RELATIONSHIPS BETWEEN ACHIEVEMENT EMOTIONS AND ACADEMIC PERFORMANCE IN NURSING STUDENTS: A NON-EXPERIMENTAL PREDICTIVE CORRELATION ANALYSIS

by

Susan Mary Kirwan

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

Joseph F. Fontanella, Ed.D., Committee Chair

Steve A. McDonald, MBA, Ed.D., Committee Member

Shanna W. Akers, Ed.D., R.N., Committee Member

ABSTRACT

The purpose of this non-experimental predictive correlation study was to investigate the relationships between achievement learning emotions and academic performance in 155 nursing students from one faith-based academic institution in the mid-Atlantic region of the U.S.A. The theory guiding this study was the Control-Value Theory of Achievement Emotions. The study was designed to answer two study research questions: (a) "What are the relationships between the outcome variable (*academic performance*) and predictor variables (*achievement emotions during learning*) in Bachelor of Science in Nursing (BSN) students?" and (b) "How accurately can the outcome variable (*academic performance*) be predicted from a linear combination of predictive variables (*achievement emotions during learning)* in BSN nursing students?" Predictor variables were measured using the Achievement Emotions Questionnaire (AEQ) for positive emotions (enjoyment, hope, pride) and negative emotions (anger, anxiety, shame, boredom, hopelessness). Outcome variable was measured using the standardized Assessment Technologies Institutes course mastery exam. The results found no statistically significant relationships between achievement emotions and ATI scores was found. Emotions were ranked from highest to lowest as enjoyment, anxiety, shame, boredom, pride, hopelessness, hope, and anger supporting the positive relationship between student and faculty as well as feelings of shame of their performance and being overwhelmed by the material. The AEQ subscales had reliability (Cronbach alpha), discrete validity, and corrected item-total correlations (r_{it}) congruent with the original AEQ Manual. Further research is needed using the AEQ tool and qualitative inquiry in designing emotion-sensitive learning environments.

Keywords: academic achievement, academic performance, emotions, learning environments, nursing education, Achievement Emotions Questionnaire (AEQ)

Dedication

To all the nursing students who fail out of nursing programs and never return, please come back if your heart is calling you to this profession. Every nursing student who has the APTITUDE (cognitive and psychosocial attributes) and ATTITUDE (emotional attributes and inner motivational drive) should be successful! You are only limited by your nursing faculty's APTITUDE and ATTITUDE to teach you. Per Vygotsky's social constructivism (1978) and McMillan and Chavis's sense of classroom community within the learning environment (1986) learning is a relational process strongly tied to classroom relationships. Therefore, if you fail nursing, your nursing faculty fails with you!

Next time, choose your nursing school not based on its envisioned (accredited) nursing curriculum but on its enacted (reality) curriculum which is created by the nursing faculty and operationalized by their efforts to create a caring relationship with their nursing students. Seek out current and graduate nursing students to investigate if they remember their nursing faculty as caring, trustworthy, fun, respectful, knowledgeable, and skilled with shared goals for you to be successful. If they do, then joyfully anticipate the fruits of shared success.

Experienced dedicated loving nursing faculty do exist…we are here…and we want you to fulfill your heart's calling.

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To Dr. Joseph Fontanella (Committee Chair), Dr. Steve McDonald (Committee Member), and Dr. Shanna Akers (Committee Member), my dynamic trio, each with your unique skill set whose insights, encouragement, aptitude, and attitude to guide me into the doctoral prepared nurse educator and researcher I have become. You will change our nursing education paradigms through your empowerment of me to redesign our nursing education learning environments from faculty-centered to student-centered and from content-heavy to thinking-enriched. Thank you!

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List of Abbreviations

Accreditation Commission for Education in Nursing (ACEN)

Associate Degree Nursing (ADN)

Achievement Emotions Questionnaire (AEQ)

Assessment Technologies Institutes (ATI)

Assessment Technologies Institutes Nursing Education's Content Mastery Series (ATI-CMS)

Assessment Technologies Institutes Test of Essential Academic Skills (ATI-TEAS)

Bachelor of Science in Nursing (BSN)

Collegiate Nursing Education American Association of Colleges of Nursing Commission (CCNE)

Health Education Systems, Inc. (HESI)

National Council of State Boards of Nursing (NCSBN)

National Council Licensure Examination for Registered Nurses (NCLEX-RN)

National League of Nursing (NLN)

Quality and Safety Education for Nurses (QSEN)

CHAPTER ONE: INTRODUCTION

Overview

Designing and implementing effective learning environments in nursing education is the responsibility of nurse educators. Nurse educators evaluate the effectiveness of nursing learning environments by measuring learning outcomes encompassing cognitive, psychosocial, and affective domains (Shultz, 2009). Recent neuroscience and education research on the affective domain links academic learning outcomes with a spectrum of positive and negative learning emotions throughout the learning process (Pekrun & Linnenbrink-Gracia, 2014; Tyng, Amin, Saad, & Malik, 2017). These findings have sparked a new paradigm shift in designing and implementing effective learning environments that support positive learning emotions and student's emotional well-being. However, there is a disconcerting gap in nursing education research which limited emotion research to stress and test anxiety. It seems sensible that nursing faculty embrace this new teaching and learning paradigm of positive learning when designing learning environments. This study examines the relationship between nursing student academic performance and a spectrum of positive (enjoyment, hope, pride) and negative (anger, anxiety, shame, hopelessness, and boredom) learning emotions using the Achievement Emotions Questionnaire or AEQ (Pekrun, Goetz, & Perry, 2005). This is the second time in published literature that the Academic Emotions Questionnaire has been used on a nursing student population. The first time was during the AEQ validation studies with 385 university students of which 31 (8.1%) were nursing students (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011).

Background

Nursing faculty are under extreme pressure by multiple organizations to increase the number of graduating nurses and improve the clinical competency of graduate nurses entering

the workforce. The United States Department of Labor Bureau of Labor Statistics (2015) has projected the nursing profession must add an additional 439,300 positions, a 16% growth rate, to meet the demands of nursing care. The Institutes of Medicine (IOM) has demanded the transformation of all healthcare education to be evidence-based and congruent with quality and safety in the healthcare (2003, 2010). The National Council of State Boards of Nursing (NCSBN) has increased the benchmark pass rates on the NCLEX-RN exam in response to poor clinical performance of novice nurses during their first years of practice including the most basic skills of assessment (Berkow, Virkstis, Stewart, & Conway, 2008; National Council of State Boards of Nursing, n.d.). The most recognized nursing program accrediting agencies in the United States (Accreditation Commission for Education in Nursing, ACEN, and Commission on Collegiate Nursing Education, CCNE) use first time pass rates of the National Council Licensure Examination for Registered Nurses (NCLEX-RN) when awarding nursing program accreditation (Serembus, 2016). Finally, nursing students report the existing culture of nursing programs, with its overwhelming volume of information, skills, and critical thinking to be achieved, generates high levels of stress and anxiety (Chernomas & Shapiro, 2013; Jones & Johnston, 2000). With so much pressure and demand, nursing faculty are challenged to realistically increase the number of graduating nursing students, incorporate new innovative teaching and learning strategies, prepare nursing graduates to pass the NCLEX-RN exam, and improve healthcare stakeholders' opinions of their newly hired nursing graduate, all while keeping the nursing education learning environment a happy enjoyable place for both nursing students and nursing faculty. To optimize this endeavor, there is a need to find, test, and apply new innovative evidence-based teaching strategies within the learning environments of nursing education while simultaneously focusing on nurturing positive relationships between students and faculty.

Historical Context: Education Research

From 1914 through 1999, the guiding paradigm in educational research on emotions in learning environments has focused almost exclusively on the negative emotionality of stress and anxiety. Folin, Demis, and Smillie (1914, as cited in Spielberger & Vagg, 1995, p. 4) reported how extreme negative emotions like stress and anxiety impede the learning process and student performance in evaluative situations. Luria (1932, as cited in Zeidner, 1998, p. 8) reported emotionally unstable students reacted to highly stressful tests with more intense negative emotional reactions then stable students. Neumann (1933, as cited in Spielberger & Vagg, 1995, p. 4) linked test anxiety to traumatic childhood experiences (recognized today as posttraumatic stress disorder or PTSD). Over the next 80 years, key variables emerged that ameliorate the effects of stress on test anxiety and academic performance: Control of one's situation (McKeachie, 1951, 1954), value of the educational goal or outcome (S. B. Sarason &Mandler, 1952), achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953), social support coupled with locus of control (I. G. Sarason, Levine, Basham, & Sarason, 1983), and stress, coping, and adaptation (Lazarus & Folkman, 1984). In 1999, Lazarus voiced concern that no one has investigated how the spectrum of emotions, positive as well as negative, impact learning. He proposed a new paradigm shift in education research to encompass a holistic range of learning emotions (positive and negative) using qualitative narrative methodology (pp. 204-205).

Contemporary Context: Neuroscience Evidence

New advances in neuroimaging and neurobiology have shifted the paradigm of education research toward the effects of students' positive and negative emotionality on learning through biologically interdependent neuronal learning networks (Hinton, Miyamoto, & Della-Chiesa, 2008). Neuropsychobiology studies reveal the complex effects of students' emotional states,

psychological sense of well-being, and social connectedness on the biological basis of acquiring, storing and retrieving information throughout the learning process (Friedlander et al., 2011). Learning networks have been classified as recognition networks (linking old memories with new information), strategic networks (applying information to current situations/events), and affective networks (emotions triggered by the limbic system) that modulate students' appraisal of the learning experience as valuable or threatening (Rose & Strangeman, 2007). Positive emotions motivate students to continue learning whereas negative emotions condition students to either engage with increased intensity or disengage for safety. The implications for teachers is to optimize the learning environment through addressing the emotional component as well as the cognitive and psychomotor skills within each learning activity to optimize deep learning that lasts over time and can be retrieved and applied to different contexts.

Contemporary Context: Emotions in Nursing Education

The predominant conceptual framework guiding nursing education research is Lazarus and Folkman's Model of Stress, Coping, and Adaptation (1984, p. 305) and later republished with more commentary (Lazarus, 1999, pp. 197-198). This framework is limited to negative emotions of stress and anxiety and its inverse relationship with academic performance. From this framework, nursing faculty have learned the power of negative emotions throughout the learning process on academic performance is irrefutable with spin-off emotions escalating to intense anger, incivility, and burnout that contributes to nursing school failure and drop out (Erickson & Grove, 2007; Watson, Deary, Thompson, & Li, 2008). No nursing research has reached beyond negative emotions to examine positive emotions and the mixture of positive and negative emotions outcome of learning performance, social functioning, morale, and sense of well-being.

Recent qualitative research in nursing education has identified the existence of a range of both positive and negative emotions throughout the nursing education experience. Positive nursing experiences lead to positive emotional states such as intense enjoyment and pride (Jennette, 1995). Negative nursing experiences lead to negative emotional states such as crippling stress, anxiety and depression (Watson et al., 2008), neutral disinterest or disillusionment (Del Prato, 2013), and explosive anger. Non-nursing educators outside the nursing discipline have found positive emotions during the learning process positively correlate with learning and engagement while negative emotions inversely correlate with learning and engagement (Pekrun & Linnenbrink-Gracia, 2014).

Theoretical/Conceptual Framework

Using qualitative studies to identify a range of academic emotions combined with the control-value theory, Pekrun and colleagues (2002) identified nine learning and test-taking emotions (enjoyment, hope, pride, anxiety, relief, anger, boredom, shame, and hopelessness) and developed the conceptual framework of the Control-Value Theory of Achievement Emotions (Pekrun, 2006). This conceptual framework is operationalized using the Achievement Emotions Questionnaire (Pekrun, 2006; Pekrun et al., 2011). This new theory in academic learning emerges out of decades of negative emotion research (Mandler & Sarason, 1952; Sarason, 1986; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) and is grounded in the neurological biological bases of emotional learning, as well as being congruent with Bandura's (1997) social learning theory and Zimmerman's (1989) self-regulated learning theory. Pekrun's Control-Value Theory of Achievement Emotions (Pekrun, 2006) posits that student's appraisal of their control over and value of a learning situation elicits an emotional reaction (achievement emotion) which determines the motivation behavior toward learning engagement. This tool is

already impacting medical education learning environments (Artino, Holmboe, & Durning, 2012; Artino & Jones, 2012; Artino, La Rochelle, & Durning, 2010).

Using Pekrun's conceptual framework, the effects of students' emotions have been linked to the whole learning process: Perceived value and control in the learning outcome (Butz, Stupnisky, & Pekrun, 2015), motivation and engagement in the learning process (Cho & Heron, 2015) perception of learning achievement and actual students' achievement of learning outcomes as measured by course grades or standardized tests, or skill set (Burić & Sorić, 2012; Dewar & Kavussanu, 2012). The positive emotion of enjoyment was correlated with engagement of deep learning strategies, while the negative emotion of anxiety was inversely correlated in 900 Philippine undergraduate math students (Dela Rosa & Bernardo, 2013). In addition, enjoyment was associated with students' adopting both mastery and performance goals toward the learning process where anxiety was associated with students' setting low levels of mastery and performance goals (Dela Rosa & Bernardo, 2013). Positive emotions of hope and excitement are positively correlated with goal setting and perceived competence whereas anxiety was negatively correlated with goal setting and perceived competence in undergraduate students (Kavussanu, Dewar, & Boardley, 2014). In addition, positive perceived competence increased ego and a sense of competence, where negative perceived competence increased a sense of threat and concentration disruption.

Negative emotions of test anxiety, boredom, and frustration were correlated with poor academic performance (lower course grade) in freshman math students (Cho & Heron, 2015). Boredom has been correlated with lower motivation, lower studying and learning strategies, and lower academic outcomes in secondary and university North American, European, and Asian students (Tze, Daniels, & Klassen, 2015). In a longitudinal study, boredom changes over the

course of a semester (Tze, Klassen, & Daniels, 2014). As boredom decreases, learning engagement and perceived faculty support increases.

Graduate business student's perception of control of their own learning, the values of that learning, and their emotional response of enjoyment is correlated with academic success (Butz et al., 2015; Butz, Stupnisky, Pekrun, Jensen, & Harsell, 2016). Medical Students experiencing high levels of enjoyment also have high levels of metacognition, task completion, and self-efficacy while high levels of frustration and boredom resulted in low levels of metacognition, task completion, and self-efficacy (Artino & Jones, 2012). In a diverse North American, European, and Asian population of university students, boredom is strongly related to lower motivation and studying with lower academic outcome (Tze et al., 2015). Finally, in undergraduate students, there is a reciprocal relationship between positive and negative emotions on academic performance (Putwain, Sander, & Larkin, 2013).

The problem is there is no nursing study that utilizes the most up-to-date conceptual framework in education emotion research to investigate the relationships between affective states during the learning process and academic performance in nursing students engaged in baccalaureate nursing education. In addition, nursing education continues to focus on faculty-centered teaching with voluminous amounts of course material while turning a blind eye to the emotional well-being of their students. The findings of this study should shift the focus of nursing faculty to embrace the newest paradigm of educational research which includes a spectrum of learning emotions not just stress and anxiety. More research needs to be done to design learning to optimize the emotional experiences in nursing education to support the learning process.

Problem Statement

There is a perplexing gap between graduate nurses' academic preparation and real life clinical competencies in the healthcare settings. The New Graduate Nurse Performance Survey (Nursing Executive Center, 2007) found only 10% of nursing leaders in the healthcare sectors believe graduate nurses are competent to practice safely in real healthcare settings in contrast to the 90% of nursing leaders in academe who believe the opposite. Critical competencies lacking include the most basic nursing competencies of patient assessment and recognition of changes in patient status (Berkow, Virkstis, & Stewart, 2008a, 2008b; Berkow et al., 2008). Yet, these skills are taught and reinforced in every nursing course, nursing skills lab, nursing simulation, and even during clinical rotations. This evidence suggests learning was more superficial (survival level) and not deep (long-term for application in other situations).

Figure 1 is a visual overview of how nursing programs are carefully monitored by the accreditation process. First, the Accreditation Commission for Education in Nursing (ACEN) and the Commission on Collegiate Nursing Education (CCNE) review the curriculum for accreditation. Second, individual State Boards of Nursing (NCSBN) approve the nursing program and post it on their website so prospective students can make informed choices about nursing programs. Throughout the curriculum, students are vigorously tested by course content mastery exams to ensure content was learned (e.g. ATI and HESI course content mastery exams). At completion of the nursing program, nursing students are given terminal exit exams to evaluate for NCLEX-RN readiness. Finally, the NCSBN administers the NCLEX-RN exam before any graduate nurse is allowed to be licensed as an RN by individual States. Notice, there is no one monitoring the learning environment where learning takes place nor if the learning

activities are linked to progressive cognitive levels of thinking (remembering, understanding, applying, analyzing, evaluating and creating).

Designing safe learning environments where the transfer of knowledge takes place requires paying attention to how nursing students fully experience the learning process beyond just the cognitive experience but also the psychosocial relationships and emotional feeling.

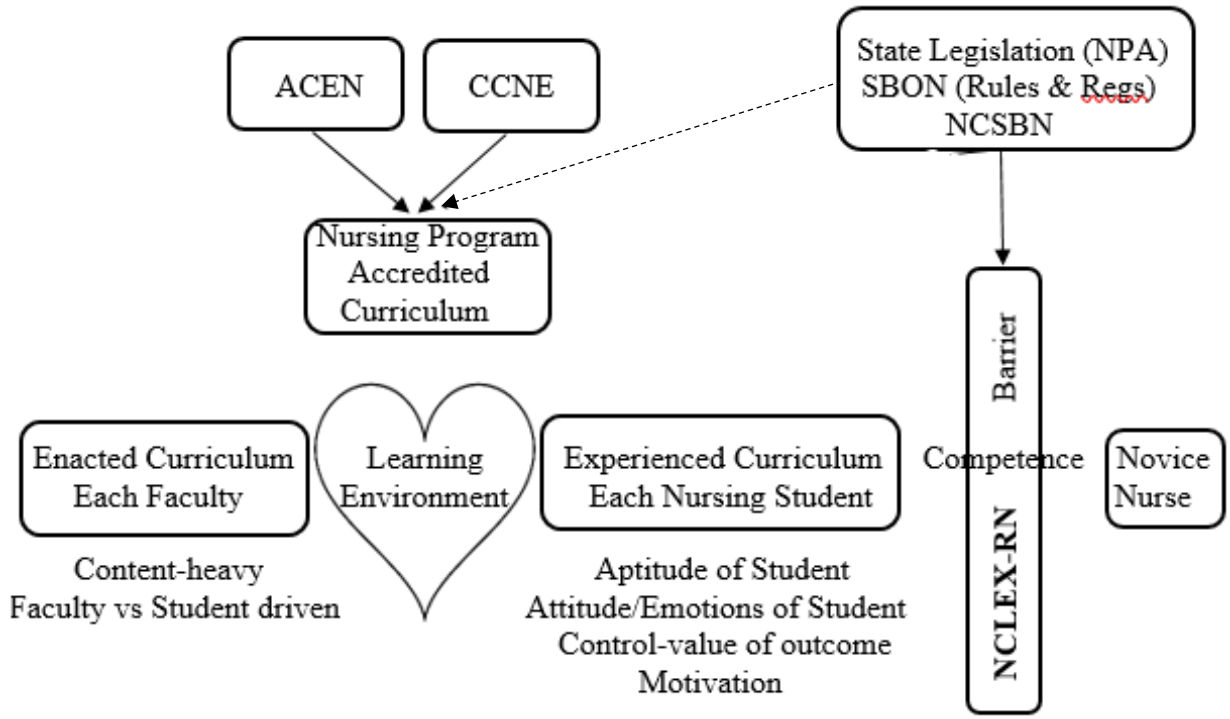


Figure 1. Schematic of the accreditation process in nursing education and its relationship with the State legislation and novice (graduate) nurses entering their first hospital job.

Learning environments in nursing education are bursting with a range of positive and negative experiences: Intense enjoyment and pride (Jennette, 1995), crippling stress, anxiety and depression (Watson et al., 2008), neutral disinterest or disillusionment (Del Prato, 2013), and explosive anger. The effects of positive and negative emotions on the learning process and academic performance in nursing have been limited to studies focused on negative emotions

such as test anxiety and stress (Shapiro, 2014; Weaver, 2011). Neuroscience studies reported that learning under high stress and anxiety fosters surface learning while hindering deep learning (Chen et al., 2015) and impedes memory and memory recall (Smeets, Otgaar, Candel, & Wolf, 2008). However, positive emotions during the learning process positively correlate with learning and engagement (Pekrun & Linnenbrink-Gracia, 2014). In addition, these findings are universal across age, gender, and culture boundaries. The problem is here is a paucity of research on the effects of a broad range of emotions on nursing student academic performance.

Purpose Statement

The purpose of this study was to examine the predictive correlation and predictive relationships between learning affective states of positive and negative emotions on academic performance in Bachelor of Science in Nursing (BSN) students. The theory guiding this study is Pekrun's (2006) Control-Value Theory of Achievement Emotions. Learning affective states of positive and negative emotions will be measured by the Achievement Emotions Questionnaire – Learning (AEQ-L) developed and tested by Pekrun and colleagues (Pekrun, 2006; Pekrun et al., 2011). Each emotion has a positive or negative valence and an activating or deactivating circumplex. Positive activating emotions include enjoyment, hope, and pride. Negative activating emotions include anger, anxiety, and shame. Negative deactivating emotions include hopelessness and boredom. Academic performance was measured by the most up-to-date standardized Assessment Technologies Institutes (ATI) Nursing Education's content mastery series (CMS) examinations developed and validated regularly by the ATI Nursing Education organization. The ATI-CMS has a high predictability on NCLEX-RN success rate (Emory, 2013; Yeom, 2013).

Significance of the Study

The impact of this study on emotions in nursing students' learning and nursing students' performance in benchmark examinations is significant in four critical domains of the nursing discipline. First, the development and implementation of our nursing curriculum is directly linked to the accreditation process of the nursing program. However, the success of the curriculum is based, not on the accredited curriculum, but rather on the curriculum experienced by the student as measured by progressive (and very expensive) benchmark examinations (marketed and sold by ATI, HESI, Kaplan, and others) and the NCLEX-RN. This study posited that these benchmark exams may not truly be a litmus test of learning but rather an expensive test of superficial (survival level) learning and not deep learning needed for long-term application in other situations outside of academe. Therefore, accrediting nursing curriculum has no merit unless it includes the student's experienced curriculum. This study examines students emotionally experience and how this correlates with academic performance.

Second, the existing accredited nursing curriculums do not encompass learning as a complex triad of cognitive and psychomotor learning activities with affective responses by the learner (Krathwohl, Bloom, & Masia, 1973). The Quality and Safety Education for Nurses (QSEN; Cronenwett, Sherwood, & Gelmon, 2009; Institute of Medicine, 2010) embraces the triad learning process of knowledge, skills, and attitudes (KSAs) necessary to be safe at the point of care. Since attitudes are the operationalized part of emotions ("Attitude," n.d.), and emotions impact the learning process, then the accreditation process should evaluate how nursing students feel while engaged in experiencing the nursing program curriculum. There needs to be a new learning paradigm that merges new information and communication technology with cognitive,

emotional, and spiritual teacher-student relationship. This study will investigate the valence of emotions reported by students and correlate it with academic performance.

Third, the impact of negative emotions on learning in nursing education has broader consequences then just failing a learning activity or performance evaluation such as quizzes, tests, or skills check-offs (Roa, Shipman, Hooten, & Carter, 2011). Nursing students' failures impact nursing students' whole life, their family's lives, the nursing program accreditation, and the health of surrounding communities. Nursing students' social, emotional, behavioral, and sense of well-being can take a toll on every aspect of their lives including financial stability (Poorman, Mastorovich, & Webb, 2002). Feelings of shame, humiliation, and uncertainty of the future can prevent successful goal achievement in academe (Conroy, Kaye, & Fifer, 2007). External stakeholders like family members rely on nursing students' success for financial security (Loftin, Newman, Dumas, Gilden, & Bond, 2012). First time pass rate of a nursing program are used by nursing education accreditors to award accreditation (Commission on Collegiate Nursing Education, 2013). Finally, because of the projected nursing shortage of over one million nurses by 2020, coupled with an increasing patient population, there is a high need for an increase in highly qualified nursing workforce (Bargaliotti, 2009).

Finally, Christian nursing faculty have a moral and biblical responsibility to their nursing students and other nursing faculty to envision a quality nursing curriculum, enact that nursing curriculum throughout each nursing student's progression in the program, and ensure that each student and other faculty experience that curriculum in a positive, nurturing, and safe learning/teaching environment. There is a growing body of literature on incivility and bullying between nursing faculty, between nursing students, and between nursing faculty and students (Gallo, 2012; Rainford, Wood, McMullen, & Philipsen, 2017). Incivility is incongruent with

biblical values. Christian nursing faculty have a moral responsibility to create and sustain a warm, loving relationship with students to enable students to achieve their potential. Most poignantly, Christian nursing faculty are guided by biblical principles that view teaching as a spiritual gift (Romans 12:6-7, English Standard Version), a privilege not a right (James 3:1-2, ESV), and a dynamic relational process between the teacher and the learner such that both emotionally, spiritually, and intellectually grow from the experience (Romans 2:21, ESV).

