in the next section.

Sample Size

Data collection was planned at six California nursing schools in an effort to ensure an adequate statistical power. There was no way to predict the number of participants that would require remediation, so an effort was made to recruit a large sample. However, in spite of this effort, the target sample size of 118 was not achieved due to the previously discussed recruitment and retention issues. Ninety four participants completed data for Phase I. Thirty nine students were identified as at risk and completed data for Phase II. As reported in Chapter 4, this dramatically decreased the statistical power for this study, increasing the risk of wrongly accepting the null hypothesis (Polit & Beck, 2004). The failure of this research to demonstrate a relationship between the remediation intervention and academic performance may simply be the result of too small a sample size.

Attrition Rate

In addition to the small sample size, a greater concern is those participants who withdrew from the study. The attrition rate of 38% is problematic, especially since it is assumed that many of those who withdrew were in need of remediation. Their failure to complete the remediation intervention and retest resulted in a significant loss of data that would have contributed to the results of this study. In addition, the self-efficacy beliefs of

those who were identified as at risk and completed the study may not be the same as those who were identified as at risk but failed to complete the study. It can be assumed that those who withdrew had lower self-efficacy beliefs than those who persisted, but this cannot be empirically confirmed.

Self-Report

This research relied heavily on self-report data. Self-report data is widely used in both nursing and education research, and can provide valuable information that may not be available in any other way (Polit & Beck, 2004). This type of research relies on participants to accurately report their data. There is the risk that participants will report what they think the researcher wants to hear, or may be reluctant to report data that could cast a negative impression on them in some way. In this study, participants might be hesitant to report poor study habits on the Examination Preparation Survey even though anonymity was assured. Participants also had difficulty quantifying their study time on the Examination Preparation Survey, and required multiple follow up emails for clarification. These factors negate the value of the Examination Preparation Survey as a measure of examination preparation.

Gender/Ethnic

The sample for this research was limited to students already admitted to California nursing programs. The gender/ethnic diversity of participants in this study closely mimics that reported in the demographic make-up of California nursing programs (Waneka et al., 2013); however, there is an underrepresentation of certain gender and ethnic groups in the sample for this study. There is not enough data to evaluate the

relationship of self-efficacy beliefs or remediation on the academic performance of these underrepresented groups.

Implications for Nursing Education

The results of this research failed to demonstrate a significant relationship between remediation and academic performance. Further research is needed regarding standardized testing and remediation to assist nurse educators in making curricular decisions that affect student outcomes. The present research does not offer enough data to assist in making these decisions.

What is clear from this research is that nursing students are overwhelmed with their academic workload and are not likely to add to that workload without significant motivation to do so. As noted by previous authors, the students most likely to need remediation are the least likely to utilize these resources (Heroff, 2009; Jacobs & Koehn, 2006). Overall, students will not pursue additional learning activities unless there is motivation to do so. The long term benefit of remediation may not be immediately evident to students; their focus is on successful completion of the individual assignment or course. Nurse Educators can facilitate the use of remediation interventions by providing motivation to complete remediation. One strategy would be to assign grade points for completing the assigned remediation.

Implications for Future Research

Early Prediction of those at Risk for Failure

This study used the level performance on a standardized nursing examination to classify participants at risk for academic failure. This decision was made based largely on analysis provided by the company which identified a predictive relationship between

student performance on individual content examinations and student performance on the Comprehensive Predictor Examination (Assessment Technologies Incorporated, nd).

There is no empiric research currently available that addresses the outcomes of student performance on student performance on subsequent content exams or on student performance on the National Council for Licensure Examination for Registered Nurses (NCLEX-RN). Further research is needed to validate the use of individual content examinations as a predictor of student outcomes related to performance on the comprehensive predictor and on the NCLEX-RN.

Benefit of Structured Remediation

Analysis of the data for this research did not identify a significant relationship between remediation activities and performance improvement on subsequent examinations. There are a number of factors that may have impacted these results. Of greatest concern was the high rate of drop out for participants in this study, presumably by those who scored lower than the benchmark and chose not to complete the remediation activities or the retest. In addition, there was an overall poor rate of completion of the remediation activities. Further research is needed with a larger sample size to evaluate the benefit of the individualized remediation that is available through the ATI standardized testing program. This could be accomplished through collaborative research between nursing faculty from each individual nursing program. Access to students, data collection, and participant buy-in could be improved if each participating nursing program had a faculty co-investigator. The Remediation Survey was identified as a reliable measure of remediation activities and provided a standardized, repeatable measure of remediation which has previously been lacking in the literature.

Experiences Related to Remediation/ Academic Performance

Nursing students experience a high level of stress. This is reported not only in the nursing literature, but was also evident during the data collection phase of this research. This stress is presumably further increased when the student experiences academic difficulties and requires remediation. Often these students feel that they are studying a lot, but are not seeing the benefit in terms of an improved grade. This feeling was voiced by one participant in her request to withdraw from this study, “I’m sorry, I just don’t want to retake a test that I studied so hard for and still failed” (email communication from participant at School 4). A qualitative analysis of the student experience with academic failure and remediation could identify the underlying concerns and needs of these at risk students. Student participants might feel intimidated by one-on-one face to face interviews with a nurse educator so the use of focus groups might be a better way to collect this data. Focus groups might decrease participant anxiety by allowing participants to share their experiences with remediation in a less threatening setting.

Specific Examination Preparation/Remediation Activities and Academic Performance

Subscale data were collected for both the Examination Preparation Survey and for the Remediation Survey; however, analysis of this data was not addressed in the research questions for this study. It would be of interest to know which study techniques had the greatest impact in terms of student outcomes. Similarly, it would be interesting to evaluate which remediation activities had the greatest benefit in terms of student

outcomes. While not appropriate for the present research, this should be evaluated in future nursing education research.

Conclusions

The purpose of this study was to identify the relationship between Self-efficacy beliefs and preparation for a standardized examination; remediation and academic performance; and between remediation and self-efficacy beliefs. Ninety-four prelicensure baccalaureate students participated in this research. Analysis of the results failed to identify a relationship between Perceived Academic Self-efficacy beliefs and Examination preparation. This may be due to the problems participants had in quantifying their study habits on the Examination Preparation Survey, and/or due to the small sample size. Thirty-nine participants were identified as at risk and completed the remediation intervention. Analysis of the results failed to identify a significant relationship between the remediation intervention and academic performance. Again, these results were likely affected by a small sample size. Further research is needed to validate these findings. A significant relationship was identified between remediation and Perceived Self-Efficacy beliefs. Participants who successfully completed the remediation intervention also had an increased score on the Perceived Academic Self-Efficacy Scale. This significant finding can be used to guide future nursing education research, especially if improved outcomes can be demonstrated with improved self-efficacy beliefs.

The results of this research indicate a need for further research on the topic of remediation. Collaborative research among nursing faculty could provide better data for analysis of this remediation intervention. Nursing faculty can encourage student

participation in remediation interventions by providing grade incentives for completing remediation activities. The use of the Assessment Technologies Incorporated remediation plan provides a standardized intervention that can be repeated by other researchers in an effort to evaluate the benefit of remediation in nursing education.

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APPENDIX A
SCHOOL SURVEY

I am a doctoral student at the University of Northern Colorado (UNC). I am currently developing my dissertation research proposal. I am studying the benefit of remediation in decreasing student attrition. I would like to collect my data from BSN programs that use the Assessment Technologies Incorporated (ATI) Content Mastery package. Please complete the following information about your nursing program.

1. Name of School/University: _____

Contact Person: _____

2. Student Information:

- a. Approximate number of BSN graduates/year _____
- b. How are students ranked for admission?
 - i. GPA only _____
 - ii. Established criteria/formula _____
 - iii. No ranking, first come, first served _____

3. How often are students admitted into your program?

- a. Admit Fall only _____
- b. Admit Fall/Spring _____
- c. Admit twice/year _____

4. Which ATI materials are used in your nursing program?

- a. Content Mastery Series _____
- b. Comprehensive Predictor only _____
- c. Don't use ATI _____

5. How does your nursing program use ATI's remediation materials?

- a. Don't use _____
- b. Students encouraged to use, not required _____
- c. Students required to use _____
 - i. If C, what triggers the need for remediation? _____

6. Who coordinates ATI testing in your nursing program?

- a. Individual course instructor _____
- b. ATI Coordinator _____
 - i. Contact Info _____