Research Questions

The initial research questions are as follows:

RQ1: What are the relationships between the outcome variable (*academic performance*) and predictor variables (*achievement emotions during learning*) in Bachelor of Science in Nursing (BSN) students?

RQ2: How accurately can the outcome variable (*academic performance*) be predicted from a linear combination of predictive variables (*achievement emotions during learning)* in BSN students?

Definitions

Definitions categorized into four categories to cluster similar concepts together: Predictor variables, outcome variables, sample and populations, and learning environment. Each concept was defined to reflect how it was interpreted within this study. Each concept is supported by the literature.

Predictor variables:

1. *Affective domain* – A multi-conceptual non-cognitive construct containing overlapping concepts of personal emotions, self-concept, beliefs, motivation, attitudes, and values (Goldin, 2014, p. 391).

2. *Emotions* – The subjective multifaceted experience in humans evoked by a variety of internal and external stimuli that can occur simultaneously in an individual through coordinated psychological processes (with action-responses): Subjective feelings (monitoring), action tendency (motivation or activating), appraisal (meaning-making), motor activity (communication), and physiological (support) (Shuman & Sherer, 2014, pp. 15-17).
3. *Emotions - Academic or academic emotions*– Emotions that are directly linked to the academic experience (Goetz, Zirngibl, Pekrun, & Hall, 2003).
4. *Emotions – achievement or achievement emotions* - Emotions that are directly linked to academic achievement within the academic experience as experienced in three academic domains: Classroom domain, learning domain, and testing domain (Pekrun, Goetz, Titz, & Perry, 2002).
5. *Emotional meta-experiences or mega-emotions* – The simultaneous range of emotional experiences occurring at a particular point in time which emerge as a singular global emotional experience manifesting as a singular sense of well-being (Pekrun et al., 2002).
6. *Achievement emotions questionnaire* (*AEQ*)– A questionnaire designed from a series of qualitative studies that measure nine achievement emotions (enjoyment, hope, pride, anxiety, anger, shame, hopelessness, and boredom) in three academic situations: Classroom, learning and testing (Pekrun, Frenzel, Goetz, & Perry, 2005).

Outcome variables:

1. *Academic performance* – Academic performance is defined as nursing student's performance on course content mastery exams (e.g. ATI nursing courses).

2. *Course content mastery exams* – ATI exams that measure a student's mastery of course content (Assessment Technologies Institute, 2011).

Sample & Population:

1. *Accredited nursing program's curriculum* – Nursing program curriculum that has received accreditation status by one two U.S. accreditation organizations: Accreditation Commission for Education in Nursing or (ACEN) and Commission on Collegiate Nursing Education (CCNE).
2. *First year nursing students* – Nursing students in an U.S. accredited nursing program who are engaged in an accredited nursing curriculum's most basic or fundamental nursing courses usually found early in the curriculum of the nursing program

Environmental context:

1. *Learning* – Learning in academe is an interplay between positive and negative learning emotions and learning appraisal and cognitive processing that contributes to student's motivation to learn culminating into academic achievement (Fielder & Beier, 2014, pp. 36-37). Learning can be superficial (short-term then lost) or deep (long-term).
2. *Learning culture* – Characteristic of the learning environment including the presiding ethos and relational characteristics including how participants interact with and treat on another as well as the ways teachers organize the learning environment to facilitate learning (Learning environment, 2014).
3. *Learning environment* – The diverse physical locations, contexts, and cultures where students and teachers interact for learning to take place (Learning environment, 2014).

CHAPTER TWO: LITERATURE REVIEW

Overview

The focus of this study was to examine the effects of achievement emotions on academic performance in first year BSN nursing students. The theoretical framework that guided this study is Pekrun's (2006) Control-Value Theory of Achievement Emotions. The literature review progresses in three sections. The first section reviews how the study's theoretical framework, Pekrun's (2006) Control-Value Theory of Achievement Emotions, integrates with and advances four emotion theories and combines the seminal works of Lazarus's revised Model of Stress, Coping, and Adaptation (1999, p. 198) Maslow's hierarchy of needs dynamic appraisal process (Goebel & Brown, 1981), Erikson and Erikson (1997) cognitive development, Piaget's psychosocial stages, and Reed's (2009) dynamic process of self-transcendence that builds the cognitive and psychosocial maturity of the individual to create the emotional foundation upon which the academic experiences are appraised. The second section examines the findings of studies in the educational literature from 1999 to 2015 that have directly examined the reliability, validity and generalizability of Pekrun's (2006) model of achievement emotions predicting academic performance. In addition, these studies report on the antecedents, attributes, and consequences of emotions on the academic learning process predicted by Pekrun's (2006) Control-Value Theory of Achievement Emotion. The third section reports that the nursing literature is devoid of studies that use Pekrun's (2006) Control-Value Theory of Achievement Emotions. Therefore, this section examines nursing research for concepts of the emotional spectrum to highlight the similarities in the findings congruent with Pekrun's (2006) Control-Value Theory of Achievement Emotions thereby identifying critical gaps that exist in the nursing literature. A summation of the literature review supports the necessity for this research study.

Theoretical Framework

The theoretical framework that guided this study is Pekrun's (2006) Control-Value Theory of Achievement Emotions. This theory combines four common contemporary theories of emotion. Grounded primarily in the appraisal theories of emotion, it advances the seminal work of Lazarus's revised Model of Stress, Coping, and Adaptation (1999, p. 198). In addition, this theory is congruent with contemporary interpretation of the developmental maturation progression of Erikson and Erikson (1997) psychosocial stages, Piaget's psychosocial stages, and Reed's (2009) dynamic process of self-transcendence that posits that accumulating experiences progressively builds the cognitive and psychosocial maturity of the individual to create the emotional foundation upon which all life experiences are appraised.

Contemporary Theories of Emotions

Paradigms that underpin four current theories on emotions contain the same five components: Subjective feelings (monitoring), action tendency (motivation), appraisal (meaning-making), motor activity (communication), and physiological (support) (Shuman & Sherer, 2014, pp. 15-17). First, basic emotions theories posit that emotions are discreet and a survival strategy that have evolved through generations of human experiences (Plutchik, 2001). Discreet survival emotions are universal across ages (children and adults) and cultures and contain all 5 emotion components simultaneously. Second, appraisal theories posit that antecedent to, and the driving force for emotions are, personal appraisals which lead to physiological arousal, motivation, and communication with the consequence of feelings or emotions which impact academic performance (Lazarus, 1968). The most widely applied appraisal theory to educational research is Lazarus's revised Model of Stress, Coping, and Adaptation (1999, p. 198) which now includes the meta-emotion of well-being as a consequence

of learning. Izard (2007) combines the basic and appraisal theories to proffer the existence of emotion schemas that are socially learned, thereby recognizing that learning emotions have a cultural component that may influence the research results in emotion studies. Panksepp (2007) furthers the merger between the basic discreet emotions and appraisal theories to posit the discreet emotions have specific universal neuronal schemas in the brain.

Third, the constructionist theories posit that emotions have a core affect with a subjective component of valence (positive and negative) and arousal (activating and deactivating) (Russel, 2003). Not all of the 5 components of emotions need be present for the feeling to exist. This core affect can be the culmination of many feelings building into the concept of emotional meta-experiences or meta-emotions grounded in culture and social learning. Finally, nonlinear dynamic systems theory posits a complex systems relationship of positive and negative experiences that cause feedback loops that reflect how a student will respond the next time a similar situation arises (Camras, 2011). Students with positive educational experiences learn to look forward to and engage in future learning experiences, whereas negative educational experiences inhibit students and trigger avoidance behavior and disengagement.

Theoretical Underpinning of the Control-Value Theory of Achievement Emotions

Pekrun's (2006) Control-Value Theory of Achievement Emotions combines the attributes of each of the four theories to offer educational researchers a comprehensive, evidence-based, new paradigm to investigate how emotions influence the learning process. There are nine most common discreet achievement emotions with additional less common discrete emotions based on a series of qualitative studies combined. Each discreet emotion has valence and arousal components. Pekrun, Goetz, and Perry (2005) developed the Achievement Emotions Questionnaire (AEQ) to test the Control-Value Theory of Achievement Emotions across cultural

groups and age levels and found universality. Upon confronting an educational event, students draw upon existing personal antecedents (personal values, perception of control, and perception of environment factors like demands, threats, benefits, and personal resources) to appraise the situation which triggers an emotional response that leads to outcomes of motivation, physiological reaction, and communication that drives academic performance outcomes. He also found that, like the constructionist theories, discreet emotions can exist simultaneously to create a meta-emotional continuum of well-being.

Model of stress, coping, and adaptation. Lazarus's revised Model of Stress, Coping, and Adaptation (1999, p. 198) is the precursor for this study's theoretical framework of Pekrun's (2006) Control-Value Theory of Achievement Emotions. Lazarus's (1999) model is an appraisal theory that posits a person's well-being is the outcome of one's cognitive, affective, physical and psychosocial states that result from one's person-environment relationship. In Figure 2, situational events (whether in the real world or the academic setting) are appraised through an interactive balance of preceding or causal antecedents resulting in immediate outcomes of physiological arousal culminating into emotional responses that influence performance (academic, sports, music, and work). Long-term outcomes include progression along the learning process (cognitive and psychosocial skills), physical health, and psychological well-being.

In academe, the person-environment relationship is a complex balance between one's personal values and sense of control and perception of threats and demands regarding academic events (within the on-site classroom or online classroom during the learning process or during evaluations like tests). Students invoke an appraisal process to determine if one's resources meet the environmental demands and threats and if there are benefits that justify the effort. Every

academic situational event is evaluated through this dynamic and repetitive appraisal process that is mediated and moderated by one's coping strategies (problem-focused and emotion-focused) and social support system (emotional, tangible, and/or informational). The result is an immediate emotional response (emotion spectrum) manifesting as behavioral action with resulting outcome (positive or negative). Over time, one's cognitive learning/development, affective state, psychosocial relationship culminates into one's sense of well-being within the environment. Too many threatening and overwhelming events can destabilize one's environment relationship to the point where one's cognitive learning and development, physical health, and psychosocial skills deteriorate into maladaptive states or psychopathology.

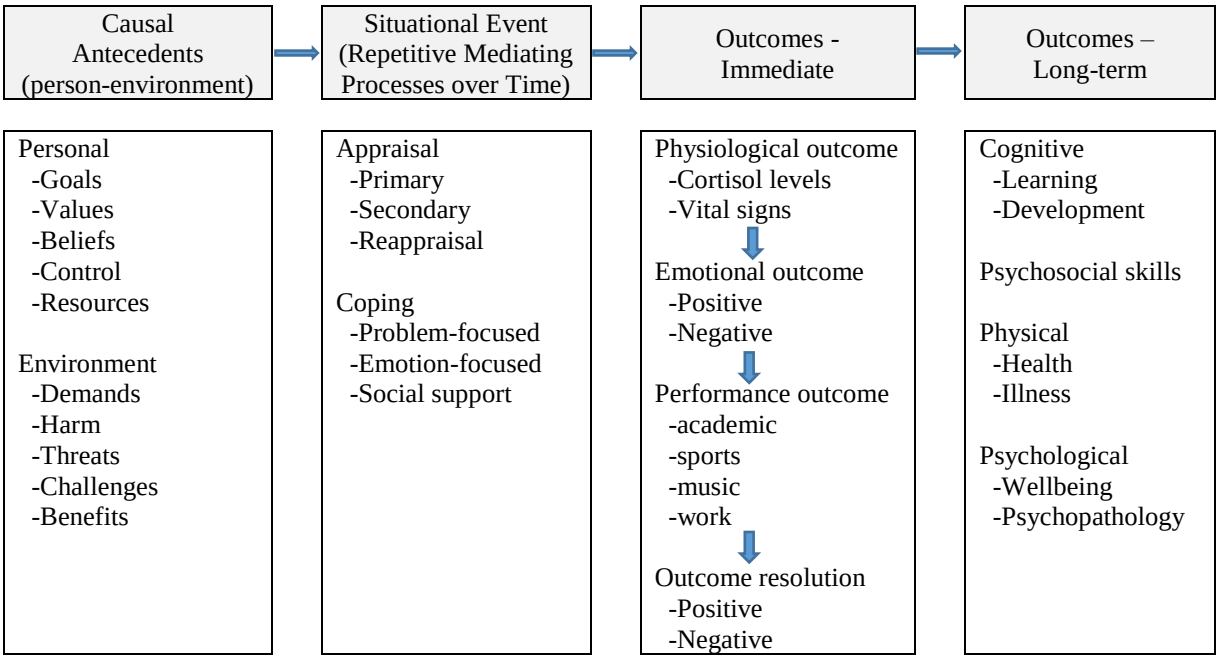


Figure 2. Revised model of stress and coping with a linear demand-perception-response. Adapted from Lazarus's (1999) "*Stress and Emotion: A New Synthesis*. New York, NY: Springer Publishing Company, Inc. p.197-200 (with permission, see Appendix A).

To support his new revised model, Lazarus (1999) advised a paradigm shift in research from being variable-centered (quantitative) to person-centered (qualitative) to focus on individual emotion processing and how this influences behavioral outcomes (p. 205). His

recommendation specifically focused on qualitative methodology he termed as "emotion narrative" (p. 205) which each individual participant in a study would be allowed to express his/her emotions on the academic situation which the research can then link with academic performance. This new approach offers researchers the unique opportunity to test "whether the individual's subjective cognitive perspectives conforms to the objective physical evidence" (p. 204) measurable through standardized evaluations.

Pekrun's five qualitative studies. This new approach of "emotion narrative" was applied by Pekrun and colleagues (Pekrun, 1992; Pekrun et al., 2002; Spangler, Pekrun, Kramerc, & Hofmannd, 2002) to gain a deeper understanding of Lazarus's revised Model of Stress, Coping, and Adaptation (1999, p. 198) with a focus on the spectrum of academic emotions. In a series of five qualitative phenomenological studies (Pekrun, 1992; Pekrun et al., 2002), a new model emerged framed within concepts known to effect the person-environment relationship. Study populations were limited to university students and their appraisal of academic experiences in three distinct academic environments (in class, while studying, and during tests). Students reported a diverse range of positive and negative emotions within the academic experience, specifically academic achievement (see review in Pekrun et al., 2002, p. 92). The reported frequency of positive emotions (enjoyment of learning, hope, pride and relief) were nearly identical to negative emotions (anxiety, anger, boredom, shame, and hopelessness) with anxiety reported most often. Hopelessness was reported less often with contributors citing "failing an exam" or "personal tragedies outside the academic environment."

Several key findings are worth noting here. First, the recognition of social emotions like gratitude, admiration, contempt, and envy were reported albeit less frequently then the above achievement emotions. Educators need to be aware of the importance of the social-relational

effects on the academic emotional experience beyond the stress and anxiety of achievement. Second, emotions activate or deactivate the motivation to learn, indicating educators can harness them for student success. Third, emotions were object-focused depending on the academic environments (class-related and learning-related) and timing (test-related). For example, anxiety was reported in all three academic environments with highest intensity before, during, and after test-related situations, enjoyment was reported in learning situations (class and studying) and pride or shame were reported after tests. Pekrun and his colleagues developed a three-dimensional taxonomy (2x3) of the nine identified emotions and some social emotions based on two object-focuses (activity and outcome where the outcome is both anticipation of and reflection after tests), two valences (positive or negative) and two motivation activations (activating and deactivating). Fourth, the phenomenon of student's meta-emotions emerged where discreet emotions combine into a grand affective experience with overlapping components underscoring the complexity of emotion research. This finding has the potential to violate statistical analyses where the assumption of independent observations may not be tenable.

Table 1 is a summary of the three-dimensional taxonomy of achievement emotions over time (Pekrun & Linnenbrink-Garcia, 2014, p. 121). Different emotions emerge from three types of object focus. First, learning activities are appraised as either easy or hard (challenging). Second, anticipation of outcomes is categorized as possible success or possible failure. Third, reflection of the outcomes is perceived as success or failure. Emotional responses for each objective focus are identified with a valance of activating (motivating, energizing) or deactivating (demotivating, deenergizing). Column 1 represents positive emotions. Column 2 represents negative emotions. Some emotions like enjoyment and anger are experienced during learning activities or during anticipated or reflective outcomes.

Table 1

Three-Dimensional Taxonomy of Achievement Emotions Over Time (2 x 3)

Object Focus	Positive		Negative	
Activity vs Outcome	Activating	Deactivating	Activating	Deactivating
Learning Activity (easy/hard)	Enjoyment	Relaxation	Anger Frustration	Boredom Frustration
Outcome Prospective anticipation (success/failure)	Hope Joy	Relief	Anxiety	Hopelessness
Outcome Retrospective reflection (success/failure)	Joy Pride Gratitude	Relief Contentment	Shame Anger	Sadness Disappointment

Reproduced from *International handbook of emotions in education* (p. 121), by R. Pekrun and L. Linnenbrink-Garcia, 2014, New York, NY: Routledge, Copyright 2014 by Taylor & Francis Group of Routledge Publishing (with permission, see Appendix A).

Finally, the relationship between emotion activation and physiological activation were correlated (Spangler et al., 2002). Cortisol levels were positively correlated with qualitative reports of anxiety and negatively correlated to reports of coping (problem-focused and emotion-oriented). An unexpected finding was positive emotions exist during exams and increased as the exam progresses and are highest after the exam, indicting test-related emotions are not limited to stress and anxiety and can change based on the students' experiences during the test. These studies link the emotional state with physiological response as moderated by cognitive appraisal as theorized by Lazarus (1999) and provide educators with new opportunities for student-friendly course designs and test designs.

From Pekrun's qualitative approach emerged the Academic or Achievement Emotions Questionnaire (AEQ, Pekrun, Goetz, & Perry, 2005). This questionnaire led to the development

of Pekrun's (2006) Control-Value Theory of Achievement Emotions which revised to be more generalized as the Achievement Emotion Model (Pekrun & Linnenbrink-Gracia, 2014, p. 123).

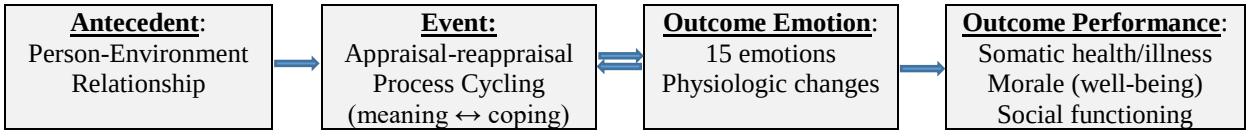
Emergence of the Control-Value Theory of Achievement Emotions

The Control-Value Theory of Achievement Emotions (Pekrun, 2006) is a range of positive and negative emotions emerging from student's perception of the person-environment relationship and the value of the achievement goal/outcome. Figure 3 provides an overview of the Control-Value Theory as a four-stage complex interrelated feedback loop of the learning process. Within the person-environment relationship, the theory posits that any antecedent variable (Stage 1) that impacts how a person appraises (makes sense of) their control of, value in, and ability to meet the demands of the experiences/attributions (Stage 2) that leads to a desired goal will manifest as groups of discrete emotions, (Stage 3) which motivate behavior (Stage 4) to culminate into goal achievement (which could be considered Stage 5). It was first published in 2006 and revised/updated in 2014 to have transferability to other performance-evaluation situations. Antecedents for both the 2006 and 2014 models are embedded in the person-environment relationship. The appraisal-reappraisal is where the person's unique set of beliefs and skills appraise situations (eg. academic- related tasks) as threat or challenge with harm or benefit consequences. Outcomes of this appraisal are a range of discreet emotions (that manifest as mega-emotions) and achievements.

A comparison of Pekrun's first Control-Value Theory of Achievement Emotions (2006) with his revised theory (2014) shows his attempt to increase generalization of each stage to allow for greater research application outside academe (e.g. sports, musical recital, etc.). The person-environment relationship has expanded from design of learning and social environments to the more generalized situation-oriented regulation and design of tasks and environment.

Achievement outcomes has expanded from learning achievement with problem-oriented regulation to any achievement with competence-oriented regulation. However, appraisal antecedents and emotion outcomes have remained stable across academic and non-academic relationships. There is a gap in the nursing literature on these two areas and this where nursing research needs to focus.

Lazarus's Model of Stress, Coping, and Adaptation (Lazarus, 1999, p. 198).



Pekrun's Control-Value Theory of Achievement Emotions

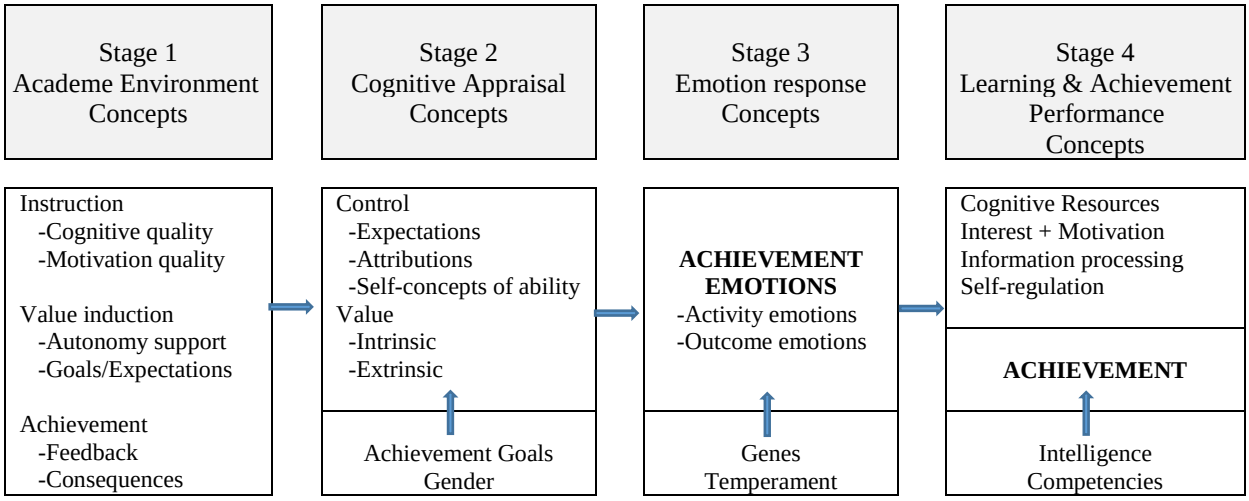


Figure 3. Comparison of Lazarus's Model of Stress, Coping and Adaptation with Pekrun's Control-Value Theory of Achievement Emotions. Adapted from *International handbook of emotions in education* (p. 123), by R. Pekrun and L. Linnenbrink-Garcia, 2014, New York, NY: Routledge - Taylor & Francis Group. Copyright 2014 by Taylor & Francis Group of Routledge Publishing (with permission, see Appendix A).

Pekrun posited that research on emotions in education is in a "state of fragmentation" (Pekrun, 2006, p. 315; Pekrun & Linnenbrink-Gracia, 2014, p. 9). In the following sections, a literature review of educational studies and nursing studies examine how studies support Pekrun's Control-Value Theory of Achievement Emotions but add additional antecedents and

outcome achievements. The emotion outcomes remain consistent across situations, cultures, and time. Nursing literature remains devoid of studies that investigate nursing students' emotions in academe beyond stress, anxiety, and burnout. This research study is a first step in addressing this gap.

Integration of Reed's Self-transcendence and Maslow's Hierarchy of Needs

The Control-Value Theory is a powerful theory that links Erikson's psychosocial stages and Piaget's cognitive development stages through the dynamic appraisal processing of Maslow's motivation hierarchy of value and control to perceived achievement goals measurable by achievement outcomes within the academe environment. The overarching outcome is the emotional experience generated within the framework of the student's individual cognitive and psychosocial development stage.

In Figure 4, Pekrun's (2006) Control-Value Theory of Achievement Emotions (Row 1) is linked with Erikson's psychosocial stages (Row 2) through cognitive appraisal, enacted coping/learning strategies, and experienced emotional responses. Educators need to be aware that each student has their own unique psychosocial developmental levels built up from infancy and progressing through primary, secondary, and higher education. Each student-academic environment encounter is appraised as a threat/benefit with value/control using Maslow's appraisal processing (Row 3). Each successive outcome incrementally culminates in progressive self-transcendence/growth or regression/woundedness (Row 2, Erikson & Erikson, 1997). Self-transcendence in academe is the process of cognitive growth and learning (from positive emotions) that educators strive for (or should strive for). Although Erikson and Erikson (1997) originally placed the self-transcendence stage as a final life stage, nursing theorist research supports self-transcendence as an individual's developmentally-based accumulative resource of

cognitive appraisal skills through lifetime experiences (Reed, 2009). It is with this perspective that Nurse Educators should strive to apply Pekrun's Control-Value Theory of Achievement Emotions theory during curriculum development.