7. In which term(s) is the Adult Medical Surgical CMS Examination given?

Fall _____ Winter _____ Spring _____ Summer _____

Thank you,
 Debra Wilson, MSN, FNP, CNL
 Associate Professor, CSU Bakersfield
 Department of Nursing
dwilson4@csu.edu
 (661) 654-6335

APPENDIX B
IRB APPROVALS

UNIVERSITY of
NORTHERN COLORADO



Institutional Review Board

DATE: February 25, 2013

TO: Debra Wilson, PhD(c)

FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [395657-2] THE RELATIONSHIP BETWEEN PERCEIVED ACADEMIC SELF-EFFICACY, REMEDIATION, AND ACADEMIC PERFORMANCE IN PRE-LICENSURE BACCALAUREATE NURSING STUDENTS

SUBMISSION TYPE: Revision

ACTION: APPROVED

APPROVAL DATE: February 25, 2013

EXPIRATION DATE: February 25, 2014

REVIEW TYPE: Expedited Review

Thank you for your submission of Revision materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of February 25, 2014.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

**DEPARTMENTAL (UNIT) REVIEW FORM
COMMITTEE ON THE PROTECTION OF HUMAN SUBJECTS
CALIFORNIA STATE UNIVERSITY, FRESNO**

Please type

PRINCIPAL INVESTIGATOR **Debra Wilson** **Nursing CSU Bakersfield**
 Name Department
661-330-0541 **661-664-6335**
 Telephone Number Dept. Telephone Number

 Name Affiliation
 Telephone Number Telephone Number

Is this a collaborative research project?

TITLE OF STUDY

If funding is sought, from what agency? **No**

How did the Principal Investigator designate the research? Minimal risk ☒ At risk ☐

REVIEWER 1 Marie Gilbert

Name
 At risk ☐ Minimal Risk ☒

COMMENTS:

Place your signature in the category of your judgment

☒ APPROVED

☐ DISAPPROVED

REVIEWER 2 Terea Giannetta

Name
 At risk ☐ Minimal Risk ☒

COMMENTS:

Place your signature in the category of your judgment

☒ APPROVED

☐ DISAPPROVED

REVIEWER 3 Mary Ann McCarthy

Name
 At risk ☐ Minimal Risk ☒

COMMENTS:

Place your signature in the category of your judgment

☒ APPROVED

☐ DISAPPROVED

The department may wish to route this form to the 3 reviewers or send each reviewer a form. If the review is done on three separate forms, the Chair ought to give each reviewer the comments of the other reviewers as well as the Principal Investigator. If all three reviewers judge the proposed as "minimal risk," the Department Chair notifies the Principal Investigator and keeps the form(s) for 5 years. If funding is sought for this study or it is "at risk," two (2) copies of the protocol and this form are forwarded to the university CPHS, Thomas Administration, Room 130, MS TA 54, with one additional copy to the dean's office. (See sections 3.7 or 3.8.)

California State University, Chico
Chico, California 95929-0875
Office of Graduate Studies
530-898-6880
Fax: 530-898-3342
www.csuchico.edu/graduatestudies



April 3, 2013

Debra Wilson
7513 Carson Hill Ct.
Bakersfield, CA 93313



Dear Debra Wilson:

As the Chair of the Campus Institutional Review Board, I have determined that your research proposal entitled "THE RELATIONSHIP BETWEEN PERCEIVED ACADEMIC SELF-EFFICACY, REMEDIATION, AND ACADEMIC PERFORMANCE IN PRE-LICENSURE BACCALAUREATE NURSING STUDENTS" has been granted clearance through an expedited review. This clearance allows you to proceed with your research.

I do ask that you notify our office should there be any further modifications to, or complications arising from or within, the study. In addition, should this project continue longer than the authorized date, you will need to apply for an extension from our office. When your data collection is complete, you will need to turn in the attached Post Data Collection Report for final approval. Students should be aware that failure to comply with any HSRC requirements will delay graduation. If you should have any questions regarding this clearance, please do not hesitate to contact me.