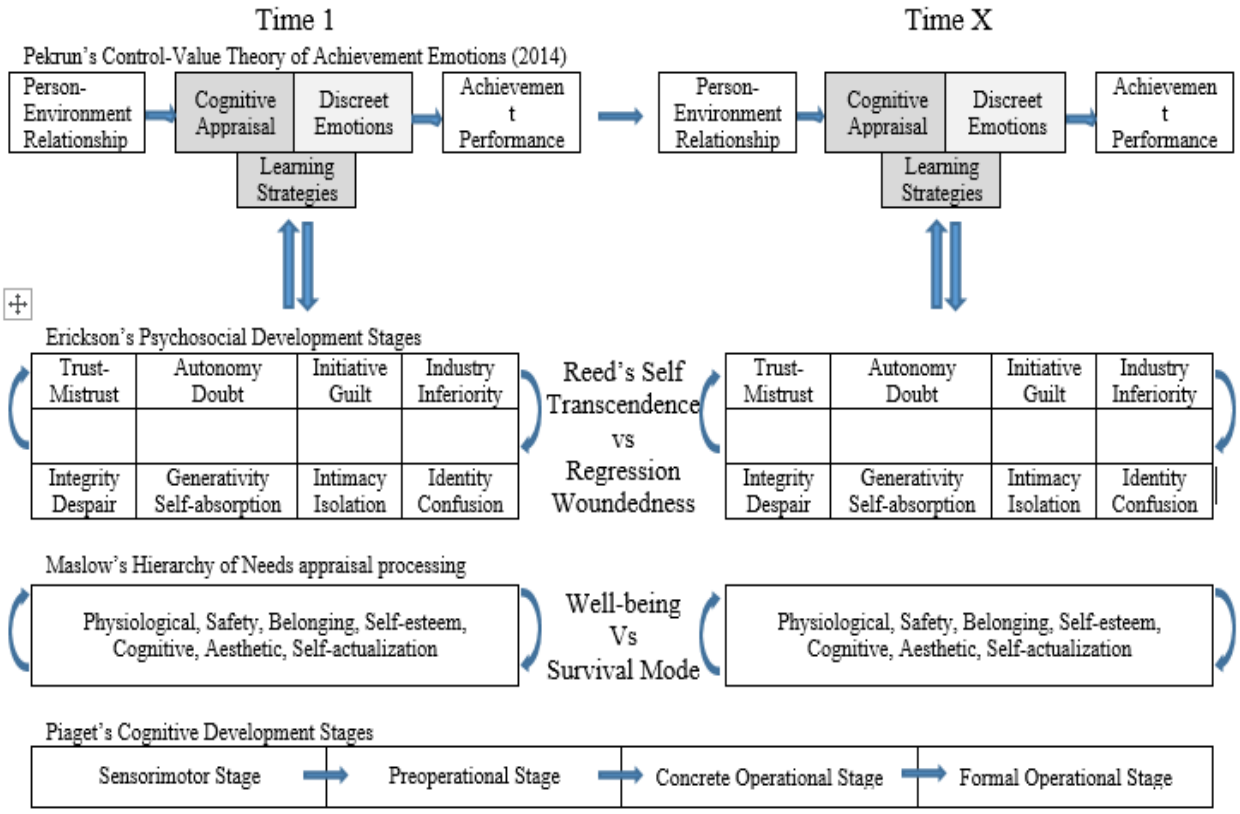


Figure 4. Academic experiences as seen through the lens of psychosocial theories

In academe, the person-academe relationship autonomy begins with the critical first step of trust, and progresses to identity. Successful encounters of environmental threats or challenges motivate individuals to engage in similar encounters. Unsuccessful or unpleasant encounters can deactivate an individual's desire to engage in similar encounters. Contrary to the previous belief in the uni-directionality of developmental stages, research now shows that each stage is revisited for each encounter to culminate in growth or regression. Positive growth leads to self-transcendence. Negative growth leads to deep woundedness and regression. Critical for

educators to know is past experiences shaped future appraisal where situational outcomes result in emotional outcomes that shape future appraisal of new situations.

Appraisal of academic situations is unique to each student and balances Maslow's hierarchy of needs (Figure 4, Row 3) with the perception of self (Pfeifer, 1998), student control, and how valued (important) is the goal of achievement (Pekrun, 2006). Academic needs can supersede basics physiological, safety, belonging, and self-esteem needs for the higher value/goal of learning (need to know and understand) and search for inner/outer beauty such as the Christian's worldview of the Fruits of the Holy Spirit (Payne, 2007). If the individual's perception of the outcome value is high enough, then he/she can override one's doubt about their resources and ignite their motivation to overcome the demands (benefits versus the risk balance). If the perception is that they do not have the resources (ability) to be successful (as experienced by past situational outcomes), then the motivation to try decreases (risk overrides benefits). In addition, cognitive appraisal skills for survival within an academic setting can adapt over time. Appraisal adaptation skills are limited by the stable unidirectional lifetime framework of Piaget's cognitive stages (Figure 4, Row 4). Higher education teachers should encounter students who have reached the formal operations stage but primary and secondary educators will encounter students who are at various stages of earlier cognitive development.

Related Literature

Education Studies – Non-Nursing Studies

This section of the literature review examined studies in education that used the theoretical framework of Pekrun's Control-Value Theory of Achievement Emotions to guide their research methodology and the Academic or Achievement Emotions Questionnaire to operationalize the variables of achievement emotions. Since 2006, numerous studies across

cultures, countries, age groups, educational levels and academic domains have studied achievement emotions through the theoretical framework of Pekrun's Control-Value Theory of Achievement Emotions.

Achievement Emotions Questionnaire (AEQ)

The Achievement Emotions Questionnaire (AEQ, Pekrun, Goetz, & Perry, 2005) measures discreet achievement emotions and was designed specifically to measure discreet achievement emotions in the Control-Value Theory of Achievement Emotions. A search of the literature from 2005 to 2015 was conducted that specifically cited the AEQ manual. Databases included CINAHL, Google Scholar, Medline, ProQuest, and PsychInfo. A total of 74 studies were found. Of those, 56 were primary studies that addressed the Control-Value Theory of Achievement Emotions. The reliability of the AEQ scales in the class-related, learning-related, and test-related domains have been consistent across cultures, countries, age groups, and educational levels. Three confirmatory factor analysis (Paoloni, Vaja, & Muñoz, 2014; Peixoto, Mata, Monteiro, Sanches, & Pekrun, 2015; Tze, Klassen, Daniels, Li, & Zhang, 2013) were similar to the reliability coefficients published in the original AEQ manual (Pekrun, Goetz, & Perry, 2005).

Emotions and Universality

The studies evaluated for this dissertation had a global representation: Argentina (N = 3), Australia (N = 1), Austria (N = 1), Canada (N = 7), China (N = 2), Germany (N = 1), Netherlands (N = 1), Philippines (N = 1), Portugal (N = 1), Spain (N = 1), United Kingdom (N = 3), and the United States (N = 11). Participants were representative across varying levels of academe: Graduate (N = 665), undergraduates (N = 14,045), secondary (N = 500), middle (N = 187), and primary (N = 3,046). Achievement outcomes included course work grades, exams,

standardized exams, course grades, perceived course grades, GPA, and sports game outcome. The results across the different studies were similar without any contradictory findings regarding the relationship between cognitive appraisal (motivation, control and value, intrinsic/extrinsic goals, self-efficacy) and learning strategies (cognitive strategies resource management). The only difference was the emphasis on subcomponents within cognitive appraisal (motivation subcomponents versus learning strategy subcomponents). Some samples emphasized motivation strategies (value components vs expectancy components) whereas other emphasized learning strategies (cognitive and metacognitive versus resource management strategies). These differences may be embedded in the chosen methodology design or a valid difference between samples resulting from unidentified extraneous variables. More comparative research is needed.

Emotion Effect on Cognitive Appraisal and Academic Performance

Cognitive appraisal can be measured by students' reports on their intrinsic/extrinsic achievement goal orientation, task value, control beliefs, and self-efficacy for learning and performances (Pintrich, 2004). Putwain, Sander, and Larkin (2013) investigated the three-dimensional taxonomy of achievement emotions in Table 1 using 200 undergraduate students from the United Kingdom. As predicted by the Control-Value Theory of Achievement Emotions, students' learning activity-focused goals are correlated with activity-focused achievement emotions such that positive emotions (enjoyment) are positively correlated and negative emotions (anger and boredom) are negatively correlated. In addition, students' performance outcome-focused goals are correlated with outcome-focused achievement emotions such that positive emotions (pride and hope) are positively correlated and negative emotions (anxiety, shame, and hopelessness) are negatively correlated. In addition, positive emotions are positively correlated with course grades whereas negative emotions are negatively correlated

with course grades. The study was repeated using a longitudinal design over five time periods with 434 undergraduate students from the United Kingdom (Putwain, Larkin, & Sander, 2013). The results verified the stability of the learning emotions over time. In a study with 187 middle school students from Romania (Fritea & Chiş, 2012), similar results were found supporting the universality of the Control-Value Theory of Achievement Emotions across age groups and culture.

In a meta-analysis of 77 studies using students from diverse educational levels, academic domains and culture, Huang (2011) found the relationship between students' cognitive appraisal of learning activity-focused goals and performance outcome-focused goals were correlated with achievement emotions supporting the universality of the Control-Value Theory of Achievement Emotions. Learning mastery goals were more highly correlated with the intensity of positive emotions. Performance avoidance goals were more highly correlated with the intensity of negative emotions. In addition, more intense positive emotions did not result in a decrease in negative emotions. Both positive and negative emotions can co-exist supporting the assumption of discreet emotions coinciding with mega-emotions. Hulleman, Schrager, Bodmann, and Harackiewicz (2010) dispute the validity of instruments measuring achievement goals as two separate concepts: Achievement mastery goals and achievement performance goals. Regardless of the over-lap between achievement mastery and performance goals, the construct of achievement goals as an antecedent to achievement emotions remains valid.

Emotion Effects on Learning Strategies and Academic Performance

Learning strategies can be measured by students' reports on the metacognitive strategies used (e.g. rehearsal, elaboration, organization, critical thinking, and metacognitive self-regulation) and resource management strategies (time and study environments, effort regulation,

peer learning, and help seeking) (Pintrich, 2004; Pintrich, Smith, Garcia, & McKeachie, 1991). Self-regulated learning strategies are positively correlated with positive emotions (enjoyment) and negatively correlated with negative emotions (frustration and boredom) (Artino, 2009; Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). Marchand and Gutierrez (2012) reported strong positive correlations between hope and learning strategies and strong negative correlations between anger/frustration and learning strategies with insignificant correlations with anxiety. In addition, Dela Rosa and Bernardo (2013) reported students' use of deep learning strategies was strongly positively correlated with enjoyment ($r = .61$) and only mildly negatively correlated with anxiety ($r = .14$). It appears that learning strategies are more highly affected by positive emotions as compared to motivation.

Emotion Effects on Academic Outcome

Achievement emotions with a positive valence (enjoyment, hope, pride) positively correlate with positive academic performance whereas negative valance (anger, anxiety, shame, hopelessness and boredom) correlate with negative academic performance. This finding appears universal: Netherlands (Tempelaar, Niculescu, Rienties, Gijselaers, & Giesbers, 2012), Argentina (Gonzalez, Donolo, Rinaudo, & Paoloni, 2011), U.S.A. (Artino, 2010), and Canada (Daniels, 2009). One exception was reported in gifted Romanian high school students (Fritea & Chiş, 2012). There was no relationship between learning or test emotions and academic performance on tests. Authors concluded that in high functioning students, where academic performance is high, the effect of emotions is overridden by their high intellect.

Boredom was reported to be inconsistently correlated with cognitive appraisal and academic performance. For example, boredom was insignificant in academic performance for Chinese and Canadian students (Putwain, Sander, & Larkin, 2013; Tze, Daniels, Klassen, &

Johnson, 2013). Boredom was insignificant in motivation (interest and performance goals) in Romanian students (Fritea & Fritea, 2013), United Kingdom students (Putwain, Sander, & Larkin, 2013), and Spanish students (González, Donolo, & Rinaudo, 2009). Boredom changed over time indicating it was a temporary state (Pekrun et al., 2010; Putwain, Larkin, & Sander, 2013). A meta-analysis of 29 studies (Tze et al., 2015) totaling 19,052 secondary and university students representing North America, Europe, and Asia was conducted on the discreet achievement emotion, boredom. The Achievement Emotions Questionnaire (class-related and learning-related domains) was used in 20 of the 29 studies to evaluate the relationship between boredom and motivation, learning strategies/behaviors, and performance. Boredom was found to be a negative deactivating emotion with moderate correlation with motivation, learning strategies, and academic outcome. Meta-analyses showed an overall effect size of boredom in both learning and class domains were $\bar{r}$ = -.24 which Tze et al. (2015) interpreted as having a small-medium magnitude (Cohen's $\bar{d}$ = -.50). However, there was a heterogeneity of effect sizes ranging from near zero to -.65 suggesting hidden moderator variables not identified. Of the 127 correlations reported in the 29 studies, 124 relationships were negative or near zero correlations (N = 124) ranging from -.65 to .019. Only three correlations were positive: Cumulative GPA (r = .18), group assignment (r = .23), and learning strategy- rehearsal (r = .19). Moderator effect sizes between boredom and academic concepts were calculated to be -.40 (motivation), -.35 (learning strategies/behaviors) and -.16 (achievement). In comparing academic domains, effect sizes were higher in class-related boredom as compared to learning-related boredom.

Emergence of Meta-Emotions

Pekrun and colleague's (Pekrun, 1992; Spielberger & Vagg, 1995) report on meta-emotions is supported by the mix of emotions that exist simultaneously in each student and with

the emergence of satisfaction from a successful outcome which culminates into overall well-being. Satisfaction is an accumulation of emotions emerging during and after academic performance. Cho and Heron (2015) found satisfaction positively correlated with successful academic course grades despite significant negative emotions reported within the academic experience. Ioannou and Artino (2010) used qualitative and quantitative methods to evaluate students' experiences with group assessment and found satisfaction coexisting with a mixture of positive and negative emotions. The Achievement Emotion Questionnaire measures emotion as discrete but has shown discreet emotions influence on the remaining eight emotions to result in a unique emotional response to achievement (Pekrun et al., 2011). The achievement emotion questionnaire does not directly measure students' satisfaction. This is a gap that needs to be addressed in future studies.

Education Studies – Nursing Education

This section of the literature review examined studies in nursing education that mentioned any concepts similar to the concepts identified in the theoretical framework of Pekrun's (2006) Control-Value Theory of Achievement Emotions (listed in Figure 2). A literature search for studies on nursing students' perceptions of the person-environment appraisal, cognitive appraisal, learning strategies, emotions and academic performance was conducted and reviewed in this section. There are no studies that examine achievement emotions using the Achievement Emotions Questionnaire (Pekrun, Goetz, & Perry, 2005). However, there are studies on nursing student academic performance and cognitive appraisal and learning strategies using Pintrich et al. (1991) Motivated Strategies for Learning Questionnaire (MSLQ). This questionnaire examines the components of cognitive appraisal and learning strategies which support parts of Pekrun's Control-Value Theory of Achievement Emotion model (identified in

Figure 3). In addition, there are qualitative studies that report on emotions identified by nursing students. Some of these emotions include the achievement emotions listed in Table 1. There are numerous quantitative studies on the intense negative emotions of stress, anxiety, burnout, and incivility in nursing education.

Emotion Effects on Cognitive Appraisal, Learning Strategies, and Academic Performance

Nursing and medical school curricula are challenging and competitive with reports of extreme stress and academic burnout from voluminous amounts of learning material and high-stakes exams (Boevé, Meijer, Albers, Beetsma, & Bosker, 2015; March & Robinson, 2015). Salamonson, Everett, Koch, Wilson, and Davidson (2009) examined cognitive appraisal (using the MSQL) with academic performance in 665 first year nursing and medical students from Australia. Nursing students had a higher extrinsic goal orientation and lower academic performance (GPA). Medical students had higher learning strategies in peer learning, help seeking, critical thinking, and time/study management. Using the same motivation tool, MSLQ, Nagelsmith, Bryer, and Yan (2012) also found a significant relationship between motivation and academic performance (GPA) in USA nursing students but the individual MSLQ scales were not reported. In another USA nursing student study, Robb (2014) found only one statistically significant relationship between the MSLQ subscales and GPA: Organization learning strategies. Whereas Kumrow (2007) found only help seeking learning strategies (MSLQ) that correlated with academic outcome in USA graduate nursing students. Krov (2010) reported high levels of hope when combined the high levels of self-efficacy hope resulted in goal achievement. The heterogeneity of these findings in nursing student studies support the validity of Control-Value Theory of Achievement Emotions while underscoring differences in how nursing students appraise the nursing education experience and choose different motivation and learning

strategies. These finding indicate there are differences between nursing students and non-nursing students in academe.

Qualitative Studies on the Lived Experiences of Nursing Education

Using a phenomenological methodology, the theme of hope emerged as part of the lived experiences of 160 USA Associate Degree Nursing (ADN) students (Jennette, 1995). Hope was goal-focused on passing the nursing program and passing the NCLEX-RN exam to the final achievement of becoming a nurse. Hope also was used as a goal of making a difference for others. This study alone supports many components of Pekrun's achievement emotions model depicted in Figure 3. First, the person-environment relationship (personal and academic) was affected personally (as identified by Lazarus's) and academically (as identified by Pekrun's models). The theme of family life emerged that included both positive and negative emotions: Joy of being loved and supported by family contrasted by being stressed and exhausted, emotional duress and crying when balancing family needs with study needs and financial anxiety. Anxiety, anger, and sadness were mentioned because of not being able to spend more time with family. Nursing students described their appraisal of academic demands with motivation components (values of goals and tasks; control beliefs; self-efficacy for learning and performance). Learning strategies were focused on resource management (time and study, effort, peer learning, and help seeking) with no mention of cognitive or metacognitive strategies. The theme of the program of study (academic experience) was described with emotions of enjoyment of learning and meeting peers and patients with the fluctuating self-esteem during clinical experiences. These emotions culminating in quality of physical health. Students mentioned the words "challenging" and "threatening" as well as "benefits" and "detriments". The value of the goal of completion was a driving force to persist. Mega-emotions were an

outcome of the totality of the nursing education experience, such as empathy for others and increased spirituality, and emerged as a self-transcendence outcome of made "me a better person and allowed me to grow in many ways that I couldn't before." Emotional volatility was also mentioned as relating to the culmination of negative emotions. One student poignantly stated "…living through this is hell" while another stated "I'd do it all over again."

Two qualitative studies add additional support for the importance of the person-environment relationship and variables in the Control-Value Theory of Achievement Emotions. Buonocore (2009) reported findings from a phenomenological study on nursing students in an RN-to-BSN program. Themes included the unexpected fast paced intensity and the importance of faculty and peer support. In a meta-synthesis, Alicea-Planas (2009) reported additional themes affecting the personal-environment relationship. First, nursing student's financial security. Second, nursing student's negative self-efficacy beliefs. Third, social support and obligations outside academe. Fourth, social support and obligations inside academe. Finally, the process of developing positive self-belief, self-confidence, self-motivation, perseverance, personal goals, and ability to handle failure. These emerging themes support the complexity of antecedents impacting achievement emotions and academic performance.

Sharif and Masoumi (2005) used focus groups to examine students' perception of their clinical experiences. One emerging theme was initial anxiety that decreased over time as the perception of not having enough clinical experience to accomplish the task was superseded by a sense of competence. Doubts about their self-efficacy were expressed as fear of failure. Sense of not belonging when staff nurses ignored them. Quality of help by staff nurses was mentioned whereas faculty were not perceived as helpful support because of their focus on determining clinical grades. Although students were explicitly asked about enjoyment, there were no reports

of enjoyment. This could be related to the combined emotion of fear such that the flight-fight response overrides any perception of positive emotions.

Pride was reported with the identity of being a nursing student (Ritchie, 2008) and being faculty of nursing students. Arreciado Marañón and Isla Pera (2015) reported pride experienced during clinical placement and assignment of mentors. Sørensen and Hall (2011) reported personal and professional pride as a prevalent emotion experienced after successful completion of nursing school only if the individual could see the big picture outside the daily emotions of working. Pride was linked to themes of self-transcendence such as moral sense of being good and sense of personal well-being. This support's Pekrun et al.'s (2002) taxonomy of emotions where pride is an outcome emotion. There was one study that reported pride as a negative emotion, when Iranian nursing students perceived faculty's pride and humiliation of students as interfering with helping nursing students (Ghiyasvandian, Bolourchifard, & Parsa Yekta, 2015).

Quantitative Studies on the Emotions in Nursing Education

Emotional intelligence. Emotional intelligence (EI) is a causal personal antecedent that affects information appraisal of one's own feelings and the feelings of others to guide thinking and behavior. The EI model is a constellation of emotional self-perceptions which is summative of self-efficacy. Self-efficacy is a causal antecedent (See Figure 2) that is part of the motivation concepts intrinsic to each person (Pintrich et al., 1991) from their cognitive and psychosocial maturation. It does not contain discreet emotions and should not be confused with academic and achievement emotions. Fernandez, Salamonson, and Griffiths (2012) examined the trait model of emotional intelligence (EI), cognitive appraisal (self-regulated learning strategies using MSLQ) and academic performance (GPA) in 81 first year nursing students. Emotional intelligence positively correlated with critical thinking, help-seeking and peer learning and

negatively correlated with extrinsic goal orientation. It was a significant predictor of academic success as was self-efficacy in educational studies.

Clinical burnout and clinical performance. Extreme levels of stress leading to burnout is prevalent in nurses, with 95.5% of acute care nurses reporting feelings of frustration and anger and 38.4% scoring at high levels of burnout and concomitant loss of sensitivity toward patients (Erickson & Grove, 2007). Burnout components include emotional exhaustion, cynicism, and reduced personal accomplishment. A cross-national survey of 43,329 nurses in five countries found high levels of burnout: 43.2% in U.S., 36% in Canada, 36.2% in England, 29.1% in Scotland, and 15.2% in Germany with 65% to 87% perceiving nursing care at poor quality levels due to high work demand (Aiken et al., 2001).

Academic burnout and academic performance. Nursing students from the global nursing community report high levels of academic stress including Borneo (Burnard, Haji Abd Rahim, Hayes, & Edwards, 2007), Hong Kong (Chan, So, & Fong, 2009), India (Saxena, 2001), Jordan (Abu Tariah & al-Sharaya, 1997), Taiwan (Sheu, Lin, & Hwang, 2002), Spain (Jimenez, Navia-Osorio, & Diaz, 2009), U.S. (Hegge & Larson, 2008), and the United Kingdom (Gibbons, 2010; Gibbons, Dempster, and Moutry, 2011).

Academic burnout persists over long periods of time. In a prospective, repeated measures survey design to investigate the relationship between stress, coping, and burnout with psychological variables (Watson et al., 2008), nursing student psychopathy was prevalent. Five personality traits of neuroticism, openness, extraversion, agreeableness, and conscientiousness were measured by the NEO Five Factor Inventory (NEOFFI). The General Health Questionnaire-12 (GHO12) was used to measure psychological morbidity. The Transactional Model of Stress by Lazarus guided this study. Nursing students (N = 147) recruited from a

university nursing program completed the seven-month study. Results indicated that psychological morbidity, stress, and burnout levels increased after seven months in nursing students. Neuroticism largely explained this variance. Emotion-oriented coping explained the variance of stress. Clinical and academic stress was increased in emotion-oriented coping. These findings indicate our nursing students are entering the workforce at moderate to high burnout levels. Wounded nurses cannot heal wounded people. Therefore, implications suggest nursing faculty need to design nursing education experiences that foster self-transcendence and protect against regression and woundedness.

Prevalence of incivility. As predicted by Figure 4, when individuals' hierarchy of needs are not being met, survival mode kicks in. Anger, frustration, anxiety, and burnout manifests as incivility, bullying and even murder/suicide. Clark (2008) conducted a large survey of 504 U.S. nursing students and 194 nursing faculty to address the frequency and type of uncivil behaviors using the Incivility in Nursing Education (INE) survey. The frequency of student-on-faculty incivility ranged from 14% to 86% and 31% to 81% faculty-on-student incivility depending on the type of uncivil behavior. Clark et al. (2010) also surveyed incivility in nursing education in the People's republic of China and found nursing students (47.9%) and nursing faculty (29%) perceived nursing incivility to be moderate to severe in nursing education.

Walrath, Dang, and Nyberg (2013) conducted a survey on disruptive clinical behavior in a mid-Atlantic region of the U.S. and the effect on patient safety. Disruptive behavior was defined as incivility, psychological aggression, and physical violence. Of the 1559 clinicians (RNs, MDs, affiliates), 84% reported personally experiencing disruptive behavior within the past year. In addition, 73% reported witnessing disruptive behavior.

Marchiondo, Marchiondo, and Lasiter (2010) surveyed 152 BSN students using the NEES tool and found a prevalence of 88% faculty-on-student incivility with 40% one-time occurrence and 43% two-time occurrence. The clinical setting had the highest occurrence at 43% with 37% occurring in the classroom. Consequences were reported to be anxiety, nervousness or depression. Program dissatisfaction varied according to level of experiences with incivility but perceived GPA was not correlated. An interesting fact emerged in that students rarely made a formal complaint.

Extreme emotions have led nursing students to murder and suicide. In 2002, a nursing student failing out of a BSN nursing program at the University of Arizona shot three nursing faculty before killing himself. Prevalence of nursing student suicide is unknown. There are scattered reports of nursing student suicide but no investigation into the cause. On the other end of the emotion spectrum is boredom. The concept of boredom in nursing education has not been examined. Brief mentions of boring lectures are given but no further explanation or evaluation. This is an area that needs to be explored.