Sincerely,

John Mahoney, Ph.D., Chair
Human Subjects in Research Committee

Attachment: Post Data Collection Report



CSU Bakersfield

Academic Affairs

Office of the Grants, Research, and Sponsored Programs (GRASP)

Mail Stop: 24 DDH Room 108
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2231
(661) 654-3342 FAX
www.csu.edu

Institutional Review Board for Human Subjects Research

Date: 04 March 2013

To: Debra Wilson, Nursing Department

cc: Paul Newberry, IRB Chair

From: Steve Suter, University Research Ethics Review Coordinator

Subject: Authorization Following Exemption from Full Review

Anne Duran, Ph.D.
Department of Psychology
Scientific Concerns

Roseanna McCleary, Ph.D.
Masters of Social Work
Scientific Concerns

Steven Gamboa, Ph.D.
Department of Phil/Rel Studies
Nonscientific/Humanistic Concerns

Lily Alvarez, B.A.
Kern County Mental Health
Community Issues/Concerns

Grant Herndon
Schools Legal Service
Community Issues/Concerns

Kathleen Gilchrist, Ph.D.
Department of Nursing
Scientific Concerns

Paul Newberry, Ph.D.
Department of Philosophy/
Religious Studies
Nonscientific/Humanistic Concerns
IRB/HSR Chair

Penelope Swenson, Ph.D.
Advanced Educational Studies
Nonscientific/Humanistic Concerns

Steve Suter, Ph.D.
Department of Psychology
Research Ethics Review Coordinator
and IRB/HSR Secretary

I am pleased to inform you that your Protocol 13-33, "The Relationship between Perceived Self-Efficacy, Remediation, and Academic Performance in Pre-Licensure Baccalaureate Nursing Students", has been approved, following exemption from full review. This research activity was exempted as defined in Paragraph 46.101 of Title 45, Code of Federal Regulations based on the following criteria: (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. Approval is based on your IRB materials received on February 26th, 2013 and your clarifications and revisions in response to reviewer completed on March 4th, 2013.

PI will request the University of North Colorado IRB to notify the CSUB IRB of any concerns registered by research participants. **This authorization is strictly limited to the specific activities that have been authorized by the IRB. In conducting this research, the investigator must carefully review the final authorized version of the protocol to ensure that the research is conducted as authorized by the IRB.** If you want to modify these activities, notify the IRB in advance so proposed changes can be reviewed. If you have any questions, or there are any unanticipated problems or adverse reactions, please contact me immediately.

The following person[s] only are authorized to interact with subjects in collecting data or obtaining informed consent:

Human Subjects Protection Training Certified:
Debra Wilson [1-17-2003]

Signed consent documents must be retained for at least three years to enable research compliance monitoring and in case of concerns by research participants. Consent forms may be stored longer at the discretion of the principal investigator [PI]. The PI is responsible for retaining consent forms. If the PI is a student, the faculty supervisor is responsible for the consent forms. The consent forms must be stored so that only the authorized investigators or representatives of the IRB have access. At the end of the retention period the consent forms must be destroyed [not re-cycled or thrown away]. Please destroy any audio tapes after scoring.

This authorization will be valid until the end of February 2014.

Steve Suter, University Research Ethics Review Coordinator



SACRAMENTO
STATE

California State University, Sacramento
Office of Research Administration
Division of Academic Affairs
6000 J Street • Hornet Bookstore Bldg. 3400 • Sacramento, CA 95819-6111
T (916) 278-7565 • F (916) 278-4886 • www.csus.edu/research

Institutional Review Board (IRB)

(FWA# 00003873)

April 15, 2013

Protocol: 12-13-112 (MAR)

To: Debra J. Wilson, 7513 Carson Hill Ct., Bakersfield, CA 93313

From: Maria Dinis, Chair *MD/D*
Committee for the Protection of Human Subjects

RE: The Relationship Between Perceived Academic Self-efficacy, Remediation, and Academic Performance in Pre-Licensure Baccalaureate Nursing Students

The Committee for the Protection of Human Subjects conditionally approved your application as "Exempt." The exemption is made pursuant to 45 CFR 46.101(b)(1)(2). The approval applies to the conditions and procedures described in your protocol. Your approval expires on **April 15, 2014**. If you wish to collect additional data after that time, you will need to request an extension. For additional information, see "Continuing Review" in the IRB Policy Manual.

Approval carries with it the understanding that you will inform the IRB promptly should any adverse event occur, and that you will make no modification to the plan as described in the protocol without the prior approval of the IRB.

Should you need further information about the protection of human subjects, please consult our website at <http://www.csus.edu/research/humansubjects/> or contact the IRB Office at 916-278-7565.



CALIFORNIA STATE UNIVERSITY, LONG BEACH
OFFICE OF RESEARCH & SPONSORED PROGRAMS

DATE: April 2, 2013

TO: Debra Wilson, PhD(c)

FROM: California State University, Long Beach

PROJECT TITLE: [442241-2] The Relationship Between Perceived Academic Self-Efficacy, Remediation, and Academic Performance in Pre-Licensure Baccalaureate Nursing Students

REFERENCE #: 13-240i

SUBMISSION TYPE: Revision

ACTION: APPROVED

APPROVAL DATE: April 2, 2013

EXPIRATION DATE: April 1, 2014

REVIEW TYPE: Administrative

This is to advise you that the Institutional Review Board for the Protection of Human Subjects (IRB) of California State University, Long Beach, has reviewed your protocol application.

Your application is approved. The requested modifications have been received, reviewed, and accepted.

Approval is for a period of one year from the date of this letter and conditional upon your willingness to carry out your continuing responsibilities under University policy. If you would like to continue this research after this one year period, please submit a renewal application and an annual report to the Office of Research & Sponsored Programs two months prior to your expiration date of April 1, 2014.

1. You must clearly indicate in the header or footer of each page of your approved Informed Consent Form the approval and expiration dates of the protocol as follows: **"Approved from April 2, 2013 to April 1, 2014 by the CSULB IRB"**.
2. You are required to inform the Director or Senior Associate Director, Office of Research & Sponsored Programs, in writing (email is acceptable) or through IRBNet within twenty-four hours of any adverse event in the conduct of research involving human subjects. The report shall include the nature of the adverse event, the names of the persons affected, the extent of the injury or breach of security, if any, and any other information material to the situation.
3. You may not change any aspect of your research procedure involving human subjects without written permission from the Director, Office of Research & Sponsored Programs or the Chair of the IRB. Please use the Protocol Modification Form on IRBNet to request any changes.



Office Memorandum

DATE: April 8, 2013

TO: Debra Wilson and Lorie Judson
School of Nursing

FROM: Elia Amaro, Institutional Review Board—Human Subjects Coordinator

COPIES TO: S. Ulanoff, Chair; J. Shiotsugu, Executive Secretary

SUBJECT: Review of Project Involving Human Subjects

Applicant: Debra Wilson/Lorie Judson

Title: The Relationship between perceived self-efficacy, remediation, and academic performance in pre-licensure baccalaureate nursing students

Application #: IRB 12-76X

Date of Review: March 26, 2013

Administrative Action—Exempt Category #2

Note: Wherever the statement in all caps appears, change it to read, "THIS STUDY HAS BEEN DETERMINED TO BE EXEMPT FROM REVIEW AND APPROVAL BY THE CALIFORNIA STATE UNIVERSITY, LOS ANGELES INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH."

IF ANY CHANGES ARE MADE TO THE METHODS AND PROCEDURES DESCRIBED IN THIS PROTOCOL, YOU MUST SUBMIT ANOTHER APPLICATION SO THAT THE PROJECT MAY BE RE-EVALUATED FOR EXEMPTION FROM IRB REVIEW.

APPENDIX C
CONSENT FORMS



CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: The relationship between perceived academic self-efficacy, remediation, and academic performance in pre-licensure baccalaureate nursing students

Researcher: Debra J. Wilson (Doctoral student)

Phone: (661) 654-6335

E-mail: dwilson4@csub.edu

Vicki Wilson, PhD (Research advisor)

Phone: (970) 351-1295

E-mail: vicki.wilson@unco.edu

Alison Merrill, PhD (Research advisor)

Phone: (970) 351-1389

E-mail: alison.merrill@unco.edu

Purpose and Description:

The purpose of this research is to evaluate the relationship between remediation, self-efficacy beliefs and the academic performance of undergraduate nursing students. Most nursing students are required to take ATI examinations while in nursing school; but the remediation resources provided by ATI are often underutilized. This study will examine whether or not completing a remediation plan helps you to score better when you repeat the test. If you agree to participate in this research you will be asked to do the following:

Before your ATI examination:

1. Complete a demographic questionnaire
2. Complete a survey about how you studied for your examination
3. Complete a survey about your confidence in your ability to succeed in school.
4. You will take your ATI examination as scheduled for your course.