Qualitative descriptive approach. Clark and Springer (2007) and Clark (2008) conducted two mixed design studies on incivility in nursing education using the Incivility in Nursing Education (INE) survey tool and written narrative reports on faculty and students' perceptions on incivility in nursing education. Passive types of student-on-faculty incivility, as perceived by faculty, were arriving late or leaving early, being unprepared, missing class, acting bored or sleeping, not paying attention, and cheating. Active types of student-on-faculty incivility were holding distracting conversations, creating tension by dominating discussions, refusing to answer direct questions, making disapproving groans or sarcastic remarks, and demanding make-up exams, extensions, or grade changes. Active types of faculty-on-student

incivility as perceived by students were condescending remarks, gestures, exerting rank, punishing everyone for one student's behavior, threats of failure, and ignoring/refusing to answer questions. Passive types of faculty-on-student incivility as perceived by students were being unavailable after class, cold or distant, being unprepared for or late or leaving early or canceling scheduled activities, ignoring disruptive behavior, subjective grading, ineffective teaching styles, deviating from the syllabus/assignments/due dates and refusing make-up exams, extensions, or grade changes.

Anthony and Yastik (2011) conducted a qualitative descriptive study to explore the experiences of BSN students with incivility in clinical experiences, perceptions of civil versus uncivil nurse behaviors, and identify what the participants believe nurse educators should do to manage this issue. Four focus groups totaling 21 participants from a Midwestern U.S. university BSN program were recruited using purposeful sampling. Three themes emerged to describe uncivil behaviors: Exclusionary behaviors, hostile or rude behaviors, and dismissive behaviors. Civil behaviors were described as the RN caring about them: Being included in patient care, allowed to do procedures, having patient care explained to them by the RN, and obtaining many learning opportunities. Participants had diverse opinions regarding how nurse educators can address uncivil behaviors. Ideas ranged from there is nothing that can be done to change incivility in nursing to more communication between the nursing staff and clinical instructors on what nursing students need, and finally to prepare nursing students on how to respond to incivility.

Narrative approach. Clark and Springer (2007) conducted a mix design to investigate incivility in nursing education. Nursing faculty (n = 36) and nursing students (n = 467) completed the Incivility in Nursing Education (INE) survey as well as wrote a narrative on their

perception of how participants contribute to causes, and how to remedy incivility in nursing education. Data was analyzed using an interpretive qualitative method.

Lasiter, Marchiondo, and Marchiondo (2012) explored 94 BSN students' personal descriptions of nursing faculty incivility using a narrative approach. Participants were from a Midwestern U.S. university. Descriptors included verbal abuse, belittling, and threatened failure. However, students were most traumatized by the fact that these uncivil behaviors occurred publically. Four categories were extracted from the narrative data: "In front of someone" (24.5%), "talked to others about me" (6.4%), "it made me feel stupid" (30.8%), and "I felt belittled" (54.3%). Consequences of these incivility experiences were errors in clinical judgment and persistent traumatizing memories.

Phenomenological approach. Using the hermeneutic phenomenological approach, Bradbury-Jones, Sambrook, and Irvine (2011) examined how 13 nursing students from the UK perceived being empowered in the clinical setting as they progressed through their nursing program. Three elements were identified: being valued as a learner, team member, and person. When students were not valued, confidence and the ability to learn decreased and feelings of powerlessness, and being ignored, isolated, and marginalized were experienced.

Del Prato (2013) used an interpretive phenomenological approach to examine the lived nursing education experiences of 13 ADN students from northeastern U.S. and their perception of educational practices that guided or prevented their professional identity formation. The major concept that emerged was faculty incivility and its consequences on professional identity formation. Four interrelated themes related to faculty incivility emerged: Verbally abusive and demeaning experiences, favoritism and subjective evaluations, rigid expectations for perfection and time management, and targeting and weeding out practices (Del Prato, 2013, p. 288).

Consequences of faculty incivility were hindering learning, self-esteem, self-efficacy, and confidence (Del Prato, 2013, p. 288). In addition, one additional affect theme emerged: Disillusionment with nursing. Participants expected caring values to be role-modeled. Faculty who did supported participants' perception of professional identify formation, where faculty who engaged in incivility hindered professional identify formation.

Mott (2014) used a descriptive phenomenological approach to examine the lived experiences of faculty-on-student incivility or bullying in 6 nursing students located within the same Midwestern U.S. city but at different nursing programs. Data saturation was reached after interviewing only 6 participants. Five themes emerged describing bullying: Bullying is an emotional experience, in order to give respect, respect must be given, resilience and persistence are key, the environment is everything, and perception is reality. Under the emotional experience theme, four categories were identified: Fear/intimidation, frustration/anger/sadness/depression, demeaning/belittled/felt stupid, and decreased self-confidence. Under the theme of environment, five categories were identified: Targeting, setting up to fail, lack of receptiveness, promoting attrition, and unprofessionalism. An unexpected finding was the generational differences in responses. The younger generation focused on lack of respect. The older generation focused on being targeted and ways to overcome bullying.

Peters (2014) examined the perception of eight nursing faculty regarding faculty-on-faculty incivility in nursing education using a hermeneutical phenomenological approach. Five themes emerged: Sense of rejection from colleagues, employing behaviors to cope with uncivil colleagues, sensing others wanted new faculty to fail, sensing a possessiveness of territory from senior faculty, and struggling with a decision to remain in academics. Within those themes, seven subthemes were identified: Feelings of self-doubt related to ability, feelings of fear or

intimidation related to future interactions with instigator, feeling belittled as though being treated like a child, perceiving lack of mentorship, sensing a power struggle within the department of nursing, sensing that senior faculty feel threatened by novice faculty, and feeling disbelief at the lack of professionalism.

Emotions on Learning and Memory

Concepts within the Allosteric Load Model are similar to Lazarus and Folkman's demand-perception-response model and there is a need in nursing education research to begin to combine both models when developing and implementing nursing courses. Antecedents are identified as individual characteristics, chronic stressors, and social environments (genetic disposition, developmental experiences such as life events and trauma/abuse events, and past and current stressful environments). McEwen's stress appraisal is limited to negative emotions that McEwen labels as threat, helplessness, and vigilance, whereas the Lazarus and Folkman model was expanded in 1999 to include 15 positive and negative emotions. McEwen's model identifies behavioral responses to perceived stress as flight-fight and personal coping (diet, smoking, drinking, and exercise). The AL Model posits that physiological responses to stressors are dependent upon a person's appraisal of that stress. This appraisal is shaped by the antecedents of individual characteristics, chronic stressors, and social environment. Repeated or prolonged perception of stress has a cumulative effect on physical and mental health which in turn affects a person's ability to learn.

Neuroscience of Learning and Memory

The hippocampus is a small area in the medial temporal lobe of the brain and is part of the integrated system of emotion and memory known as the limbic system. The hippocampus is

involved in long-term memory, spatial navigation, spatial memory, and behavioral inhibition. At the beginning of the 21st century, neuroscientists discovered two areas of the mammalian brain where new neurons are being born every day: Subventricular zone and subgradular zone of the hippocampus (Deng, Zhao, & Gage, 2011; Doetsch & Hen, 2005; Namihira & Nakashima, 2011). This process is known as neurogenesis. Neurogenesis is modulated by the experiences in the environment. For example, increases in the demand for spatial learning and memory up-regulates production and survival of new neurons (Dupret et al., 2007). An environment rich with sensory stimuli and motor stimuli (motor movement) up-regulates neurogenesis. Learning up-regulates neurogenesis where stressors down-regulate neurogenesis (Gould, Beylin, Tanapat, Reeves, & Shors, 1999).

A stress response triggers the hypothalamic-pituitary-adrenal (HPA) axis which releases glucocorticoids (GCs) leading to a behavioral response. The effects of glucocorticoids (GCs) is documented through the literature particularly on cognitive appraisal and information processing. In nursing students, studies have been done to link high cortisol levels with poor academic performance.

Thornton and Carmody (2014) used quantitative EEG (QEEG) to study patterns of associations of brain activation during encoding (learning) and recall (memory retrieval) for face-name memory retrieval in a sample spanning 8 to 74-year-old participants. During encoding, there is widespread brain activation across all brain areas (metaphorically termed ‘flashlight’ activity) with a focus in the frontal (F7) and temporal (T3) areas connecting to the central (metaphorically termed the central processing unit ‘CPU’) area of the brain with dominant activity in the left hemisphere. During recall, the left temporal (T3), bilateral prefrontal cortex (PFC), and bilateral parietal locations are activated supporting the theory of brain

connectivity. The occipital (visual) area is active during memory encoding but minimized during recall. When combining data from using other cognitive tasks, Thornton found that different learning tasks tap into different (with some overlapping) cognitive resources which he termed coordinated allocation of resources or CAR. Developmental differences across the lifespan showed increasing age caused increases and decreases in different diffuse patterns of brain associations, which he theorized to be a trend toward centralizing cognitive processing.

Summation of the Literature Review

Thirty-six studies that used the Achievement Emotions Questionnaire (AEQ), or a variation, validated Pekrun's Control-Value Theory of Achievement Emotions (Pekrun, Elliot, & Maier, 2006; Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011; Pekrun & Linnenbrink-Garcia, 2014). These studies represent various cultures, countries, and age groups. Although there were variations in the tools used to measure antecedents and consequences to achievement emotions, the theory was well-supported. The directionality of the relationships (Figure 3) was unanimously reciprocal between antecedents (Stage 1 and 2), the phenomenon of discreet achievement emotions (Stage 3), and consequences (Stage 4). Such findings support the dynamic continuous shifts that occur between these concepts over time such that consequences impact antecedents through emotions, as well as antecedents impact consequences through emotions in a dynamic interplay that inter-twined together over time. The result is a progression through psychological and psychosocial lifespan developmental stages where each academic experience influences future appraisal of academic experiences.

In addition, nursing studies were evaluated for congruency with Pekrun's Control-Value Theory of Achievement Emotions. Although there was a dearth of studies that applied Pekrun's Control-Value Theory of Achievement Emotions or used the Achievement Emotions

Questionnaire, qualitative nursing studies clearly supported that learning emotions in nursing spans a wide range of positive and negative emotions. In addition, the antecedent concepts of perceptions personal control and value were a driving force for motivation and engagement in nursing students as well as other students in primary, secondary, and tertiary education.

Nurse educators need to embrace and apply the most up-to-date learning theories when envisioning and enacting learning activities and creating learning environments. The findings in this study should be a bridge between the old paradigm of nursing education research and the new paradigm that embraces the continuum of learning emotions on nursing students' learning experience.

CHAPTER THREE: METHODS

Overview

This study examined predictive correlation relationships between the spectrum of positive and negative achievement emotions with academic nurse performance on the national standardized Assessment Technology Institute (ATI, 2011) exams that measure a student's mastery of course content. Emotions were measured using the Achievement Emotions Questionnaire or AEQ (Pekrun, Goetz, & Perry, 2005). The following Chapter Three section details the study design including supportive literature that identified a gap in nursing education research on learning environment designs, two research questions that address the nursing literature gap, seven null hypotheses that reflect what is currently known from education literature, and supportive rationale for the consistency in this study's methodology between the research questions and hypotheses and the described procedures. The collected data was entered into the SPSS version 22 statistical software and visually screened for anomalies and extreme outliers before preceding to correlation and predictive data analysis reported in Chapter Four.

Design

A non-experimental predictive correlation design was chosen for this study to look for significant relationships between nursing students' academic performance (outcome variable) and eight self-reported emotions experienced while learning (predictor variables) during a nursing course in nursing fundamentals. Over 60 years of nursing education research has been limited to only two negative emotions: Stress and anxiety. However, neuroscience evidence supports the effects of positive and negative emotions on many cognitive processes including attention, executive control, and the learning process during memory encoding and memory retrieval (Tyng et al., 2017). In addition, education research including primary, secondary,

higher education and graduate education links positive and negative emotions experienced during the learning process on academic performance on exams (Pekrun & Linnenbrink-Gracia, 2014). From this literature gap, two research questions were developed to examine if there is a correlation between both positive and negative emotions in nursing students and academic performance on a written nursing exam and if so, are these emotions predictive of academic performance. The study was non-experimental since no variables were manipulated.

The first research question examined if correlation relationships exist between nursing students' performance on a standardized nursing exam and eight self-reported learning emotions experienced throughout the learning process before taking the ATI fundamentals of nursing exam. Correlation designs effectively determine the strength of a relationship between variables which is appropriate for the two quantitative variables in this study (Gall, Gall, & Borg, 2006). The measurable outcome variable is academic performance (a continuous ratio variable) that can be compared to a national data base of nursing students taking the same exam. The predictor variable is achievement emotions measured using the Achievement Emotions Questionnaire (AEQ) with eight Likert subscales that measure eight discrete emotions: Enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom (Pekrun, Elliot, & Maier, 2006; Pekrun et al., 2011) which is comparable to existing literature of other students in higher education. Although Likert scales are purported to be qualitative in nature (Creswell, 2013), the Likert scales in this study are considered interval variables progressing from a lower value to a higher value. The demographic survey tool developed by the researcher contained non-quantitative data to establish generalizability to the National League for Nursing reported demographics of our nursing population: Participant's age, and perception of gender, ethnicity, and primary language.

Predictive designs are used in non-experimental research when the researcher cannot or chooses not to manipulate the predictor variables (thereby eliminating any cause-effect conclusions) but believes the literature supports the assumption that the predictor variables may have a causative relationship with the outcome variable (Howell, 2011, p. 191 Warner, 2013, p. 555). In this study, there is enough evidence in neuroscience and education studies to indicate that the predictor variable of learning emotions reported by nursing students may impact the learning process, which may affect the outcome variable of academic performance. Therefore, choosing the predictive correlation design to address the literature gap is tenable.

Multiple regression is applicable in this study because this statistical strategy analyzes for significant statistical association between the outcome variable (academic performance) from the combination of multiple predictor variables (eight discrete emotions) to infer a possible causal connection (Warner, 2013, p. 266). Multiple regression takes into account the interrelationships among the eight predictor variables (X_i) by assigning weights (b) to each variable that culminate into influencing the outcome (Y_i) (Warner, 2013, p. 557). In addition, multiple regression explains the relative contribution of each predictor to the overall total variance. Regression equation for this study is as follows:

$$Y'_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + b_4X_{4i} + b_5X_{5i} + b_6X_{6i} + b_7X_{7i} + b_8X_{8i}$$

In lieu of a random sample for this study, a convenience sample was chosen from a mid-Atlantic university due to availability and researcher access to and familiarity with the site and population. This is not the best sample choice according to statisticians but is acceptable (Warner, 2013, p. 1079). However, the strength of choosing a convenience sample at a one-site location controls for extraneous variables hidden in nursing curriculum, nursing faculty-student

relationship, and diverse university philosophies on education. Participation was voluntary with safe guards to ensure privacy.

Research Questions

Two research questions (RQ) that link with the literature gap in nursing education on a spectrum of learning emotions in nursing learning environments and emotion research in academic learning are as follows:

RQ1: What are the relationships between the outcome variable (*academic performance*) and predictor variables (*achievement emotions during learning*) in Bachelor of Science in Nursing (BSN) students?

RQ2: How accurately can the outcome variable (*academic performance*) be predicted from a linear combination of predictive variables (*achievement emotions during learning)* in BSN nursing students?

Hypotheses

Seven null hypotheses (H_0) are linked to the two research questions RQ).

RQ1: What are the relationships between the outcome variable (*academic performance*) and predictor variables (*achievement emotions during learning*) in Bachelor of Science in Nursing (BSN) students?

> **$H_0$1:** There is no significant correlational relationship between Assessment Technologies Institutes Content Mastery Series examination (ATI-CMS, ie. *academic performance*) and the learning affective state of enjoyment, hope, and pride (*positive activating learning achievement emotion*) as measured by the Achievement Emotions Questionnaire (AEQ) in nursing students enrolled in an in-class Bachelor of Science in Nursing (BSN) program.

$H_0$2: There is no significant correlation between ATI-CMS examination (*academic performance*) and the learning affective state of anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

$H_0$3: There is no significant correlation between ATI-CMS examination (*academic performance*) and the learning affective state of boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

RQ2: How accurately can the outcome variable (*academic performance*) be predicted from a linear combination of predictive variables (*achievement emotions during learning)* in BSN students?

$H_0$4: There is no statistically significant predictive relationship between ATI–CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, pride, anger, anxiety, shame, boredom, and hopelessness (*learning achievement emotions*) in nursing students enrolled in an in-class BSN program.

$H_0$5: There is no statistically significant predictive relationship between ATI–CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, and pride (*positive activating learning achievement emotions*) in nursing students enrolled in an in-class BSN program.

$H_0$6: There is no statistically significant predictive relationship between ATI–CMS examination (*academic performance*) and the linear combination learning affective states

anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

H_07: There is no statistically significant predictive relationship between ATI–CMS examination (*academic performance*) and the linear combination learning affective states boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

Participants and Setting

Participants

Participants for this study were recruited from a convenience sample of nursing students enrolled in a U.S. mid-Atlantic, accredited, residential Bachelor of Science in Nursing (BSN) program and who were engaged in the basic nursing fundamental course offered early in most nursing program curriculums. For this study, choosing a convenience sample from one nursing course within the same nursing program with the same university controlled for unforeseen extraneous variables that might influence the emotionality experienced by participants. For purposes of this study, these students were referred to as 'first year nursing students' (see Chapter 1 Definition section) because most nursing curriculums offer a nursing fundamental course as an introductory course preceding more advanced courses in later semesters. First year nursing students are most predictive of the effects of emotions on learning because they have been previously screened for higher education aptitude to be successful in college-level nursing programs, but have not been lost to the nursing program through failure in early nursing courses. Students who attend face-to-face, on-campus courses have a greater sense of community and connectedness and form stronger social bonds then students who attend online courses (Rovai, Wighting, & Liu, 2005). As part of the admissions process into the nursing program, all

participants met stringent admission standards for high GPA scores and nursing school cognitive aptitude through the ATI Test of Essential Academic Skills, version five (TEAS-V). See Appendix B for review of admission requirements into the nursing program. Motivational and self-efficacy components of affective aptitude can be inferred from GPA scores (Hinton, 2014, p. 126 Krathwohl et al., 1973). The TEAS-V measures basic academic knowledge in reading, mathematics, science and English and language use. There are no direct tests for affective aptitude. Sample demographics are representative of most U.S. nursing students when compared to the most recent demographics published by the National League for Nursing (2016) and available to non-NLN members.

Setting

The study site was a single accredited four-year nursing program located within the mid-Atlantic region of the U.S.A. A single site was chosen over multiple sites to control for extraneous variables that impact learning including curriculum differences (accredited and enacted), faculty diversity in pedagogy and experience, and faculty-student incivility prevalent throughout nursing education. Nursing education incivility as high as 64% in nursing schools is reported (Kantek & Gezer, 2009) triggering negative emotional states like stress, anxiety, and anger (Hartman & Crume, 2014) that might impact the data results. This nursing program is unique in that it is Christian based with a 10:1 student to faculty ratio and a strong commitment to a ministry of caring both for each other and for patients.

Generalizability to the target population of all BSN U.S. nursing students attending on-campus courses was applicable for several reasons. First, the university reports its student profile represents all 50 U.S. states including Washington D.C. Second, the scholarship of the nursing program is supported by its accreditation by the Commission on Collegiate Nursing

Education and its history of its graduate nurses consistently achieving a first time pass rate on the NCLEX-RN exam greater the 90%. Third, nursing students accepted into the program are screened using the ATI Test of Essential Academic Skills (ATI-TEAS) to ensure academic success. However, the uniqueness of the university and its nursing program is its Christian-based philosophy which influences its education delivery and faculty-student relationships. It is for this reason that this site was chosen since it controls for faculty-student conflict issues that are prevalent in and reported by other nursing programs (Hartman & Crume, 2014) but not experienced in this nursing program where Christian faculty-student relationships are nurtured.

Sample Size

The number of participants recruited who completed and signed the surveys was 155 which exceeded the calculated minimum number for a medium effect size. Minimum sample size (N) of 110 was determined based on the following rationale. First, Warner's (2013) N > 10(p) rule of thumb where p is the number of predictor variables would require 80 participants with the recommended minimum sample size of 100 participants (p. 842). Tabachnick and Fidell (2001, p. 117) rule of thumb suggest 100 participants plus the number of independent variables for a total of 109. Stevens (2002, p. 143) suggest a rule of thumb of at least 15 participants per predictor variable for a total of 120. Using G* Power 3.1 program, sample size was calculated at 160 using power of .95, p = .05, and medium effect size f^2 = .15. Another approach Park and Dudycha (1974) determined that the sample size needed to keep R^2 from deviating from R^2–corrected requires consideration of the population multiple correlation coefficient (p^2). For the AEQ questionnaire, the range of multiple correlation coefficients is .74 to .98. Therefore, according to the tables in Park and Dudycha (1974), the minimum sample size

at 95% confidence interval and alpha value of 0.5 would be 202 (available at http://www.danielsoper.com/statcalc3/calc.aspx?id=1).

Instrumentation

Three instruments were used in this study. Demographic data was collected using a four-question survey to collect demographics as used by the National League for Nursing (2016) to generalize this research sample to the national nursing student population: Perceived gender, age (either under 30 years of age or 30 years or older), English as primary language, and self-described ethnicity. The criterion variable was measured by the Achievement Emotions Questionnaire – Learning (AEQ-L) developed to assess emotions in learning situations (Pekrun, Goetz, & Perry, 2005). See Appendix A for permission to use the instrument by the creator of the instrument, Dr. Reinhard Pekrun. The outcome variable was measured using the Assessment Technologies Institute Course Mastery Series (ATI-CMS) exam for Fundamentals of Nursing course for 2017. This exam is one of nine course mastery exit exams designed to evaluate nursing students' comprehension of the fundamentals of nursing course content and contributes to predicting NCLEX-RN success (ATI Nursing Education, n.d.).

Achievement Emotions Questionnaire –Learning

The AEQ-L instrument is the culmination of nearly two decades of research on the emotions of learning which originally focused on stress and test anxiety (Lazarus, 1999) and expanded to focused on eight emotions (Pekrun et al., 2011). Pekrun et al. (2002) advanced Lazarus's work by combining test anxiety research with test anxiety antecedents using the control-value theory of achievement emotions (Pekrun, 2000) and qualitative research methods (Pekrun et al., 2002) to develop the test emotions questionnaire or TEQ (Pekrun et al., 2004). This led to the Control-Value Theory of Achievement Emotions and the development of the

Achievement Emotions Questionnaire or AEQ (Pekrun, 2006; Pekrun et al., 2006; Pekrun, Frenzel, Goetz, & Perry, 2007). The Achievement Emotions Questionnaire (AEQ) is a multidimensional self-report instrument that assesses students' achievement emotions experienced in three different learning situations: Class-related (attending class), learning-related (studying), and test-related (writing tests and exams). The AEQ has been used in numerous studies (Daschmann, Goetz, & Stupnisky, 2011; King, McInerney, & Watkins, 2012; Lichtenfeld, Pekrun, Stupnisky, Reiss, & Murayama, 2012; Pekrun, Cusack, Murayama, Elliot, & Thomas, 2014; Pekrun et al., 2010). For this study, only the learning-related questions were given to nursing students.

The AEQ-learning instrument consists of 75 questions and used a five-point Likert scale ranging from Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5. There are eight subscales to measure the eight discreet achievement emotions: Enjoyment (n = 10), hope (n = 6), pride (n = 6), anger (n=9), anxiety (n = 11), shame (n = 11), hopelessness (n = 11), and boredom (n = 11). Scoring consisted of summing the items under each scale and taking their means, standard deviations, and internal reliabilities (Cronbach alpha). Total internal reliabilities of the eight scales range from adequate (alpha = .75) to very good (alpha = .92) that support their discreet robustness. Correlations between scales are low to medium indicating discriminant validity. Exploratory and confirmatory factor analysis support the internal structural validity of the tool (Pekrun et al., 2011; Pekrun et al., 2004).

Individual components of each emotion are reflected in each subscale so that a total emotional experience is measured: Domain (class room, learning, or test taking), Valence (positive vs. negative), activation (activating vs. deactivating), or trait vs. state, and integrated components (affective, cognitive, physiological, and motivational). When interpreting the mean

for each emotion subscale, the description needs to be learning-related emotion scales measure the following emotions: positive activating (enjoyment, hope, pride), negative activating (anger, anxiety, shame) and negative deactivating (hopelessness, boredom).

There are four different component subscales: Affective, cognitive, motivational, and physiological. There are three different time factors for when the emotion is experienced: Before studying, during studying, and after studying. These components were constructed by and validated by the developers of the AEQ-L questionnaire (Pekrun, Goetz, & Perry, 2005; Pekrun et al., 2011) and are not meant to be deconstructed since they define each emotion. Each survey subscale has items that are coded for based on the emotion.

Assessment Technologies Institute Course Mastery Series (ATI-CMS)

The Assessment Technologies Institute (ATI) provides nine standardized content mastery exams (ATI-CMS) for nursing courses (Assessment Technologies Institute, 2010). The ATI-CMS are correlated with the blueprint for the NCLEX-RN and provide a formative evaluation of NCLEX-RN readiness in nine content specific areas (Assessment Technologies Institute, 2011). The ATI-CMS include the following nine content-specific tests with reported predictive variance (regression coefficient R^2): 1) Community Health 3.9%, 2) Nursing Care of Children 10.1%, 3) Fundamentals 10.2%, 4) Mental Health 11.1%, 5) Leadership 11.3%, 6) Pharmacology 11.5%, 7) Maternal-Newborn 12.9%, 8) Nutrition 13.9% and 9) Adult Medical-Surgical 14.9% (ATI Nursing Education, n.d.). For this study, the course for Fundamentals of Nursing was chosen which is one of the earliest nursing courses taken by nursing students. This would ensure that students with achievement emotions that negatively impact academic performance would not have been weeded out and should still be enrolled in the nursing program. The ATI-CMS

Fundamentals of Nursing 2017 exam consisted of 60 multiple choice questions on a computer with Proctors monitoring the exam. The exam is given over one hour.

Procedures

Permission to conduct research at the chosen school of nursing was initially obtained from the Dean at the School of Nursing, both in person and by email, and is included in Appendix A. Liberty University's Institutional Review Board (LU IRB) approval for exemption status was obtained. See Appendix C. An exempt category is appropriate since this research study involves human participants in an approved educational setting and has no more than minimal risk, but does involves participant identifiers that link the predictor variables obtained through surveys, given prior to the end of a nursing program course, to the outcome variable obtained from confidential standardized test scores at the end of the nursing program course. Upon Receiving IRB approval, arrangements were made with collaborating nursing faculty members to distribute and collect hardcopies of the study's survey which consisted of a single survey packet containing AEQ-L survey and demographic survey (Appendix D) and the informed consent (Appendix E). The survey packet was distributed to the nursing students three weeks prior to the end of the course. Four weeks later (one week after the course ended), nursing students took the ATI-CMS fundamentals of nursing exam. Survey data and ATI test scores were manually entered into the Statistical Package for the Social Sciences (SPSS v. 22 and double-checked for input errors by another research assistant at three separate times). Figure 5 summarizes the data collection procedures, data analysis, and data analysis reviewed by another statistician.

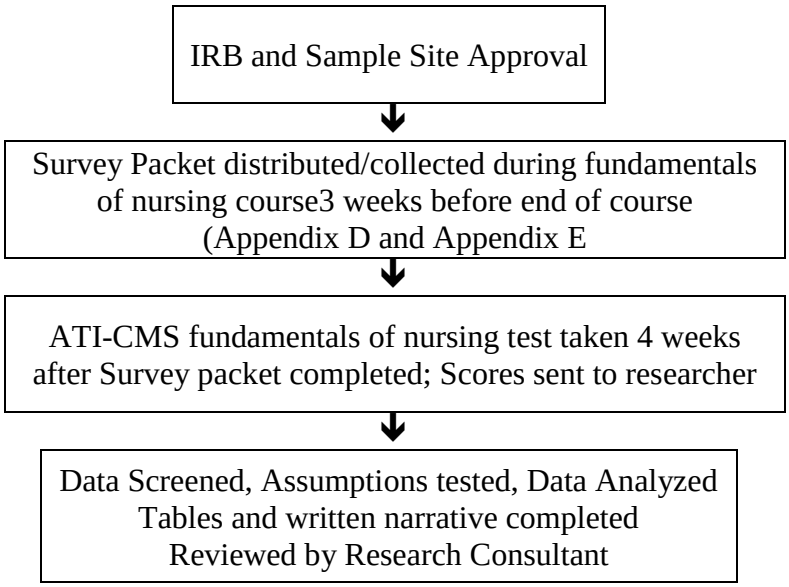


Figure 5. Data collection procedure and completion of dissertation.

Data Analysis

Before data analysis, data screening was done to detect input errors into SPSS v22. Data analysis was done in six phases. First, baccalaureate nursing student demographics from the research sample were calculated and compared to the most recent National League for Nursing (2016) baccalaureate programs demographic statistics and the U.S. Department of Education National Center for Education Statistics (NCES, 2016) for generalizability purposes. Second, descriptive statistics and Cronbach alpha reliability of the AEQ-L Questionnaire was compared to previously published data by Pekrun, Goetz, and Perry (2005). Third, screening for outliers that could impact statistical significance was conducted using Box Plots and Z-scores. Fourth, standard assumption testing for parametric statistical procedures was done which includes level of measurement (interval or ratio), random sampling, and independent observations, frequency variance around the mean (σ^2), normality using visual strategies (frequency histograms, P-P plots, Q-Q plots) and empirical strategies (skewness, kurtosis, Kolmogorov-Smirnov test, and Shapiro-Wilks test) and equal variances using Levene's Test and homescedasticity

The fifth and sixth phase specifically addressed each research question. The first research question (RQ1) and the three corresponding null hypotheses (Ho1, Ho2, Ho3) required bivariate correlation to examine the correlation between individual emotions (predictor variable) and ATI scores (outcome variable). The second research question (RQ2) and the four corresponding null hypotheses (Ho4, Ho5, Ho6, Ho7) required bivariate linear regression to examine if individual emotions (predictor variable) predict ATI scores (outcome variable). Assumption testing specific to both bivariate correlation and bivariate regression statistical methods are the same and include the assumptions of bivariate normality and bivariate linearity. Since bivariate linearity was not met (no correlation), Spearman rho and Kendall's tau were used to examine for associations to ascertain the effects of statistical test assumptions not being met.

Demographics for Generalizability

The individual demographics of the sample was calculated as percent of the total sample. The rationale was to determine generalizability with the target population of baccalaureate nursing students based on the National League for Nursing (2016) demographics and generalizability with the larger target population of U.S. college students based on the U.S. Department of Education National Center for Education Statistics (NCES, 2016) college student demographics. All AEQ-L research has been done in college student populations not nursing students. Interpreting the data results may require how different or similar the research sample is with the larger populations. Variables chosen were perceived, gender (males or females), age (under the age of 30 years or 30 years and over), English as their primary language (yes or no), and perceived ethnicity/cultural identification (Caucasians, Hispanics, Blacks or African or African-American, Asian or Island Pacific Islander, American Indian or Pacific Islander, or two or more combinations). The rationale is choosing these variables were based on the National

League for Nursing demographics data on U.S. nursing students (2016). In addition, nursing students who have English as a second language was reported because the NLN has identified language barriers as a risk factor for NCLEX-RN failure.

Descriptive Statistics for Predictive and Outcomes Variables

Frequency distributions for each of the five Likert scale categories interprets the participant's attitude about the object of the survey (Warner, 2013, pp. 902-903). The AEQ-L Likert scale provides two responses (agree and strongly agree) that report the achievement emotion was experienced with the remaining three responses (neutral/don't know, disagree, strongly disagree) indicating the achievement emotion was either not experienced or not perceived to be experienced. Interpreting the predictor variable as a non-parametric (yes or no) instead of parametric (interval) may be a more informative method to addressing RQ1 and RQ2. Descriptive statistics for each item of the AEQ-L survey allows comparison with published data in the AEQ manual (Pekrun, Goetz, & Perry, 2005). Cronbach alpha for each subscale was calculated to compare reliability of each subscale for this nursing students sample as well as the mean, standard deviation, and each survey question for comparison with reports in the literature.

Data Screening

Visual screening for missing data, outliers, and extreme outliers were handled based on procedures outlined in Warner (2013, pp. 125-184) and included visual scanning of the raw data and use of Box plots. Z-scores were calculated to determine if extreme scores exceeded the ±3.29 standard deviations which would then indicate removal.

Basic Assumption Testing for Parametric Statistics

Research question 1 (RQ1) was investigated using correlation and research question 2 (RQ2) was investigated using linear regression. Basic assumption testing for both statistical

procedures was built into the research design of this study and included level of measurement, random sampling, independent observation, normality, and equal variance. Level of measurement being quantitative (continuous) variables of interval or ratio level was tenable for the predictive variable (AEQ-L tool) and outcome variable (ATI-CMS exam score). The ATI-CMS exam scores are continuous discrete numbers from zero to 100%. The eight learning emotions were measured using the eight Likert subscales with 1 to 5 ranking from the AEQ-L questionnaire. Likert scales are controversial as to whether they represent non-parametric data (categorical or ordinal) or parametric data (interval or ratio). According to Warner (2013, p. 10), Likert scales can produce normal distributions and should be evaluated with parametric statistics if a normal distribution has been determined. The assumption for random sampling is not tenable since a convenience sample was chosen to minimize extraneous variable inherent in choosing multiple university sites. However, it is assumed the convenience sample is coming from a random population attending the one-site university and representing the total nursing student population in the U.S. According to Warner (2013, p. 4), convenience sampling can substitute for random sampling as long as the researcher reports it as a potential limitation for generalizability to the population. The assumption of independent observations was tenable based on the subscales of the AEQ-L tool which have discrete measurement for the variable being tested and each individual nursing student completed their own individual AEQ-L survey and took their own ATI-CMS exam.

Normality testing of the frequency distribution was checked using visual examination of frequency histograms, P-P Plots, and Q-Q Plots (Field, 2009, p. 822; Warner, 2013, p. 147). Normality was also evaluated using, statistical methods of z-ratio of the skewness and kurtosis values of a frequency distribution (Warner 2013, pp. 150-153). Individual values were tested for

measure of position using percentiles, quartiles, and standard z-scores which locates the precise position of each individual data point as equal to the mean, or how many standard deviations away from the mean. According to Warner (2013, p. 153), Z-score analysis of the outliers visible in the box and whisker plots are acceptable if the standard Z-scores fall within the -3.29 to +3.29 range. According to Warner, (2013, p. 153) this indicates that 99% of the scores in these variables are within -3 to +3 standard deviations (sd) of mean for normally distributed scores and are acceptable for inclusion in data analysis. Extreme outliers may influence the validity of parametric statistical tests of correlation and regression and are removed after careful review of the statistician.

Specific Assumptions for Hypothesis Testing for Correlation and Regression

There are four additional assumptions for bivariate correlation and bivariate linear regression. First, the assumption of linearity was determined. Scatter plots provide a visual analysis for linearity (Warner, 2013, pp. 268, 573). If curvilinear plots are observed, the data may need to be linearized using quadratic transformation (Pekrun et al., 2011). If the data is exponentially increasing, a log transformation may correct this into linearity (Warner, 2013, pp. 157, 166, 173). Curvilinear and exponentially increasing/decreasing plots have not occurred in other studies by Pekrun et al. (2011). Second, the assumption of homoscedasticity tests for variability in the linear relationship between the predictor and outcomes variables (Warner, 2013, pp. 268-269, 555, 573). Violation of this assumption should be visible in a scatterplot if the plot does not have a cigar shape (Warner, 2013, p. 169). In addition, a scatterplot of the residuals versus the predicted vales should be evenly distributed around a flat line. The Goldfeld-Quant test will split the data into high and low values to see if there is significant differences in the variance. Significance indicates a violation (i.e. more variance between the lower and upper

portions of the data. Third, is the assumption of no multicollinearity where two or more predictors have extremely high correlations (r>.9) between each other (Warner, 2013, p. 458). In theory, this indicates they may measure the same construct. Warner (2013, pp. 458-459) suggests averaging the two predictor scores before continuing the multiple regression analysis. Fourth, the assumption of no extreme bivariate outliers will be examined using scatter plot matrix for all combinations between predictor variables and outcome variable.

Research Question 1 (RQ1) with Hypothesis Testing

RQ1 was analyzed using bivariate zero order Pearson correlation between ATI-CMS exam scores (outcome variable) and the individual learning emotions based on their positive or negative valence or their activating or deactivating valence. $H_0$1 states there is no significant correlation between ATI-CMS exam scores (outcome variable) and positive activating learning achievement emotion of enjoyment, hope, and pride. $H_0$2 states there is no significant correlation between ATI-CMS exam scores (outcome variable) and negative activating learning achievement emotion of anger, anxiety, and shame. $H_0$3 states there is no significant correlation between ATI-CMS exam scores (outcome variable) and negative activating learning achievement emotion of boredom and hopelessness. For variables were the assumption of bivariate linearity was not tenable, Spearman rank and Kendall's tau were done to address correlations for non-normal distributions (Warner, 2013, p. 316).

Research Question 2 (RQ2) Hypothesis Testing

RQ2 was analyzed using bivariate regression between ATI-CMS exam scores (outcome variable) and the individual learning emotions based on their positive or negative valence or their activating or deactivating valence. Four null hypotheses were tested. $H_0$4 states there is no significant predictive relationship between ATI-CMS exam scores (outcome variable) and

positive activating learning achievement emotion of enjoyment, hope, and pride. $H_0$5 states there is no significant predictive relationship between ATI-CMS exam scores (outcome variable) and negative activating learning achievement emotion of anger, anxiety, and shame. $H_0$6 states there is no significant predictive relationship between ATI-CMS exam scores (outcome variable) and negative activating learning achievement emotion of boredom and hopelessness. $H_0$7 states there is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

Descriptive Statistics and Reliability of the AEQ-L Questionnaire

Since this is the first time the AEQ-L survey has been used in a nursing student sample, descriptive and reliability statistics of AEQ tool were compared with the original AEQ study (Pekrun, Goetz, & Perry, 2005). Each emotion subscale of the AEQ-L questionnaire tool was analyzed for mean, standard deviation, reliability (Cronbach alpha) and compared to the AEQ-learning mean, standard deviation, and reliability as reported by Pekrun, Goetz, and Perry (2005). In addition, AEQ Scale quality and reliability for each individual subscale item was examined for mean, standard deviation, reliability (Cronbach alpha), and corrected item-total correlations (*r*-item) using the method described by Johnson and Morgan, 2016).

CHAPTER FOUR: FINDINGS

Overview

This correlation and predictive study examined the relationships between the predictor variables of eight positive and negative achievement emotions with the outcomes variable of academic nurse performance on the standardized Assessment Technology Institute course management series (ATI-CMS) exam for the fundamentals of nursing course. Nursing students (N = 155), just starting their Baccalaureate of Nursing program at a faith-based university in Virginia, completed the Achievement Emotions Questionnaire for learning three weeks prior to taking the ATI-CMS fundamentals of nursing exam.

Research Questions

RQ1: What are the relationships between the outcome variable (*academic performance*) and predictor variables (*achievement emotions during learning*) in Bachelor of Science in Nursing (BSN) students?

RQ2: How accurately can the outcome variable (*academic performance*) be predicted from a linear combination of predictive variables (*achievement emotions during learning)* in BSN students?

Null Hypotheses

$H_0$1: There is no significant correlation between Assessment Technologies Institutes Content Mastery Series examination (ATI-CMS, i.e. *academic performance*) and the learning affective state of enjoyment, hope, and pride (*positive activating learning achievement emotion*) as measured by the Achievement Emotions Questionnaire (AEQ) in nursing students enrolled in an in-class Bachelor of Science in Nursing (BSN) program.

$H_0$2: There is no significant correlation between ATI-CMS examination (*academic performance*) and the learning affective state of anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

$H_0$3: There is no significant correlation between ATI-CMS examination (*academic performance*) and the learning affective state of boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

$H_0$4: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, pride, anger, anxiety, shame, boredom, and hopelessness (*learning achievement emotions*) in nursing students enrolled in an in-class BSN program.

$H_0$5: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, and pride (*positive activating learning achievement emotions*) in nursing students enrolled in an in-class BSN program.

$H_0$6: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

$H_0$7: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states

boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program.

Descriptive Statistics

Demographics for Generalizability

A convenience sample was obtained at a Christian-based mid-Atlantic university. Nursing students were chosen from a Fundamentals of Nursing course typically one of the first courses taught in most U.S. nursing program curriculums. One hundred and fifty-seven (N = 157) signed surveys (informed consent paper signed) and nine (N = 9) unsigned surveys (informed consent paper not signed) were returned. The unsigned surveys were set aside and not used. Two students who completed the AEQ-L survey were not part of the Fundamentals of Nursing course and should not have been given the surveys. Their surveys were not included. The remaining one hundred and fifty-five (N = 155) surveys qualified for the study.

Generalizability of the research sample to the target population of nursing students and the larger target population of U.S. college students is depicted in Table 2. The research sample ratio of male-to-female nursing students (12%, 88%) is similar to the population of U.S. nursing students (15%, 85%) reported by the National League for Nursing (NLN, 2016) but very different from the larger population of U.S. college students (43.7%, 56.3%) reported by the National Center for Education Statistics (National Center for Education Statistics [NCES], 2006). The research sample ratio of students under the age of 30 years or 30 years or over (94%, 6%) was slightly higher than the population of U.S. nursing students (87.4%, 12.6%; NLN, 2016) and much higher than the larger population of U.S. college students reported by the National Center for Education Statistics (77.9%, 21.8%; NCES, 2016, Table 303.55). Diversity of the ethnicity of the research sample ratio is mostly homogenous toward Caucasian at 94%

with only 1.3% Hispanics, 1.9% Black/African-American and 1.9% Asian/Pacific (1.9%). The population of U.S. nursing students is more diverse with 70.4% Caucasians, 8.1% Hispanics, 10.8% Black/African-American, and 5.5% Asian/Pacific. Both the research sample and the U.S. nursing student population are significantly different in ethnic diversity from the U.S. college student population (NCES, 2016).

Table 2

Comparative Demographic Variables

Variable	Sample	U.S. Nursing Students NLN, 2016	U.S. College Students NCES, 2016
Gender: Male	12%	15%	43.7%
Gender: Female	88%	85%	56.3%
Age: <30years	94%	87.4%	77.9%
Age: ≥30years	06%	12.6%	21.8%
Caucasian	94.8%	70.4%	57.6%
Hispanic	01.3%	8.1%	17.3%
Black/African-American	01.9%	10.8%	14.1%
Asian/Pacific Islander	01.9%	05.5%	06.8%
Two or more/Other	0%	05.2%	04.3%

Source: U.S. nursing students' statistics retrieved from NLN or National League for Nurses (2016) data available at http://www.nln.org/newsroom/nursing-education-statistics/biennial-survey-of-schools-of-nursing-academic-year-2015-2016. U.S. college students' statistics retrieved from NCES or National Center for Education Statistics (2016) available at https://nces.ed.gov/programs/digest/2016menu_tables.asp

Descriptive Statistics of Predictor and Outcome Variables

The eight predictor variables (enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom) and one outcome variable (ATI-CMS scores for the Fundamentals of Nursing course) were analyzed for frequency distribution and central tendency. Table 3 identifies the number of survey questions for each emotion and the frequency (with percent) of

each Likert scale response: Strongly disagree, disagree, neutral, agree, and strongly agree. Most of the responses for each emotion was either agree, neutral, or disagree with much less responses having strong perceptions (strongly agree or strongly disagree) of experiencing the emotion. Three emotions experienced with the highest reported frequencies (i.e. agree or strongly agree are strongly agree) were pride (73%), enjoyment (62%), and hope (60%). The remaining reported frequencies for emotions experienced were anxiety (42%), shame (28%), boredom (20%), anger (17%) and hopelessness (11%). A visual screening of the raw data for each student did not indicate any student that reported all negative emotions without a balance of positive emotions.

Using the assumption that an emotion reported as neutral is an emotion not experienced and therefore is the same as an emotion reported as disagree or strongly disagree as not being experienced, Table 4 was developed to help bring visual (not statistical) clarity to those emotions

Table 3

AEQ-L Frequency Distributions of Five Likert Scales for Predictive Variables

		Frequency (%) of Scaled Responses				
	Number of AEQ questions	Strongly disagree	Disagree	Neutral*	Agree	Strongly Agree
Enjoyment	10	65 (4%)	214 (14%)	313 (20%)	646 (42%)	312 (20%)
Hope	6	8 (1%)	109 (12%)	253 (27%)	463 (50%)	97 (10%)
Pride	6	9 (1%)	54 (6%)	186 (20%)	480 (52%)	201 (22%)
Anger	9	393 (28%)	542 (39%)	216 (15%)	205 (15%)	39 (3%)
Anxiety	11	256 (15%)	466 (27%)	261 (15%)	579 (33%)	143 (8%)
Shame	11	336 (19%)	635 (36%)	258 (15%)	381 (22%)	95 (5%)
Hopeless	11	586 (33%)	701 (40%)	232 (13%)	142 (8%)	44 (3%)
Boredom	11	434 (25%)	634 (36%)	291 (17%)	267 (15%)	79 (5%)

* Neutral is neither agree or disagree

Table 4

AEQ-L Frequency Distributions of Total Positive, Neutral, and Negative Frequencies

		Frequency of Scaled Responses		
	Number of AEQ questions	Combined Strongly Disagree and Disagree	Neutral*	Combined Strongly Agree and Agree
Pride	6	63 (7%)	186 (20%)	681 (73%)
Enjoyment	10	279 (18%)	313 (20%)	958 (62%)
Hope	6	117 (13%)	253 (27%)	560 (60%)
Anxiety	11	722 (42%)	261 (15%)	722 (42%)
Shame	11	971 (57%)	258 (15%)	476 (28%)
Boredom	11	1068 (63%)	291 (17%)	346 (20%)
Anger	9	935 (67%)	216 (16%)	244 (17%)
Hopeless	11	1287 (75%)	232 (14%)	186 (11%)

* Neutral is neither agree or disagree

that were reported as being experienced (either as agreed or strongly agreed) from those that were denied being experienced (neutral, disagree, strongly disagreed). There is a significant percent of each emotion reported as neutral (no opinion or “I don’t know”). These are ranked from highest to lowest: Hope (27%), enjoyment (20%), pride (20%), boredom (17%), anger (16%), anxiety (15%), shame (15%), and hopelessness (14%). This neutrality factor may impact measures of central tendency and will be addressed in Chapter 5.

The ATI-CMS Fundamental of Nursing scores for the BSN nursing students were given to the researcher by the nursing program. Individual scores were reported as a percent (0% to 100%). Individual scores were also grouped into levels of proficiencies: Level 0 (4.5%), Level 1 (42.6%), Level 2 (47.7%), Level 3 (5.2%). Levels 0 and 1 represents scores that are predictive of nursing students who will not pass the NCLEX-RN exam. Levels 2 and 3 scores are predictive of nursing students who will pass the NCLEX-RN exam. Faculty use the ATI-CMS

scores to determine the effectiveness of their enacted curriculum for that course as well as the experienced curriculum learned by the nursing students. For this 155 BSN nursing student sample, 52.9% are predicted to pass the NCLEX-RN exam.

Descriptive Statistics for Predictor (AEQ-L) and Outcome (ATI scores) variables are reported in Table 5. The achievement emotion with the highest mean was enjoyment (M = 36.0, SD = 4.7, σ^2 = 23.0) which also had the second lowest variance. Anxiety (M = 32.3, SD = 7.8, σ^2 = 60.9) had the second highest mean which also had the second highest variance. Shame had the third highest mean (M = 28.3, SD = 8.94, σ^2 = 80.0) but the highest variance. Boredom had the fourth highest mean (M = 26.1, SD = 7.46, σ^2 = 55.6). Pride (M = 23.2, SD = 3.20, σ^2 = 10.24), hope (M = 21.4, SD = 3.60, σ^2 = 13.0), and hopelessness (M = 22.3, SD = 7.67, σ^2 = 58.8) were

Table 5

Descriptive Statistics for Predictor (AEQ-L) and Outcome (ATI scores) Variable

					Skewness		Kurtosis	
Variable	N	Mean	SD	Variance σ^2	Statistic	Z-score	Statistic	Z-score
Enjoyment	155	36.0	4.79	23.0	0.04	0.21	0.12	0.31
Hope	155	21.4	3.60	13.0	-0.56	-2.87*	-0.18	-0.47
Pride	155	23.2	3.20	10.2	-0.30	-1.54	-0.61	-1.58
Anger	155	20.3	6.40	41.0	0.66	3.38*	0.03	0.08
Anxiety	155	32.3	7.80	60.9	-0.08	-0.41	-0.45	-1.16
Shame	155	28.3	8.94	80.0	0.44	2.26*	-0.50	-1.29
Hopelessness	155	22.3	7.67	58.8	0.96	4.92*	0.66	1.71
Boredom	155	26.1	7.46	55.6	0.57	2.92*	-0.28	-0.72
ATI	155	63.6	8.28	68.6	0.10	0.51	-0.08	-0.21

*Indicates Z-scores outside acceptable ±1.96 (p = .05) range for assumption of normality to be tenable. The assumption of normality using skewness was not tenable for hope, anger, shame, hopelessness, and boredom.

similar with the lowest means. Both pride and hope had the lowest variance while hopelessness had the second highest variance. The rank order of the mean is as follows: Enjoyment (M = 36.0), anxiety (M = 32.3), boredom (M = 26.1), shame (M = 28.2), pride (M = 23.2), hope (M = 23.2), hope (M = 21.4), and anger (M = 20.2).