After the ATI examination:

1. Mail your results to the researcher (A self-addressed stamped envelope will be provided)
2. If you score less than a level 2 proficiency, you will be asked to develop and complete an online focused review on the ATI website (instructions will be provided to you by the researcher)

After you complete your on-line review:

1. Retake your ATI exam
2. Complete a remediation survey

3. Complete a survey about your confidence in your ability to succeed in school

The surveys should take no more than 20 minutes to complete. The length of time required to complete the on-line focused review will depend on your score on the ATI examination (ie. the more questions you miss, the more time it will take to complete the remediation).

Potential risks:

Potential risks are minimal. Some students might feel anxious about their academic performance, but the risk for this is not any greater than for nursing students in general. Participants might be worried that their scores will be seen by a teacher or other person who might influence their grade. To protect their confidentiality, participants will be assigned a three digit number. All survey instruments and examination score reports will be labeled with this number rather than their name. The researcher has no influence over course grades; ATI examination reports will be available to nursing faculty regardless of whether or not the student opts to participate in this research.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-2161.

Subject's Signature

Date

Researcher's Signature

Date



CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH
UNIVERSITY OF NORTHERN COLORADO

Project Title: The relationship between perceived academic self-efficacy, remediation, and academic performance in pre-licensure baccalaureate nursing students

Researcher: Debra J. Wilson (Doctoral student)

Phone: (661) 330-0541

E-mail: dwilson4@csub.edu

Vicki Wilson, PhD (Research advisor)

Phone: (970) 351-1295

E-mail: vicki.wilson@unco.edu

Alison Merrill, PhD (Research advisor)

Phone: (970) 351-1389

E-mail: alison.merrill@unco.edu

Purpose and Description:

The purpose of this research is to evaluate the relationship between remediation, self-efficacy beliefs and the academic performance of undergraduate nursing students. Most nursing students are required to take ATI examinations while in nursing school; but the remediation resources provided by ATI are often underutilized. This study will examine whether or not completing a remediation plan helps you to score better when you repeat the test. If you agree to participate in this research you will be asked to do the following:

Before your ATI examination:

5. Complete a demographic questionnaire
6. Complete a survey about how you studied for your examination
7. Complete a survey about your confidence in your ability to succeed in school.
8. You will take your ATI examination as scheduled for your course.

After the ATI examination:

3. Mail your results to the researcher (A self-addressed stamped envelope will be provided)
4. If you score less than a level 2 proficiency, you will be asked to develop and complete an online focused review on the ATI website (instructions will be provided to you by the researcher)

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Potential risks:

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Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-2161.

THIS STUDY HAS BEEN DETERMINED TO BE EXEMPT FROM REVIEW AND APPROVAL BY THE CALIFORNIA STATE UNIVERSITY, LOS ANGELES INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH.

Subject's Signature

Date

Researcher's Signature

Date

CONSENT FORM FOR
PARTICIPANTS IN
UNIVERSITY OF



HUMAN
RESEARCH
NORTHERN

Project Title: The relationship between perceived academic self-efficacy, remediation, and academic performance in pre-licensure baccalaureate nursing students

Researcher: Debra J. Wilson (Doctoral student)

Phone: (661) 330-0541

E-mail: dwilson4@csu.edu

Vicki Wilson, PhD (Research advisor)

Phone: (970) 351-1295

E-mail: vicki.wilson@unco.edu

Alison Merrill, PhD (Research advisor)

Phone: (970) 351-1389

E-mail: alison.merrill@unco.edu

Purpose and Description:

The purpose of this research is to evaluate the relationship between remediation, self-efficacy beliefs and the academic performance of undergraduate nursing students. Most nursing students are required to take ATI examinations while in nursing school; but the remediation resources provided by ATI are often underutilized. This study will examine whether or not completing a remediation plan helps you to score better when you repeat the test. If you agree to participate in this research you will be asked to do the following:

Before your ATI examination:

9. Complete a demographic questionnaire
10. Complete a survey about how you studied for your examination
11. Complete a survey about your confidence in your ability to succeed in school.
12. You will take your ATI examination as scheduled for your course.