Results

Data Screening

Data screening was done to detect input errors into SPSS v22 and outliers that could impact statistical significance. Two researchers reviewed each of the 155 surveys and 155 ATI scores and rechecked the data entered into the SPSS v22 data file. Six input errors were corrected. Screening for data point outliers was done by using Box plots (box-and-whisker diagrams). See Figure 6. There are visible outliers for the six variables: Enjoyment, hope,

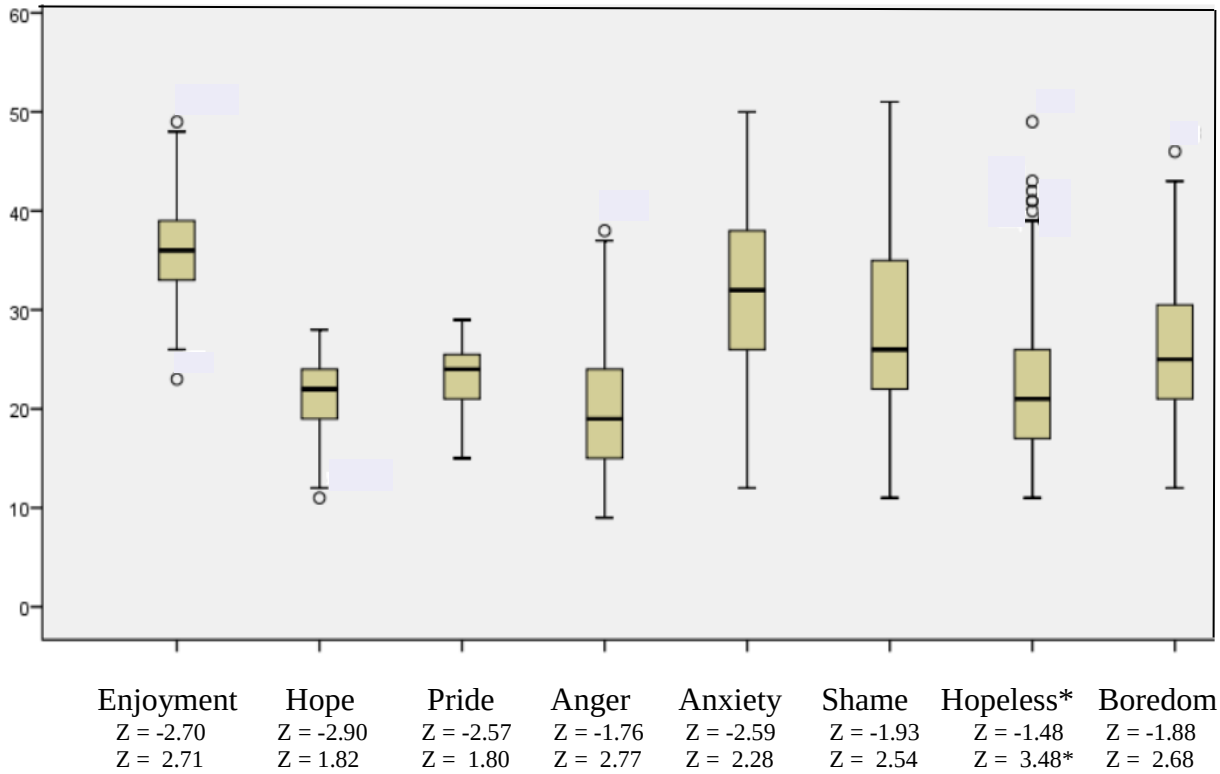


Figure 6. Box plot of predictor variables. Depict range of Z-scores from lowest to highest.
*Indicates Z-scores outside acceptable ±3.29 range

anger, hopeless, boredom, and ATI. No outliers for the variables pride, anxiety, and shame. To determine if these outliers were extreme enough to impact parametric statistics, z-scores were evaluated for determination if any outlier z-scores falls within the acceptable ±3.29 range for inclusion in a data base for data analysis (Warner, 2013, p. 153). Z-score analysis of the outliers visible in the box and whisker plots of enjoyment, hope, anger, and boredom are within the -3.29 to +3.29 range. According to Warner, (2013, p. 153) this indicates that 99.9% of the scores in these variables are within -3 to +3 standard deviations (sd) of mean for normally distributed scores and are acceptable for inclusion in data analysis. However, z-score analysis of one outliers in the variable of hopelessness was +3.48 (representing a 6% higher score from the mean and greater than +3.29 limit). Based on the recommendation of Warner (2013, pp. 157, 270-272), all assumption testing ADN statistical analysis for this study was conducted with and without the outlier. Since tenability of assumptions and all other statistical tests were not affected with or without the outlier, no outliers were removed.

Basic Assumption Testing for Parametric Statistics

Eight assumptions required for parametric statistical procedures specifically correlation and regression were examined. The first three basic assumptions were addressed in the research design and discussed in the Data Analysis section of Chapter 3. First, the level of measurement (interval or ratio) was tenable by using AEQ-L survey with its five level Likert scale (accepted as interval) and ATI-CMS exam scores (ratio). Second, random sampling was not tenable because the choice of using convenience sampling to control for extraneous variables (multiple sample sites with diversity of nursing program curricula and faculty relationships) was more desirable to isolate the effects of emotion on the learning process. This is a limitation and a strength of this

study. Third, independent observations (each individual nursing student) was ensured by having one AEQ-L survey completed per student and one ATI-CMS exam completed per student.

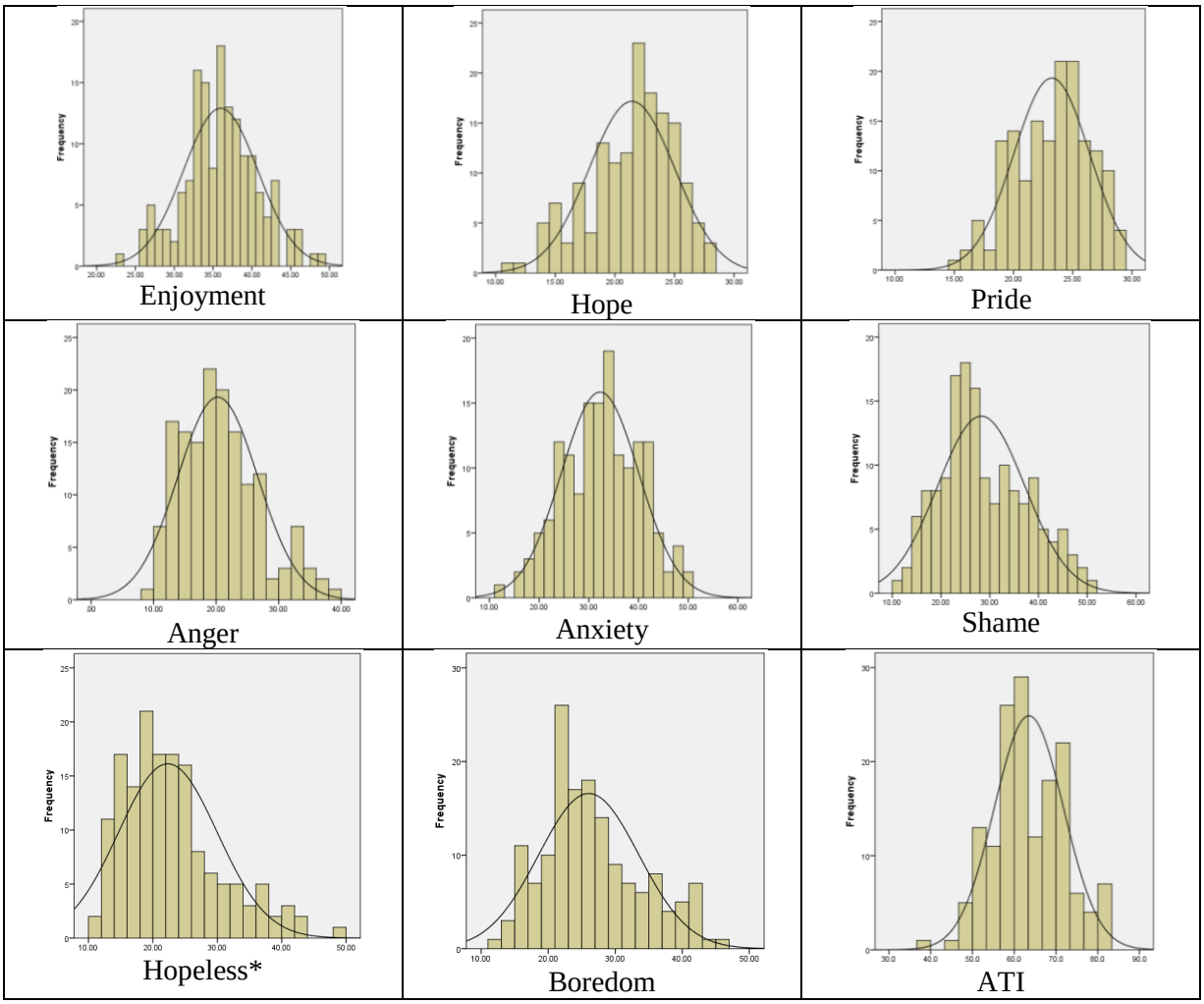
The remaining sssumptions for the statistical procedures of correlation for RQ1 and regression for RQ2 were examined. Fourth, the frequency variance around the mean was not tenable as there were widespread variance differences (Table 5) from the mean between the three positive emotions of enjoyment ($\sigma^2 = 23.0$), hope ($\sigma^2 = 13.0$), and pride ($\sigma^2 = 10.2$) and the five negative emotions of anger ($\sigma^2 = 41.0$), anxiety ($\sigma^2 = 60.9$), shame ($\sigma^2 = 80.0$), hopelessness ($\sigma^2 = 58.8$), and boredom ($\sigma^2 = 55.6$). This is a limitation of the study but also an important finding in emotion research such that the experience of positive emotions has a narrow variability whereas the experience of negative emotions has wide variability that needs further exploration.

Fifth, univariate normality of the frequency distribution for each variable was examined empirically and visually. Skewness and kurtosis values of a frequency distribution were analyzed for values of "0" and z-scores less than ±1.96. See Table 5. Based on skewness z-scores, univariate normality was not tenable for hope (z = -2.87), anger (z = 3.38), shame (z = 2.26), hopelessness (z = 4.92), and boredom (z = +2.92). Based on kurtosis z-scores, univariate normality was tenable. Normality was tenable using visual histograms (Table 6) except for the hopelessness variable with questionable normality with visible right skewness. However, the robustness of the correlation and regression statistical methods allows for normality assumption to be tenable based on the approximate normal curve using histogram (Warner, 2013, p. 153).

P-P plots graph the cumulative probability of a variable (actual z-scores) against the cumulative probability of the normal distribution (expected z-scores). A straight line indicates the assumption of univariate normal distribution is tenable. See Table 7. P -P plots indicate a straight line for all univariates with some visible central deviations for shame, hopelessness, and

Table 6

Histograms of Predictor Variables and Outcome Variable



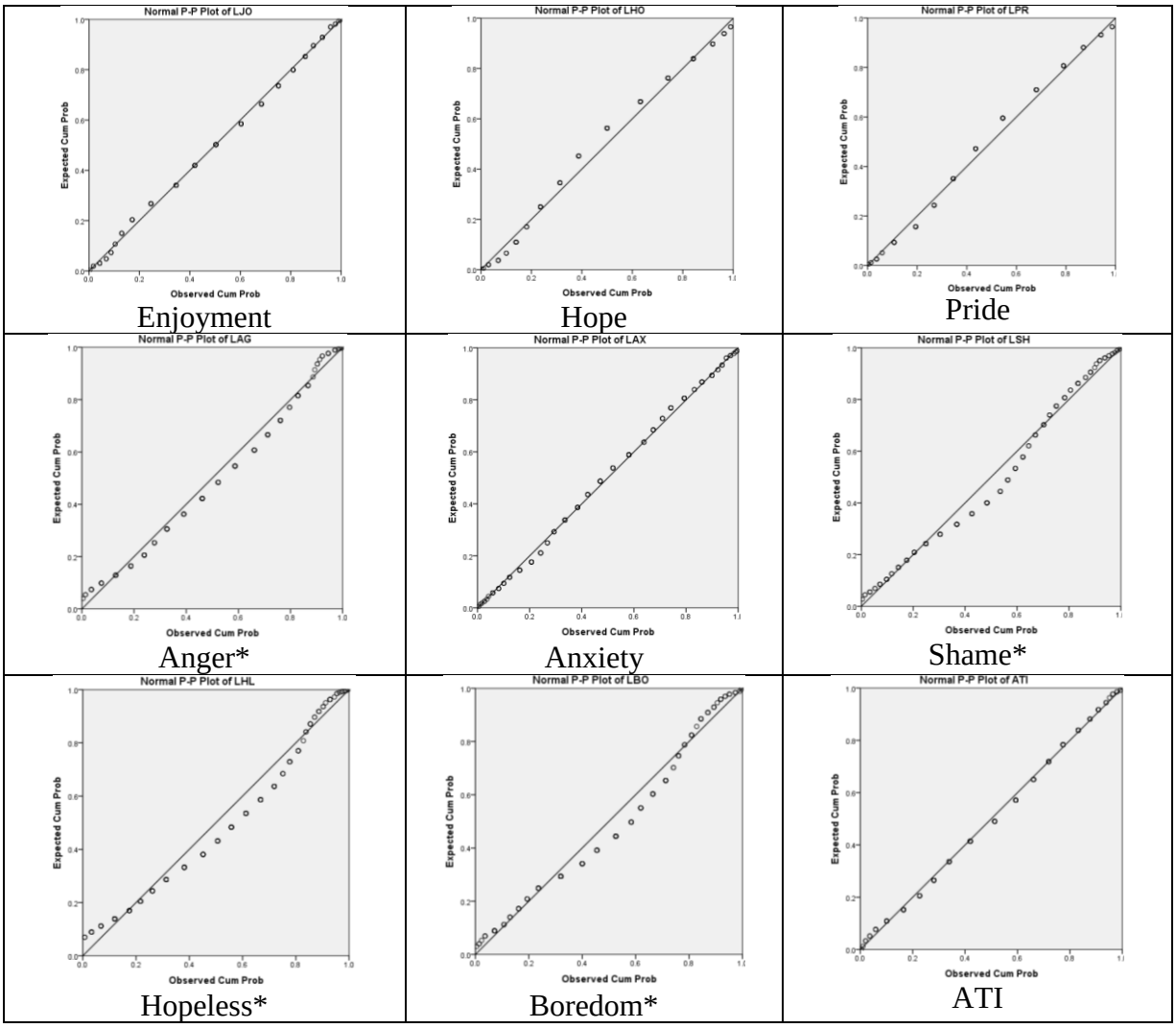
*Indicates tenability of the assumption of normal distribution was questionable

.

boredom. Such minor deviations do not negate line linearity. Q-Q plots graph the quantiles (values that split a data set into equal portions) of the data set instead of every individual score. See Table 8. Q-Q plots indicate a straight line for all univariates with some visible deviation at the end of the lines for anger, shame, hopelessness and boredom. Minor deviations do not negate overall line linearity. Both P-P plots and Q-Q plots support the tenability of the univariate normal distribution.

Table 7

P-P plots of Predictor Variables and Outcome Variable

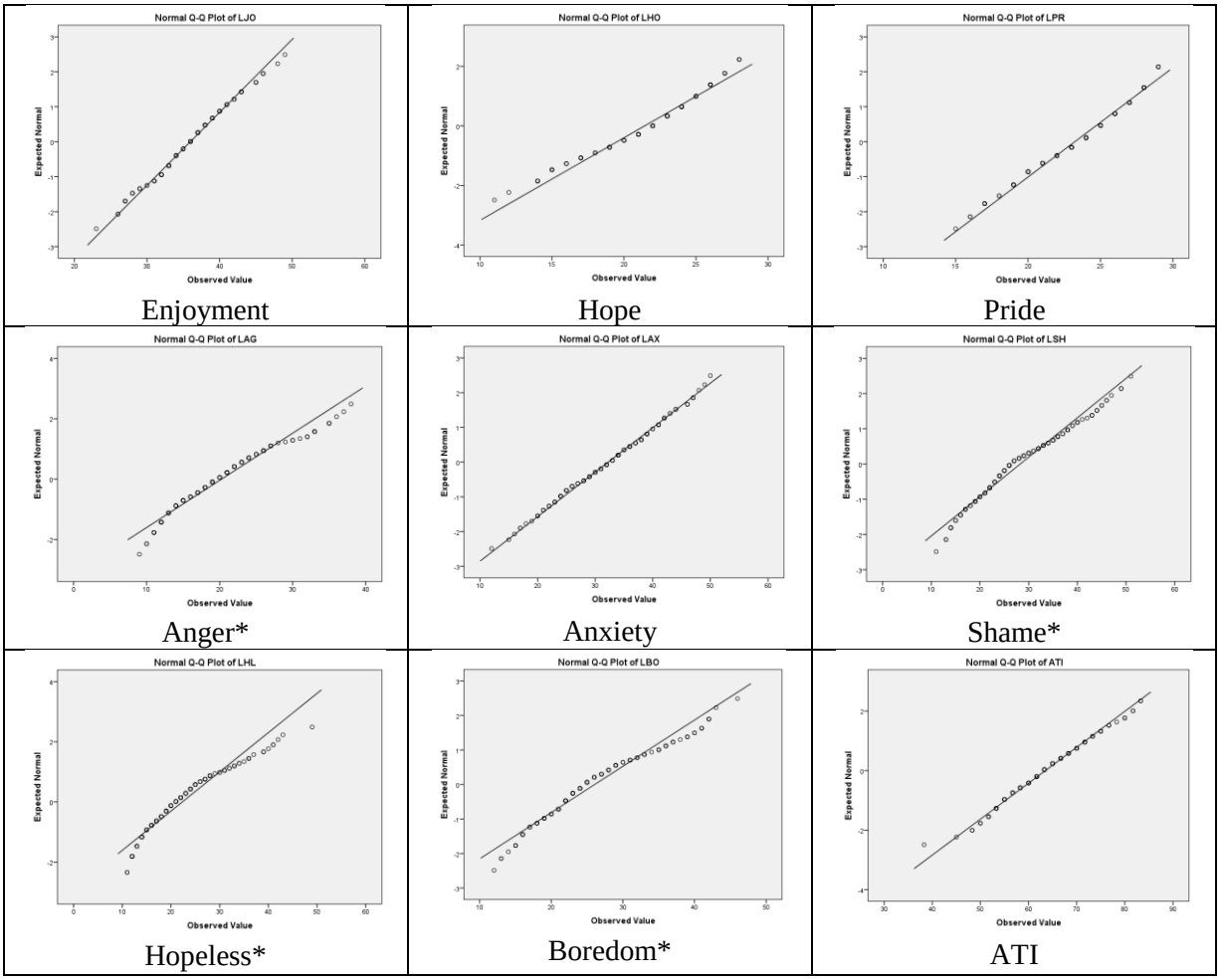


*Indicates tenability of assumption of normal distribution was questionable but acceptable. There is linear deviation for anger, shame, hopelessness, and boredom.

Frequency distributions were evaluated for significant deviation from a normal distribution using two formula-based tests called the Kolmogorov-Smirnov test (for non-parametric variables) and Shapiro-Wilk test (Warner, 2013, p. 153). See Table 9. Using the Kolmogorov-Smirnov test, univariate normal distribution was tenable for ATI-CMS exam scores (0.06, p = .20) and anxiety (0.05, p = .20). Using the Shapiro-Wilk test, univariate

Table 8

Q-Q plots of Predictor Variables and Outcome Variable



*Indicates tenability of assumption of normal distribution was questionable but acceptable. There is linear deviation for hope, anger, shame, hopelessness, and boredom.

distribution is tenable for enjoyment (0.99, p = .33), anxiety (0.96, p = .59), and ATI-CMS exam scores (0.99, p = .33). According to Warner (2013, p. 153), the Kolmogorov-Smirnov test and Shapiro-Wilk tests evaluate if the empirical frequency of a distribution statistically differs significantly from the normal distribution but using this method can be misleading. For this study, all 8 predictor variables and 1 outcome variable have univariate normal distributions that were acceptable as tenable.

Table 9

Empirical Normality Examined with Kolmogorov-Smirnov and Shapiro-Wilks Tests

	Kolmogorov-Smirnov test[a] Significance (*p*-values)			Shapiro-Wilk Significance (*p* values)		
Variable	Statistics	*df*	Sig*	Statistics	*df*	Sig*
Enjoyment	0.07	155	.04	0.99	155	.33*
Hope	0.14	155	.00*	0.99	155	.00
Pride	0.12	155	.00*	0.96	155	.00
Anger	0.09	155	.01*	0.97	155	.00
Anxiety	0.05	155	.20	0.96	155	.59*
Shame	0.12	155	.00*	0.99	155	.00
Hopeless	0.11	155	.00*	0.97	155	.00
Boredom	0.12	155	.00*	0.93	155	.00
ATI	0.06	155	.20	0.99	155	.33*

*Indicates tenability of the assumption of normal distribution was not met at $p > .05$. Normal distribution was not tenable for enjoyment, hope, pride, anger, shame, hopelessness, and boredom using the Kolmogorov-Smirnov test.
[a] Lilliefors Significance Correction

Sixth, the Assumption of Equal Variance was conducted using the Levene's test for Equality of Variance. See Table 10. A significance level greater than .05 means that the assumption of equal variance is tenable and that the population distributions have the same variance (Szapkiw, n.d., p. 17 course notes). The assumption of equal variance was tenable for all variables except hopelessness $F(25, 122) = 2.26$, $p = .00$.

Seventh and final tests for strength of associations (variable discreetness or discriminant validity) and tests for no collinearity between the predictor variables was done using a correlation matrix: Bivariate Pearson correlations (Table 11a), Spearman's Rho (Table 11b), and Kendall's tau

Table 10

Homogeneity of Variance Using the Levene Test on Predictor and Outcome Variables

Variable	F	Sig. Anova	Levene Statistics	df1	df2	Sig.* Levene
Enjoyment	1.72	.03	1.07	19	132	.38
Hope	0.89	.58	1.16	14	138	.31
Pride	1.04	.41	1.15	13	140	.33
Anger	1.00	.48	1.50	21	126	.09
Anxiety	1.08	.37	1.06	27	119	.39
Shame	0.95	.56	1.32	32	117	.15
Hopelessness	1.26	.19	2.26	25	122	.00**
Boredom	0.69	.89	0.77	26	122	.78

* Equal variance is tenable if *p*-values >.05 for Levene test.
**The assumption of equal variance was not tenable for the variable hopelessness

(Table 11c). The Pearson product correlation is robust enough to be used when normality is slightly skewed and some assumptions are questionable and is designed for one continue and one interval data. Spearman's Rho and Kendal tau are designed for rank order in ordinal data and is useful when assumptions are not tenable. There was no collinearity between variables verifying each variable was discrete. The three positive emotions (enjoyment, hope, pride) were positively associated with each other. The five negative emotions (anger, anxiety, shame, hopelessness, and boredom) were positively associated with each other. The three positive emotions (enjoyment, hope, pride) were inversely related to the five negative emotions (anger, anxiety, shame, hopelessness, and boredom). Interpreting the strength of each relationship was based on Szapkiw (n.d.) interpretations of "0" (no relationship), "0.1 to 0.29" (small relationship), "0.30 to 0.49" (medium relationship) and "0.50 to 1.00" (large relationship). The Pearson coefficient and Spearman rank tests were identical in strength of associations. Kendall's Tau reported lower.

Table 11a

Zero-Order Correlations Using Pearson's r of Predictor and Outcome Variables

Variable	Enjoy	Hope	Pride	Anger	Anxiety	Shame	Hopeless	Boredom	ATI
Enjoy	1.000								
Hope	0.653	1.000							
Pride	0.593	0.500	1.000						
Anger	-0.443	-0.494	-0.227*	1.000					
Anxiety	-0.287	-0.515	-0.185*	0.602	1.000				
Shame	-0.391	-0.603	-0.414	0.557	0.734	1.000			
Hopeless	-0.461	-0.694	-0.463	0.627	0.693	0.822	1.000		
Boredom	-0.521	-0.484	-0.273	0.577	0.379	0.452	0.508	1.000	
ATI	0.061	0.032	0.069	-0.020	0.039	-0.067	-0.058	0.037	1.000

*Indicated significance at p = .05 (2-tailed). Remaining significance at p = .01 level (2-tailed)

Table 11b

Associations Using Spearman's Rho Analysis for Predictor and Outcome Variables

Variable	Enjoy	Hope	Pride	Anger	Anxiety	Shame	Hopeless	Boredom	ATI
Enjoy	1.000								
Hope	0.626	1.000							
Pride	0.569	0.510	1.000						
Anger	-0.414	-0.443	-0.248*	1.000					
Anxiety	-0.265	-0.502	-0.181*	0.566	1.000				
Shame	-0.351	-0.541	-0.381	0.559	0.717	1.000			
Hopeless	-0.414	-0.653	-0.461	0.632	0.659	0.789	1.000		
Boredom	-0.518	-0.441	-0.241*	0.592	0.358	0.405	0.463	1.000	
ATI	0.004	0.017	0.095	-0.028	0.024	-0.096	-0.074	0.059	1.000

*Indicated significance at p = .05 (2-tailed). Remaining significance at p = .01 level (2-tailed)

Table 11c

Associations Using Kendall's Tau Analysis for Predictor and Outcome Variables

Variable	Enjoy	Hope	Pride	Anger	Anxiety	Shame	Hopeless	Boredom	ATI
Enjoy	1.000								
Hope	0.481	1.000							
Pride	0.432	0.385	1.000						
Anger	-0.297	-0.331	-0.175*	1.000					
Anxiety	-0.190	-0.362	-0.124*	0.418	1.000				
Shame	-0.252	-0.398	-0.276	0.404	0.549	1.000			
Hopeless	-0.305	-0.497	-0.335	0.472	0.495	0.618	1.000		
Boredom	-0.374	-0.319	-0.174*	0.434	0.250	0.288	0.337	1.000	
ATI	0.001	0.009	0.073	-0.020	0.016	-0.071	-0.056	0.042	1.000

*Indicated significance at p = .05 (2-tailed). Remaining significance at p = .01 level (2-tailed)

In summation, data was screened for input errors and outliers. Six input errors were found and corrected. Box plots indicated outliers with z-scores within the 3.29 standard deviation from the mean except for one score in the hopelessness variable at 3.48. All assumption testing was done with and without this one outlier and the result was the tenability of assumption was not changed. Two basic assumptions were met by study design: Level of measurement (interval or ratio) and independent observations. The assumption of random sampling was superseded by using the more advantageous convenience sampling that controlled for extraneous variables of curriculum design and faculty-student relationships. The assumption of normality of univariate frequency distributions was tenable using histograms (the hopelessness variable was approximate), skewness z-scores (enjoyment, pride, anxiety, and ATI), kurtosis z-scores (all variables), P-P plots (enjoyment, hope, pride, anxiety, and ATI), Q-Q plots (enjoyment, pride, anxiety, and ATI), Kolmogorov-Smirnov test (anxiety), and Shapiro-

Wilk test (enjoyment, anxiety, ATI). The assumption of homogeneity of variance using the Levene's test was tenable for all variables except hopelessness. Intercorrelation tests for no collinearity and for individual discreetness of each predictor variable by Pearson, Spearman Rho and Kendal Tau were the same but differed in the strength of associations.