After the ATI examination:

5. Mail your results to the researcher (A self-addressed stamped envelope will be provided)
6. If you score less than a level 2 proficiency, you will be asked to develop and complete an online focused review on the ATI website (instructions will be provided to you by the researcher)

After you complete your on-line review:

7. Retake your ATI exam
8. Complete a remediation survey
9. Complete a survey about your confidence in your ability to succeed in school

The surveys should take no more than 20 minutes to complete. The length of time required to complete the on-line focused review will depend on your score on the ATI examination (ie. the more questions you miss, the more time it will take to complete the remediation).

Confidentiality:

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Potential risks:

Potential risks are minimal. Some students might feel anxious about their academic performance, but the risk for this is not any greater than for nursing students in general. Participants might be worried that their scores will be seen by a teacher or other person who might influence their grade. To protect their confidentiality, participants will be assigned a three digit number. All survey instruments and examination score reports will be labeled with this number rather than their name. The researcher has no influence over course grades; ATI examination reports will be available to nursing faculty regardless of whether or not the student opts to participate in this research.

Potential benefits:

It is possible that participants will benefit directly from the remediation intervention in subsequent nursing courses; however, this benefit is not guaranteed.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-2161.

Signature of Research Subject: I understand the procedures and conditions of my participation signed above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Printed name of Subject

Subject's Signature

Date

Statement and Signature of Investigator:

In my judgment, the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

Researcher's Signature

Date

APPENDIX D
RESEARCH INSTRUMENTS

Perceived Academic Self-Efficacy Scale

Rate your degree of confidence that you can perform the task described by recording a number in the confidence column from 0-100 using the scale given below:

0	10	20	30	40	50	60	70	80	90	100
I cannot do at all			Somewhat sure I can do					Certain I can do		
I am confident that I:									Confidence (0 -100)	
1. Can get professors to help me if I am stuck on an assignment.										
2. Can get professors to help me if I have social problems.										
3. Can get another student to help me if I get stuck on an assignment.										
4. Can get another student to help me if I have social problems.										
5. Can achieve the required GPA or higher.										
6. Can finish my class assignments on time.										
7. Can study when there are other interesting things to do.										
8. Can take good notes during class instruction.										
9. Can use the library resources to get information for class assignments.										
10. Can plan my schoolwork for the day.										
11. Can accurately remember information presented in class.										
12. Can accurately remember information I read in textbooks.										
13. Can remain positive and confident even if I fail on a school assignment or test.										
14. Can find a place to study that minimizes distractions.										
15. Can get myself to do school work.										
16. Can participate actively in class discussions.										
17. Can keep focused on my goals even if I stumble academically at first.										
18. Can seek the help of a tutor when I need it.										
19. Can seek the help of a mentor when I need it.										
20. Can get involved in a student organization related to my major.										
21. Can get involved in a student organization related to my hobby.										
22. Can achieve the academic goals I set for myself.										

Demographic Information

Age (in years): _____

Gender (Circle One): Male / Female

Ethnicity (Circle One): Caucasian / African-American, African / American Indian /

Hispanic / Asian / Latino / Middle Eastern / Alaskan Native / Pacific Islander /

Other (please specify) _____

Marital Status: Married / Single / In a Relationship

Campus: _____

Examination Preparation Survey

1. I read the ATI book for this content area: Yes No If yes, # of minutes _____

2. I read the textbook for this course:

Yes No If yes, # of minutes _____

3. I reviewed course notes: Yes No If yes, # of minutes _____

4. I completed a non-proctored practice assessment from ATI:

Yes No If yes, # of times repeated _____

5. I took a non-proctored practice test, and developed a study guide based on my results:

Yes No If yes, # of minutes _____

6. I used other study materials:

Yes No If yes, specify: _____
minutes _____

7. I didn't study:

Yes No

Remediation Questionnaire

Use the following scale to rate your remediation activities:

0 10 20 30 40 50 60 70 80 90 100

I didn't do at all I did somewhat I completed all

1. I reviewed the Topics to Review section of my Individual Performance Profile	
2. I created an On-line Focused Review	
3. I read the assigned reading in my Focused Review	
4. I completed the Remediation Templates assigned in my Focused review	
5. I watched the Media clips assigned in my Focused Review	
6. I completed the Nurse Logic Tutorial	