Specific Assumptions for Hypothesis Testing for Correlation and Regression

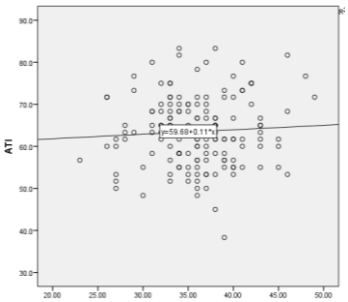
The assumptions for bivariate normal distribution, bivariate linearity, no extreme bivariate outliers, and homoscedasticity was done using scatter plots. See Table 12. According to Warner (2013, pp. 267-274, 573), scatter plots each predictor variable (x-axis) and the outcome variable (y-axis) provide a visual analysis to test for bivariate normal distribution linearity, bivariate outliers, and homoscedasticity. The assumptions of bivariate normal distribution, bivariate linearity, and no extreme bivariate outliers was not tenable as evidenced by the elliptical shape scatter plots with the slope of each trend line less than 0.11. The assumption of homoscedasticity was visibly not tenable for hopelessness and boredom (same as the Levene test). Finally, the test for bivariate correlation was done using Pearson correlations (Table 11a), Spearman's Rho (Table 11b), and Kendall's tau (Table 11c) to account for possible the tenability

Hypothesis Testing for RQ1

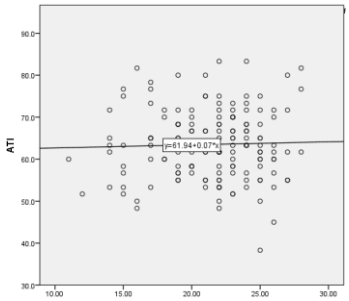
Correlation analysis between univariate predictor variables (enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom) bivariate predictor and outcome variables (ATI-CMS exam scores) were conducted using bivariate zero order Pearson r correlations (Table 11a, row 9), Spearman's Rho (Table 11b, row 9), and Kendall's tau (Table 11c, row 9). The bivariate scatter plots and the slope of the lines (-0.03 to +0.11) as seen in Table 12 show no correlation between ATI scores and learning emotions.

Table 12

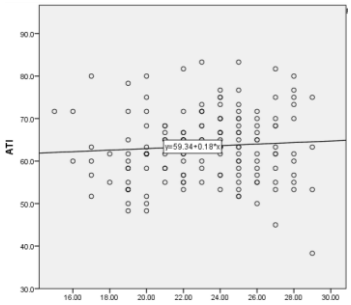
Bivariate Scatter Plots of Predictor Variables and Outcome Variable



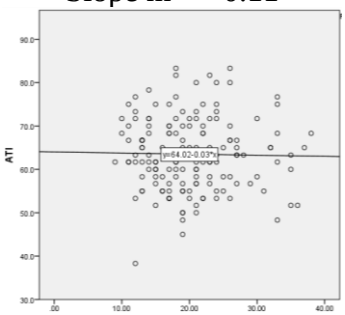
Enjoyment: y=59.68+0.11*x
Slope m = +0.11



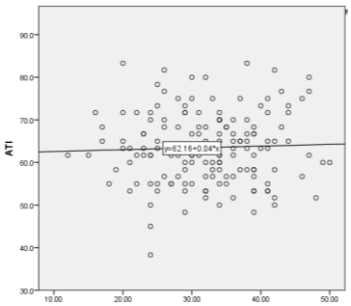
Hope: y=61.94+0.07*x
Slope m = +0.07



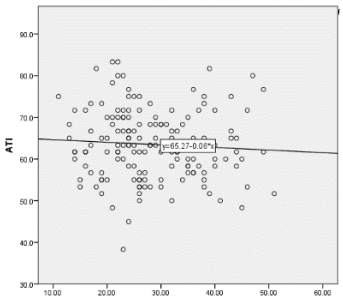
Pride: y=59.34+0.18*x
Slope m = +0.18



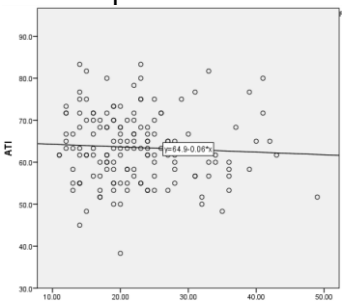
Anger: y=64.02 -0.03*x
Slope m = -0.03



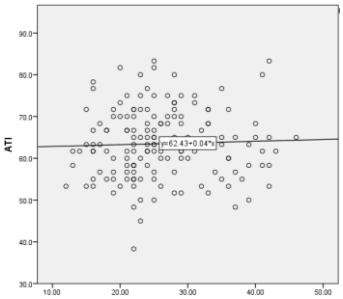
Anxiety: y=62.16+0.04*x
Slope m = +0.04



Shame: y=65.27-0.06*x
Slope m = -0.06



Hopeless: y=64.9-0.06*x
Slope m = -0.06



Boredom: y=62.43+0.04*x
Slope m = +0.04

*Indicates slope line is zero or nearly zero indicating no linear relationship between variables

H_01: There is no significant correlation between Assessment Technologies Institutes Content Mastery Series examination (ATI-CMS, ie. *academic performance*) and the learning affective state of enjoyment, hope, and pride (*positive activating learning achievement emotion*) as measured by the Achievement Emotions Questionnaire (AEQ) in nursing students enrolled in an in-class Bachelor of Science in Nursing (BSN)

program. The researcher failed to reject the null hypothesis. There is no significant relationship between relationships between ATI-CMS exam scores and the three-positive activating learning achievement emotions of enjoyment, $r(155) = .061$, $p = .447$, hope, $r(155) = .032$, $p = .695$, and pride, $r(155) = .069$, $p = .392$ using Pearson's coefficients.

$H_0$2: There is no significant correlation between ATI-CMS exam scores (*academic performance*) and the learning affective state of anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis. There is no significant relationship between relationships between ATI-CMS exam scores and the three negative activating learning achievement emotions of anger, $r(155) = -.020$, $p = .810$, anxiety, $r(155) = .039$, $p = .623$, and shame, $r(155) = -.067$, $p = .406$ using Pearson's coefficients.

$H_0$3: There is no significant correlation between ATI-CMS examination (*academic performance*) and the learning affective state of boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis. There is no significant relationship between relationships between ATI-CMS exam scores and the three-negative deactivating learning achievement emotions of hopelessness, $r(155) = -.058$, $p = .474$, and boredom, $r(155) = .037$, $p = .645$ using Pearson's coefficients.

Hypothesis Testing for RQ2

Based on correlation analysis between univariate predictor variables (enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom) and the outcome variable (ATI-CMS exam scores), the assumptions for linear regression analysis were not tenable. Therefore, the hypothesis testing for Ho4, Ho5, Ho6, and Ho7 are as follows:

$H_0$4: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, pride, anger, anxiety, shame, boredom, and hopelessness (*learning achievement emotions*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis.

$H_0$5: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states of achievement emotions enjoyment, hope, and pride (*positive activating learning achievement emotions*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis.

$H_0$6: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states anger, anxiety, and shame (*negative activating learning achievement emotion*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis.

$H_0$7: There is no statistically significant predictive relationship between ATI –CMS examination (*academic performance*) and the linear combination learning affective states boredom and hopelessness (*negative deactivating learning achievement emotion*) in nursing students enrolled in an in-class BSN program. The researcher failed to reject the null hypothesis.

Reliability of the Achievement Emotion Questionnaire for Learning (AEQ-L)

Since this study represents the first time this tool has been used in the nursing student population, the AEQ-L instrument was examined for scale quality and reliability. Scale quality

was examined using distribution scores of each item across the Likert scale of "strongly disagree," "disagree," "neutral," "agree," and "strongly agree". Item quality is defined as an even distribution across the response continuum (Johnson & Morgan, 2016). Of the 75 scale items, 33 (44%) had two or less responses (numbers) in the extreme the ends of the continuum (i.e. "strongly disagree" or "strongly agree"). If the research tool is examining a continuum of responses for a construct and the item is showing only part of the continuum was chosen, then either the item is suspect of not capturing the full range for that construct or the research sample is unique in some way that is skewing the response distribution. This can be problematic if the items are tallied into one subscale score. Deconstructing the codes of each item (coded in column 2 of Table 13) over half of those extreme frequency distribution were items capturing emotions experienced during the learning experience (represented by the letter D in the name of the item in column 2 of Table 13). From a neuroscience view point, this is the temporal moment when learning become encoded in a recent memory engram. This finding is insightful since questions coded with the letter A at the end of the code reflect emotions experienced after studying which can undo the memory engram if negative.

Table 13.

Subscale Quality and Reliability of AEQ-L Instrument

Item	**Name***	**Enjoyment – Learning-related questions** **Nursing students: N=10 M=35.97 SD=4.79 α=0.76**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
81	LJOA1B	I look forward to studying	14	61	52	27	1	2.61	0.90	0.46
124	LJOA2D	I enjoy the challenge of learning the material	1	6	35	87	26	3.85	0.77	0.54
139	LJOA3D	I enjoy acquiring new knowledge	x	1	7	77	70	4.39	0.61	0.40
131	LJOC1D	I enjoy dealing with the course material	x	16	46	79	14	3.59	0.80	0.44
150	LJOC2A	Reflecting on my progress in coursework makes me happy	1	6	18	86	44	4.07	0.78	0.47
110	LJOM1D	I study more than required because I enjoy it so much	40	70	36	6	3	2.11	0.91	0.53
146	LJOM1A	I am so happy about the progress I made that I am motivated to continue to study	1	18	42	70	24	3.63	0.91	0.45
154	LJOM3A	Certain subjects are so enjoyable that I am motivated to do extra readings about them	5	21	33	68	28	3.60	1.04	0.40

117	LJOP1D	When my studies are going well, it gives me a rush	2	3	21	76	53	4.13	0.81	0.13
136	LJOP2D	I get physically excited when my studies are going well	1	12	23	70	49	3.99	0.91	0.46
Item	**Name***	**Hope – Learning-related questions** **Nursing students: N=6 M=21.43 SD=3.60 α=0.82**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
88	LHOA1B	I have an optimistic view toward learning	3	19	49	71	13	3.46	0.89	0.64
98	LHOA2D	I feel confident when studying	1	18	56	76	4	3.41	0.75	0.66
83	LHOC1B	I feel confident that I will be able to master the material	1	20	44	82	8	3.49	0.81	0.56
94	LHOC2B	I feel optimistic that I will make good progress at studying	1	14	33	94	13	3.67	0.78	0.63
104	LHOM1D	The thought of achieving my learning objectives inspires me	x	11	18	80	46	4.04	0.84	0.34
113	LHOM2D	My sense of accomplishment motivates me	2	27	53	60	13	3.35	0.91	0.67
Item	**Name***	**Pride – Learning-related questions** **Nursing students: N=6 M=23.23 SD=3.20 α=0.70**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
144	LPRA1A	I'm proud of myself	2	7	37	74	35	3.86	0.86	0.54
107	LPRC1D	I'm proud of my capacity	1	15	39	81	19	3.66	0.84	0.46
152	LPRC2A	I think I can be proud of my accomplishments at studying	2	6	29	86	32	3.90	0.81	0.49
129	LPRM1D	Because I want to be proud f my accomplishments, I am very motivated	x	9	30	82	34	3.91	0.80	0.40
122	LPRP1D	When I solve a difficult problem in my studying, my heart beats with pride	2	5	29	83	36	3.94	0.82	0.37
135	LPRP2D	When I excel at my work, I swell with pride	2	12	22	74	45	3.95	0.93	0.32
Item	**Name***	**Anger – Learning-related questions** **Nursing students: N=9 M=20.26 SD=6.40 α=0.86**	**Item Response Frequency**						**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
90	LAGA1B	I get angry when I have to study	65	61	16	12	1	1.86	0.94	0.69
115	LAGA2D	Studying makes me irritated	26	71	36	17	5	2.38	0.99	0.70
121	LAGA3D	I get angry while studying	57	72	12	13	1	1.90	0.91	0.71
92	LAGC1B	I'm annoyed that I have to study so much	20	62	40	27	6	2.59	1.04	0.60
128	LAGC2D	I get annoyed about having to study	35	47	36	31	6	2.52	1.16	0.67
84	LAGM1B	Because I get so upset over the amount of material, I don't even want to begin studying	22	59	25	43	6	2.69	1.14	0.49
100	LAGM2D	I get so angry I feel like throwing the text book out of the window	77	53	15	5	5	1.76	0.98	0.53
106	LAGP1D	When I sit back at my desk for a long time, my irritation makes me restless	22	54	21	51	7	2.79	1.18	0.47
143	LAGP2A	After extending studying, I'm so angry that I get tense	69	63	15	6	2	1.77	0.87	0.54
Item	**Name***	**Anxiety – Learning-related questions** **Nursing students: N=11 M=32.27 SD=7.77 α=0.85**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
86	LAXA1B	When I look at the books I still have to read, I get anxious	22	33	21	65	14	3.10	1.29	0.57
118	LAXA2D	I get tense and nervous while studying	31	58	39	22	5	2.43	1.06	0.63
147	LAXA3A	When I can't keep up with my studies it make me fearful	10	12	25	81	27	3.66	1.06	0.55
96	LAXC1D	I worry whether I'm able to cope with all my work	11	39	20	74	11	3.23	1.12	0.47
125	LAXC2D	The subject scares me since I don't fully understand it	22	58	29	40	6	2.68	1.12	0.49
141	LAXC3A	I worry about whether I have properly understood the material	3	22	20	85	25	3.69	0.97	0.44
82	LAXM1B	I get so nervous that I don't even want to begin to study	31	60	27	33	4	2.48	1.11	0.64

102	LAXM2D	While studying I feel like distracting myself in order to reduce my anxiety	26	55	19	44	11	2.74	1.24	0.56
85	LAXP1B	When I have to study I start to feel queasy	65	63	12	14	1	1.86	0.95	0.50
111	LAXP2D	As time runs out my heart begins to race	12	29	20	73	21	3.01	1.27	0.50
132	LAXP3D	Worry about not completing the material makes me sweat	23	37	29	48	18	3.40	1.17	0.48
Item	**Name***	**Shame – Learning-related questions** **Nursing students: N=11 M=28.25 SD=8.94 α=.90**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
127	LSHA1D	I feel shamed	72	55	7	18	3	1.87	1.07	0.73
89	LSHC1B	I feel ashamed about my constant procrastination	24	47	28	39	17	2.86	1.27	0.54
99	LSHC2D	I feel ashamed that I can't absorb the simplest of details	24	65	27	34	5	2.55	1.09	0.56
105	LSHC3D	I feel ashamed because I am not as adept as others in studying	19	51	23	43	19	2.95	1.26	0.71
134	LSHC4D	I feel embarrassed about not being able to fully explain the material to others	23	47	34	40	11	2.80	1.19	0.75
138	LSHC5D	I feel ashamed when I realized that I lack ability	31	46	18	52	8	2.74	1.26	0.70
148	LSHC6A	My memory gaps embarrass me	27	54	29	34	11	2.66	1.20	0.71
142	LSHM1A	Because I have had so much troubles with the course material, I avoid discussing it	41	82	15	15	2	2.06	0.93	0.60
151	LSHM2A	I don't want anybody to know when I haven't been able to understand something	19	66	31	31	8	2.63	1.09	0.61
114	LSHP1D	When somebody notices how little I understand I avoid eye contact	29	64	24	33	5	2.49	1.12	0.60
120	LSHP2D	I turn red when I don't know the answer to a question relating to the course material	27	58	22	42	6	2.63	1.17	0.45
Item	**Name***	**Hopelessness – Learning-related questions** **Nursing students: N=11 M=22.40 SD=7.66 α=0.90**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
95	LHLA1B	I feel hopeless when I think about studying	49	66	21	17	2	2.08	1.00	0.71
130	LHLA2D	I feel helpless	78	58	13	4	2	1.67	0.84	0.72
153	LHLA3A	I feel resigned	44	64	42	3	2	2.05	0.86	0.50
123	LHLC1D	I'm resigned to the fact that I don't have the capacity to master this material	49	75	22	8	1	1.95	0.85	0.63
145	LHLC2A	After studying I'm resigned to the fact that I haven't got the ability	50	70	24	10	1	1.98	0.89	0.63
149	LHLC3A	I'm discouraged about the fact that I'll never learn the material	50	72	14	11	8	2.06	1.08	0.74
155	LHLC4A	I worry because my abilities are not sufficient for my program of studies	28	41	35	35	16	2.81	1.26	0.61
108	LHLM1D	I feel so helpless that I can't give my studies my full efforts	35	89	13	15	3	2.11	0.93	0.52
116	LHLM2D	I wish I could quit because I can't cope with it	87	48	13	4	3	1.63	0.89	0.58
91	LHLP1B	My lack of confidence makes me exhausted before I even start	47	60	18	25	4	2.23	1.13	0.69
101	LHLP2D	My hopelessness undermines all my energy	69	58	17	9	2	1.82	0.94	0.73
Item	**Name***	**Boredom – Learning-related questions** **Nursing students: N=11 M=26.05 SD=7.46 α=0.88**	**Item Response Frequency**					**M**	**SD**	r_{it}
			1	**2**	**3**	**4**	**5**			
112	LBOA1D	The material bores me to death	78	54	19	3	1	1.68	0.81	0.70
133	LBOA2D	Studying for my courses bores me	36	79	27	11	2	2.12	0.89	0.66
137	LBOA3D	Studying is dull and monotonous	22	63	43	21	6	2.52	1.02	0.58
119	LBOC1D	While studying this material, I spend my time thinking of how time stands still	65	59	19	12	x	1.86	0.91	0.59

140	LBOC2D	The material is so boring I have no desire to learn	33	62	33	25	2	2.36	1.03	0.73
109	LBOC3D	I find myself wandering while I study	3	18	20	78	36	3.81	0.99	0.41
87	LBOM1B	Because I am bored I have no desire to learn	71	52	17	11	4	1.87	1.04	0.60
93	LBOM2B	I would rather put off this boring work till tomorrow	21	68	26	30	10	2.61	1.14	0.40
97	LBOP1D	Because I am so bored I get tired sitting at my desk	25	49	28	45	8	2.75	1.12	0.52
103	LBOP2D	The material bores me so much that I feel depleted	56	68	24	5	2	1.90	0.87	0.70
126	LBOP3D	While studying I seem to drift off because it's so boring	24	62	35	26	8	2.56	1.10	0.71

* Name Codes in order: L=learning, JO=enjoyment, HO=hope, PR=pride, AG=anger, AX=anxiety, SH=shame, HL=hopelessness, BO-boredom, A=affective, C=cognitive, M=motivational, P=physiological; B=before, D=during, A=after.
Source: Adapted from Pekrun, Frenzel, Goetz, & Perry (2005). *Achievement emotions questionnaire (AEQ) - User's manual*. Unpublished manual, University of Munich, Germany. Survey questions reproduced with permission from Dr. R. Pekrun.

The means and standard deviations were calculated to provide insight into item quality as through the central tendency for each item response distribution. Corrected Item-Total Correlations (r_{it}) were calculated as it quantifies that relationship of that individual item with the total survey score if that individual item was removed. These values were compared to the Achievement Emotion Questionnaire Manual (Pekrun, Goetz, & Perry, 2005). Overall, the research study AEQ-L scale quality was nearly identical to the AEQ-L scale quality reported by the developers.

CHAPTER FIVE: CONCLUSIONS

Overview

Chapter Five is presented in four sections. The discussion section provides an in-depth integration of the findings for each research question into the theoretical framework and existing literature as reviewed in Chapter Two. The implication section provides insight into how these findings support and challenge the development of learning environments by nursing faculty and non-nursing faculty in our current educational systems. The limitation section is a transparent discourse on how the research design and actual methodological procedures limited the internal and external validity of the findings and how the findings need to be assessed within the boundaries of these limitations. The recommendations for future research section provides insightful guidance for future research to advance the findings of this study.

Discussion

This correlation and predictive study examined the relationships between the predictor variables of three positive and five negative achievement emotions with the outcomes variable of academic nurse performance on the standardized Assessment Technology Institute Course Management Series (ATI-CMS) exam specific for the fundamentals of nursing course given in the Spring 2017. Nursing students (N = 155) just starting their Baccalaureate of Nursing program at a faith-based university in the mid-Atlantic region of the U.S. completed the Achievement Emotions Questionnaire for learning or AEQ-L (Pekrun, Goetz, & Perry, 2005) three weeks prior to taking the ATI-CMS exam for the fundamentals of nursing exam. The findings were compared with existing studies in education. Since this AEQ-L tool has not been used in a nursing student population before, the findings were compared with education studies that used the AEQ survey and nursing education studies using the concepts of emotions.

Positive Activating Learning Achievement Emotions and Academic Performance

Positive activating learning achievement emotions (enjoyment, hope and pride) were not associated with academic performance on the ATI-CMS exam for fundamental of nursing. This contradicts the majority of studies using the AEQ survey in other university populations. Positive emotions (enjoyment, hope and pride) were positively linked to academic performance in U.S. business graduates (Butz et al., 2015) and United Kingdom psychology undergraduates (Putwain, Sander, & Larkin, 2013). Enjoyment was positively linked to academic performance in math undergraduates from the Netherlands (Tempelaar et al., 2012), Canadian psychology undergraduates (Daniels, 2009), and U.S. medical students (Artino, 2009; Artino et al., 2010). Both enjoyment and hope were linked to academic performance in Argentina undergraduates (Gonzalez et al., 2011).

It is possible that the contradictory findings of this study compared to other university populations is related to the temporal experience of positive emotions being in flux at the time the AEQ-L survey was completed which superseded the ATI-CME exam by three weeks. Achievement emotions were in temporal flux (see Table 1) where the focus on current learning activities may have elicited positive emotions of enjoyment and negative emotions of anger and boredom while simultaneously eliciting anticipatory emotions of hope, joy, anger and/or boredom for the upcoming exam. After learning or completing the exam, new emotions emerge from reflection on the success or failure such as shame and anger.

Another plausible explanation for the mixed emotionality reported by nursing students can be exemplified by a study with gifted and non-gifted high school students preparing for the National Chemistry Olympics (Fritea & Chiş, 2012). Both groups scored high in enjoyment but the gifted students concomitantly scored high in pride and hope while the non-gifted students

scored high in negative emotions of anxiety boredom, and shame with hope and pride being the lowest. Nursing students had a similar ranking as the non-gifted students with enjoyment ranked the highest and the next highest scores being anxiety, shame, and boredom (Table 5). This finding supports Pekrun's Control-Value Theory (Figure 3) where self-appraisal of high ability with high achievement in the gifted students led to high levels of positive emotions while the self-appraisal of lower ability with lower achievement in non-gifted students and nursing students led to negative emotionality even though the enjoyment of learning was high.

The closest empirical studies on positive emotions in nursing students is through studies on emotional well-being (Fredrickson & Joiner, 2002). Emotional well-being is linked to academic performance in nursing students when linked with faculty support in the learning environment (Tharani, Husain, & Warwick, 2017; Torregosa, Ynalvez, & Morin, 2016). Well-being is also reciprocal to anxiety and stress (Fabbris, Mesquita, Caldeira, Carvalho, & Carvalho, 2017). In a large longitudinal study (Rania, Siri, Bagnasco, Aleo, & Sasso, 2014), the link between nursing student well-being and academic performance was dependent on class context but the link between well-being and high academic performance was positive with peer relationships, locus of control, and self-esteem. These findings support Lazurus's model of stress (Figure 2) and Pekrun's Control-Value Theory of Achievement Emotions (see Figure 3) where the antecedents of personal, environmental, and social support precede emotional outcomes which then is associated with academic performance.

Negative Activating Learning Achievement Emotions and Academic Performance

In this study, negative activating learning achievement emotions (anger, anxiety, and shame) were not associated with academic performance on the ATI-CMS exam for fundamentals of nursing. This finding contradicts studies spanning over a century of anxiety emotion research

in undergraduate students including nursing students. However, most of the survey tools completed by nursing students have been limited to the Test Anxiety Inventory (TAI, Spielberger et al., 1983). No studies have been done to compare the validity between the two tools. Most of the studies (Schwabe, Joels, Roozendaal, Wolf, & Oitzl, 2012) in neuroscience linked stress on memory using measurements of salivary cortisol and/or brain imaging. The emotions of anger and shame have not been studied in nursing students beyond reports of incivility and burnout.

Using the AEQ survey, the relationships between negative activating learning achievement emotions (anger, anxiety, and shame) and academic performance were reviewed and found to be inversely correlated and mostly weak (0.1 to 0.29) to moderately (0.03 to 0.49) related. In U.S. business graduate students (Butz et al., 2015) and United Kingdom psychology undergraduate students (Putwain, Sander, & Larkin, 2013), anger, anxiety, and shame were negatively correlated with perceived or actual academic performance. In the Netherlands freshman undergraduate students and U.S. medical students (Artino, 2010), and Canadian undergraduates (Daniels, 2009), anxiety was negatively correlated with learning achievement. In nursing students, the relationship between negative emotions are focused on text anxiety (Shapiro, 2014) with 30% of nursing students reporting test anxiety while taking the exam.

Negative Deactivating Learning Achievement Emotions and Academic Performance

In this study, negative deactivating learning achievement emotions (hopelessness and boredom) were not associated with academic performance on the ATI-CMS exam for fundamentals of nursing. The only studies that have investigated the emotions of hopelessness and boredom have been limited to using the AEQ survey. Boredom is a unique concept because its emotionality is strongly linked to decreasing cognitive stimulation which arguably is not a negative emotion.

Boredom has been found to be weakly (r = 0.01 to 0.29) or moderately correlated (r = 0.30 to 0.49) with academic performance in university students from North America, Asia, and Europe (Tze et al., 2015), U.S. freshman undergraduates (Cho & Heron, 2015), U.S. business graduate students (Butz et al., 2015), and United Kingdom psychology undergraduate students (Putwain, Sander, & Larkin, 2013), Netherlands freshman undergraduates (Tempelaar et al., 2012), German and Canadian undergraduates (Pekrun et al., 2010), U.S. medical students (Artino, 2010), and Canadian freshman (Daniels, 2009). However, no correlation between boredom and academic performance was found in Canadian and Chinese university students (Tze et al., 2015). Hopelessness is weakly negatively associated with academic performance in Netherland freshman students (Tempelaar et al., 2012) but moderately associated in Croatian high school students (Burić & Sorić, 2012).

Implications

Two key implications are identified. First, with all known critical variables controlled for, there must be missing variables impeding success on the ATI-CMS exam. ATI scores at proficiency Level 2 and Level 3 were achieved by 52% (n = 82) which predicts NCLEX-RN success. The other 48% (n = 73) had scores that predicted NCLEX-RN failure. Faculty need to focus on why half the sample were successful on the ATI exam while another half indicate not being ready to successfully pass the NCLEX-RN exam. A review of Figure 1, the variable of the nursing curriculum (accredited, enacted) was controlled by using a one-site sample. Within the learning environment, the student-faculty relationship was controlled by using a credible Christian-based faculty with a philosophy of education grounded in positive, supportive, loving relationships. Incivility is not part of the nursing experience at this research site. The validity of the outcome variable (ATI-CMS exams) as a valid tool in predicting NCLEX-RN success is well

known and supported by studies (ATI Nursing Education, n.d.). The college readiness for each nursing student was controlled in the nursing student admission process (see Appendix B). Therefore, after controlling for the above variables, no correlation between the predictor variables (learning emotions) and ATI-CMS exam scores was found. This implies other confounding variables blocking progressive learning through Blooms' Taxonomy of learning to be successful in applying, analyzing, and evaluating diverse clinical situations as tested in the ATI-CMS exam.

Second, beyond the positive student-faculty relationship, nursing faculty need to consider other factors within the learning environment that link with ATI-CMS exam success. The contents of the ATI-CMS exam for fundamentals of nursing require multi-level cognitive learning beyond theory (knowledge and comprehension) to include application (applying, analyzing, and evaluating). A missing variable in this study was how the curriculum was enacted in such a way that learning at the higher cognitive functions of applying, analyzing, and evaluating was achieved for all students within the learning environment. It is possible that half the student sample needs a different set of learning activities (or more repetitive learning activities) for deep learning to take place.

The positive effects of social relationships on the emotional well-being in nursing learning environments (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013) is well known but the type of social relationship that stimulate critical thinking is best achieved through tutoring, mentoring, and preceptorship in linking theory with practice (McClure & Black, 2013). In the landmark reports by the Institutes of Medicine (2003, 2010), nursing faculty were challenged to seek, find, and engage in evidence-based teaching strategies required to produce graduate nurses that are safe to practice upon graduation. This study indicates that this variable (type of student-

faculty interaction) may have resulted in positive emotions in nursing students but not supported higher order cognitive learning.

Limitations

There were strengths and weaknesses inherent in the research design that controlled for confounding variables to optimize the learning environment while creating limitations to its generalizability. First, the learning environment was limited to one site, one course, and one nursing faculty group. While this controls for extraneous variables in student-faculty relationships, curriculum enactment, and teaching philosophy, the site was homogenous for Caucasians. The uniqueness of this site was its focus on Christian-based student-faculty relationships conceptualized in its philosophy of education and operationalized through student-faculty relationships. This is a strength since learning best takes place with positive student-faculty relationships, particularly in minority students (Ume-Nwagbo, 2012).

Second, there are procedural flaws on how the AEQ-L survey was completed by the nursing students. The AEQ-L survey was given to them three weeks before the final studying "rush" of taking the exam. The procedural design was chosen based on how the survey has been given in most studies. The survey was given to them without time to deeply reflect on their emotional state during studying for the specific course of fundamentals of nursing. Several nursing students left comments on the survey stating their inability to discern emotional experiences while studying for one nursing course compared to other courses being taken simultaneously. Third, the Likert scale construct used on the AEQ-L survey provides a neutral stem response that is neither positive ("agree" or "strongly agree") or negative ("disagree" or "strongly disagree"). Table 13 reflects the percent of responses for each predictor variable that were "neutral" or "I don't know if I did or did not experience this." Warner (2013, pp. 902-903)

discusses the sensitivity issues with attitude scales like the Likert scale emphasizing that the scale itself needs to have directionality. The AEQ-L scale does not fit the directionality criterion. The relevancy of whether a nursing student reporting "neutral," "disagree," or "strongly disagree" is realistically stating that emotion was not experienced. The correct interpretation of the frequency responses should be categorical "yes" the emotion was perceived to be experienced or "no" the emotion was not experienced as seen in Table 13. Neuroscience studies that support the findings that emotions influence the learning process do not use Likert scales.

Generalizability of the Sample to Target Populations

The research sample demographics for gender (88% female) and age below 30 years (94%) is similar to the target population of U.S. nursing students for gender (85% female) and age below 30 years (87.4%) based on the National League for Nursing (2016) biennial survey for the 2015 – 2016 academic year. However, ethnicity (reported as "perceived culture" in the survey tool) was skewed toward Caucasian (94%) compared to the NLN (2016) report (87.4%). This is a limitation for generalizability since Caucasians have a higher retention rate in nursing programs, while minority nurses have higher drive or intention to succeed (Evans, 2013).

Caucasian and minority nursing students report the importance of the student-faculty relationship (Condon et al., 2013) which is a strength in this study for two reasons. First, the study was done at one site with one nursing program and one nursing course to control for confounding variables like curriculum and student-faculty relationships.

Neither the research sample nor the NLN biennial survey for the 2015 – 2016 academic year is generalizable to the U.S. college student demographics as reported by the National Center for Education Statistics (2016). This is a limitation since the AEQ-L tool has never been used in the

nursing student population. The uniqueness of the nursing student population is well documented which impacts how education studies conducted on non-nursing student populations can be generalized to nursing students.

Recommendations for Future Research

There are gaps within nursing education literature on how to optimize the learning environment in nursing education. The learning environment (see Figure 1) is where there are no accreditation controls over the variables impacting the learning process: Relationships between student and faculty and validity of learning activities with progressive higher order thinking skills (remembering, understanding, applying, analyzing, evaluating, and creating). Future research should first focus on the emotionality of learning and harnessing the positive effects of emotions while mitigating the negative effects. The second focus should be on optimizing the effectiveness of each learning activity on progressive higher order thinking skills.

First, this study needs to be reproduced using the same one-site sample while controlling for procedural variables that may have distorted the temporal link between completing the AEQ-L survey and taking the ATI-CMS exam. Second, the validity and reliability of the AEQ survey in the nursing student population needs to be repeated using large samples at multiple sites to explore each discrete achievement emotion within its temporal context of learning and anticipation of taking high-stake exams and reflection after taking the exam. Third, qualitative or mixed method studies to explore nursing students' learning emotions and compare with the AEQ-L survey would provide insight into the emotionality of learning in this nursing student population. Finally, there needs to be intense scrutiny of the current learning environment and how the enacted curriculum uses diverse innovative learning strategies that meets diverse

learning needs, to progress students from simple knowledge acquisition through applying, analyzing, and evaluating diverse clinical situations.

Finally, there is a new concept-based curriculum emerging that restructures how knowledge is transferred by bundling voluminous amounts of information into concepts that can be applied to diverse clinical situations. A study should be done using the AEQ survey on nursing students who are engaged in this new concept-based curriculum.

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APPENDICES

Appendix A

Permission to Conduct Research and Copyright Licenses

Permission for Copyright Licenses to adapt information in Lazarus (1999) on pp. 1997-200 for Figure 2 - Revised model of stress and coping with a linear demand-perception-response. See below.

Stress and emotion : a new synthesis

Order detail ID:	71131494	**Permission Status:**	**Granted**
ISBN:	9780826112507	**Permission type:**	Republish or display content
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Publisher:	SPRINGER PUBLISHING COMPANY, INCORPORATED	**Order License Id:**	4331330432170
Author/Editor:	LAZARUS, RICHARD S.	⊞ View details	

Permission for Copyright Licenses to adapt information in Pekrun and Linnenbrink-Gracia (2014) on page 123 for Figure 3. Comparison of Lazarus's model of stress, coping and adaptation with Pekrun's control-value theory of achievement emotions and on page 121 for Table 1. Three-Dimensional Taxonomy of Achievement Emotions over Time (2 x 3). See below.

International Handbook of Emotions in Education

Order detail ID:	71131539	**Permission Status:**	**Granted**
ISBN:	9781136512605	**Permission type:**	Republish or display content
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Volume:		**Job Ticket:**	501389910
Issue:		**Order License Id:**	4334470278050
Start page:			
Publisher:	Taylor and Francis	⊞ View details	

Permission to use the AEQ instrument in Pekrun, Goetz, and Perry (2005) for Dissertation research. Permission obtained through emails with Dr R. Pekrun. See below.

From: Reinhard Pekrun <[redacted]>

Sent: Saturday, May 31, 2014, 2:08 AM

Dear Dr. Kirwan,

thanks for your interest in the AEQ and for sending the abstract. Enclosed find a copy of the manual for the instrument, and yes, it would be interesting to see the findings of your investigation.

What do you mean by “U-curve emotions”? Emotions that show U-curve relations with other variables?

Best wishes for your work,

Reinhard Pekrun

Dr. Reinhard Pekrun
Professor of Psychology
Dpt. of Psychology, University of Munich
80802 Munich, Germany
Phone: [redacted]
Email: [redacted]

Professorial Fellow
Institute for Positive Psychology and Education
Australian Catholic University
North Sydney, NSW 2060, Australia

Permission to use information in Pekrun et al. (2005) on pages 17 through 24 in Table 13. *Subscale quality and reliability of AEQ-L instrument* and Appendix C. Learning-related Emotions Questionnaire. Permission obtained through emails with Dr R. Pekrun. See below.

Reinhard Pekrun <[redacted]>
Sun 4/8, 11:44 AM

Dear Susan,
thank you for sharing these data with me - they look good! Excellent to know that the findings converge.
Yes, you can publish the table in your dissertation.

Best wishes,
Reinhard

Dr. Reinhard Pekrun
Professor of Psychology
Dpt. of Psychology, University of Munich
80802 Munich, Germany
Phone: [redacted]
Email: [redacted]

Professorial Fellow

Institute for Positive Psychology and Education
Australian Catholic University
North Sydney, NSW 2060, Australia

Tue 4/3, 11:35 AM

Dr Pekrun,
As promised, I am sharing my data with you.
I am requesting permission to publish the attached Table which is partially found in your AEQ Manuel (2005) combined with my data. The table combines your survey tool for learning emotions and the M, SD, and rit data with my research. The attached table would only be published in my dissertation. No journals.

I am excited with my data and would like to continue with our research with your AEQ tool in the nursing student population. I do not want to violate any copyright.

SOURCE: Pekrun, R., Goetz, T., & Perry, R. P. (2005). Achievement emotions questionnaire (AEQ) - User's manual. Unpublished manual, University of Munich, Germany.

Warm regards,
Susan M. Kirwan, MSN, APRN, CPNP-PC

Permission to the AEQ instrument in Pekrun et al. (2005) for ongoing research. Permission obtained through emails with Dr R. Pekrun. See below:

Reinhard Pekrun <[redacted]>

Mon 4/9, 1:07 AM

Dear Susan,

yes please feel free to use the instrument for your research purposes. And, yes, I continue being interested in any findings you will generate.

Best wishes,
Reinhard

Dr. Reinhard Pekrun
Professor of Psychology
Dpt. of Psychology, University of Munich
80802 Munich, Germany
Phone: [redacted]
Email: [redacted]

Professorial Fellow
Institute for Positive Psychology and Education

Australian Catholic University
North Sydney, NSW 2060, Australia

Sun 4/8, 12:15 PM

Dr Pekrun
Thank you for your permission and continued support in this dissertation.
I am convinced your AEQ tool has much to offer nursing faculty who are tasked to design learning environments sensitive to nursing students emotional well-being. I will continue to use your AEQ tool but this time will use the full tool and in diverse nursing samples. All data will be shared with you if you choose.

REQUEST: Will need to again **ask you permission** to **use your AEQ tool for all future research indefinitely**. My last request only covered the dissertation.

Warm regards,
Susan M Kirwan

Permission to conduct research at the research site school of nursing. Permission obtained through email following face-to-face meetings and phone correspondence. See below for final email permission.

[redacted] Clark (School of Nursing Admin)
Tue 11/22, 6:34 PMKirwan, Susan
If all you need is an email, that is no problem. I approve of your study being conducted on nursing students as presented to Shanna Akers.

From: Kirwan, Susan M
To: [redacted] (School of Nursing Admin)
Sent: Monday, November 21, 2016 3:07 AM
Subject: Request permission to study LU-SON nursing students using the AEQ and ATI scores

Dr [redacted]

Dr [redacted] 11/17, 21/2016
I am requesting your permission to conduct my doctoral research this Spring, 2017 on the NUR[redacted] Fundamentals in Nursing students.

I am currently an EdD student at Liberty University School of Education, nursing faculty in an online nursing program, and a pediatric nurse practitioner (rural pediatric clinic with urban hospital privileges) in the Southwest area of the U.S.A.

As part of my dissertation work on advancing the science of nursing education, I am investigating the correlational and predictive relationships between affective states (predictive

variable) during the learning process and academic performance (criterion variable) in nursing students engaged in baccalaureate nursing education. Affective states will be measured using Pekrun's (2016) Achievement Emotions Questionnaire (AEQ, 75items). Academic performance will be measured using the ATI Course Content Mastery exam for Fundamentals in Nursing

I appreciate your timely consideration of this request. Timely submission to the LU IRB is 5 days after the successful study defense. I successfully defended on 11/17/2016.

Warm regards,

Susan M Kirwan, MSN, APRN, CPNP-PC, CNS
Pediatric Nurse Practitioner – Childrens Medical Clinics
Nursing Faculty – TESU School of Nursing

Appendix B

Nursing Program Admission Requirements: Demonstrated Cognitive Aptitude for Success

Entrance requirements include the following:

A. A minimum, cumulative GPA of 3.0
B. Completion of BIOL 213, BIOL 214, BIOL 215, BIOL 216, CHEM 107, NURS 101, NURS 105, NURS 115
C. Two written recommendations from employers or faculty outside nursing.
D. An essay stating career goals (maximum 300 words).
E. A personal interview with nursing faculty may be required.
F. Successful completion of the TEAS test
G. Satisfactory behavior at [redacted]. Students who have been expelled, suspended or experiences sanctions at not eligible for initial entry until fully reinstated to good standing.
H. The nursing faculty reserves the right to dismiss from the major, students who exhibit unprofessional, immoral or unethical behavior.
I. International students, for who English is a second language, may be required to have all general education courses completed prior to entering the nursing major. Students should have have completed ENGL 101 and be registered for ENGL 102 at the time of application.
J. Admission decisions are guided by the four-tiered grid found on pages 11-12.

The competitive applicant will have:

A. A cumulative college GPA above 3.5
B. A grade of “A” or “B” in both semesters of Anatomy and Physiology
C. Excellent recommendations
D. Careful consideration will be given to the ideas, grammar and presentation of the Essay. Completed pre-requisite course work.

Appendix C

IRB Approval Letter

Liberty University's Institution Review Board (IRB) – Approval Letters

January 18, 2017

Susan M Kirwan
IRB Approval 2724.011817: Predictive Relationships between Achievement Emotions and Academic Performance in Nursing Students

Dear Susan M Kirwan,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

[redacted]

Administrative Chair of Institutional Research

IRB Change in Protocol Approval: IRB Approval 2724.011817: Predictive Relationships between Achievement Emotions and Academic Performance in Nursing Students

Reply all|
Thu 4/6/2017 8:24 AM
To: Kirwan, Susan
Cc: Fontanella, Joseph (School of Education);
Good Morning Susan,

This email is to inform you that your request to replace the research assistant listed on your approved study, Matthew Neumann, with a new research assistant, Jinny Laughlin, has been approved.

Thank you for complying with the IRB's requirements for making changes to your approved study. Please do not hesitate to contact us with any questions.

We wish you well as you continue with your research.
Best,
G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Appendix D

Survey Packet: Learning-related Emotions Questionnaire

Directions to Teaching Assistant – Please read verbatim the following directions:

"Studying for your courses at a university can induce different feelings. This questionnaire refers to emotions you may experience when studying. Before answering the questions on the following pages, please recall some typical situations of studying which you have experienced during the course of your studies."

Directions to Nursing Student:

Read each section's directions carefully.

Respond using the Likert Scale and record your answers in the RIGHT COLUMN.

	Strongly Disagree 1	**Disagree 2**	**Neither Agree nor Disagree 3**	**Agree 4**	**Strongly Agree 5**
					Survey Tool #:_____
	BEFORE STUDYING "The following questions pertain to feelings you may experience **BEFORE** studying. Please indicate how you feel, typically, before you begin to study."				
81.	I look forward to studying.				
82.	I get so nervous that I don't even want to begin to study.				
83.	I feel confident that I will be able to master the material.				
84.	Because I get so upset over the amount of material, I don't even want to begin studying.				
85.	When I have to study I start to feel queasy.				
86.	When I look at the books I still have to read, I get anxious.				
87.	Because I'm bored I have no desire to learn.				
88.	I have an optimistic view toward studying.				
89.	I feel ashamed about my constant procrastination.				
90.	I get angry when I have to study.				
91.	My lack of confidence makes me exhausted before I even start.				
92.	I'm annoyed that I have to study so much.				
93.	I would rather put off this boring work till tomorrow.				
94.	I feel optimistic that I will make good progress at studying.				
95.	I feel hopeless when I think about studying.				

	Strongly Disagree 1	Disagree 2	Neither Agree nor Disagree 3	Agree 4	Strongly Agree 5 *Survey Tool #:_____*

DURING STUDYING

"The following questions pertain to feelings you may experience **DURING** studying. Please indicate how you feel, typically, during studying."

96.	I worry whether I'm able to cope with all my work.	
97.	Because I'm bored I get tired sitting at my desk.	
98.	I feel confident when studying.	
99.	I feel ashamed that I can't absorb the simplest of details.	
100.	I get so angry I feel like throwing the textbook out of the window.	
101.	My hopelessness undermines all my energy.	
102.	While studying I feel like distracting myself in order to reduce my anxiety..	
103.	The material bores me so much that I feel depleted.	
104.	The thought of achieving my learning objectives inspires me.	
105.	I feel ashamed because I am not as adept as others in studying.	
106.	When I sit at my desk for a long time, my irritation makes me restless.	
107.	I'm proud of my capacity.	
108.	I feel so helpless that I can't give my studies my full efforts.	
109.	I find my mind wandering while I study.	
110.	I study more than required because I enjoy it so much.	
111.	As time runs out my heart begins to race.	
112.	The material bores me to death.	
113.	My sense of confidence motivates me.	
114.	When somebody notices how little I understand I avoid eye contact.	
115.	Studying makes me irritated.	
116.	I wish I could quit because I can't cope with it.	
117.	When my studies are going well, it gives me a rush.	
118.	I get tense and nervous while studying.	
119.	While studying this boring material, I spend my time thinking of how time stands still.	

	Strongly Disagree 1	Disagree 2	Neither Agree nor Disagree 3	Agree 4	Strongly Agree 5 *Survey Tool #:_____*
120.	I turn red when I don't know the answer to a question relating to the course material.				
121.	I get angry while studying.				
122.	When I solve a difficult problem in my studying, my heart beats with pride.				
123.	I'm resigned to the fact that I don't have the capacity to master this material.				
124.	I enjoy the challenge of learning the material.				
125.	The subject scares me since I don't fully understand it.				
126.	While studying I seem to drift off because it's so boring.				
127.	I feel ashamed.				
128.	I get annoyed about having to study.				
129.	Because I want to be proud of my accomplishments, I am very motivated.				
130.	I feel helpless.				
131.	I enjoy dealing with the course material.				
132.	Worry about not completing the material makes me sweat.				
133.	Studying for my courses bores me.				
134.	I feel embarrassed about not being able to fully explain the material to others.				
135.	When I excel at my work, I swell with pride.				
136.	I get physically excited when my studies are going well.				
137.	Studying is dull and monotonous.				
138.	I feel ashamed when I realize that I lack ability.				
139.	I enjoy acquiring new knowledge.				
140.	The material is so boring that I find myself daydreaming.				
	AFTER STUDYING "The following questions pertain to feelings you may experience **AFTER** having studied. Please indicate how you feel, typically, after having studied."				
141.	I worry whether I have properly understood the material.				
142.	Because I have had so much troubles with the course material, I avoid discussing it.				
143.	After extended studying, I'm so angry that I get tense.				

	Strongly Disagree 1	Disagree 2	Neither Agree nor Disagree 3	Agree 4	Strongly Agree 5 *Survey Tool #:_____*
144.	I'm proud of myself.				
145.	After studying I'm resigned to the fact that I haven't got the ability.				
146.	I am so happy about the progress I made that I am motivated to continue studying.				
147.	When I can't keep up with my studies it makes me fearful.				
148.	My memory gaps embarrass me.				
149.	I'm discouraged about the fact that I'll never learn the material.				
150.	Reflecting on my progress in coursework makes me happy.				
151.	I don't want anybody to know when I haven't been able to understand something.				
152.	I think I can be proud of my accomplishments at studying.				
153.	I feel resigned.				
154.	Certain subjects are so enjoyable that I am motivated to do extra readings about them.				
155.	I worry because my abilities are not sufficient for my program of studies.				

Source: Reproduced with permission from Dr. Reinhard Pekrun. See Appendix A. Adapted from Pekrun, R., Goetz, T., & Perry, R. P. (2005). *Achievement Emotion Questionnaire (AEQ) - User's Manual*. Unpublished manual, University of Munich, Germany.

Demographic Data
(Circle your response)

GENDER: MALE FEMALE

AGE: Under 30 years Over 30 years

Is English your Primary Language? YES NO

ETHNICITY: How do you define your ethnicity or your culture?

Caucasian
Black/African-American
American Indian/Alaskan Native
Hispanic/Latino
Asian/Pacific Islander

NOTE: If you view yourself as having two or more ethnicities listed above, then Choose the category that most reflects how YOU define yourself.

Appendix E

Survey Packet: Informed Consent

You are being asked to participate in a research study specifically in the nursing student population.

What is the study about?

Purpose: Examine learning emotions on learning outcomes for nursing students. Studying for nursing courses can induce different feelings. This questionnaire refers to your studying or learning emotions you have experienced as you have progressed throughout this course before taking the ATI course content mastery exam. This questionnaire does not ask about emotions felt during this in-class experience or during test-taking.

What will you are asked to do?

Part I: Complete this survey that will take approximately 20-30 minutes.
Part II: Your ATI course content mastery grade will be compared with your questionnaire responses.

Risks and benefits:

Risks: No more than you would encounter frequently as a student.
Benefits: Advancement of the science of nursing education by sharing your feelings during the learning process so we can see if there is a link between your studying feelings and your ATI course content mastery performance.

Compensation:

Monetary or physical compensation: None
Emotional: Satisfaction of knowing you make a difference to nursing faculty who care about your emotional well-being.

Confidentiality:

Results: Survey results will be kept confidential. Identifying data will be destroyed once coded to correlation with your ATI score.
Voluntary: Participation in the study is strictly voluntary. You may fully participate or withdraw at any time with no concerns. You may also choose not to answer questions from the survey.

Questions:

If you have any questions, please contact the nursing department secretary.
After data collection is complete and analyzed, you may request a copy of the overall results.

CONSENT FOR PARTICIPATION IN PART I & PART II:
By signing below, you agree to participate in both Part I and Part II of this study.

DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATE HAS BEEN ADDED TO THIS DOCUMENT.

SIGNATURE: _____ Survey Tool Number: _____

PRINTED NAME: _____

Student ID number: _____