

DEVELOPMENT AND VALIDATION OF THE
STUDENT ACTIVATION MEASURE

By

Rachel A. Kinder

Dissertation

Submitted to the Faculty of the
Graduate School of Vanderbilt University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

In

Nursing Science

December, 2008

Nashville, Tennessee

Approved:

Professor Kenneth A. Wallston

Professor Larry E. Lancaster

Professor Sheila J. Ridner

Professor Vaughn G. Sinclair

Professor Craig A. Smith

Copyright © 2008 by Rachel A. Kinder
All Rights Reserved

To my beloved husband, Dana, infinitely supportive

and

To my amazing daughters, April and Erin

ACKNOWLEDGEMENTS

This work could not have been possible without the personal and professional guidance of my Dissertation Committee. Each of the members of my Dissertation Committee has provided me with a wealth of knowledge on scale development and validation. I would especially like to thank Professor Kenneth A. Wallston, the chair of my committee, for his continued support and encouragement throughout the dissertation process.

TABLE OF CONTENTS

	Page
DEDICATION	iii
ACKNOWLEDGMENTS	iv
LIST OF TABLES	v
LIST OF FIGURES	vi
Chapter	
I. INTRODUCTION	1
Statement of the Problem.....	4
Purpose of the Study	4
Research Questions	5
Significance of the Study	5
II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK	8
Theoretical Framework	8
Perceived Personal Control.....	8
Self-efficacy	11
Optimism.....	13
Cognitive Adaptation	15
Hardiness.....	17
Resilience	19
Summary of Theoretical Framework	21
Literature Review.....	23
Academic Variables and NCLEX-RN Success	24
Grades in Nursing Courses	25
Cumulative Grade Point Average	27
Scores on Standardized Examinations	29
Summary of Academic Variables	31
Nonacademic Variables and NCLEX-RN Success.....	33
Assumptions.....	34
Hypotheses	35
III. DEVELOPMENT OF THE STUDENT ACTIVATION MEASURE	36
Patient Activation.....	36

	Critical Thinking and Nursing	38
	Student Activation Measure.....	39
IV.	METHODOLOGY	42
	Research Design.....	42
	Description of the Research Setting.....	42
	Sample and Sampling Plan	43
	Nature and Size of the Sample.....	43
	Criteria for Sample Selection.....	46
	Methods for Subject Recruitment	46
	Strategies to Ensure Human Subjects Protection.....	47
	Data Collection Methods	48
	Procedures.....	48
	Instruments and Definition of Terms.....	49
	Demographic Form	49
	Student Activation Measure.....	50
	Patient Activation Measure.....	50
	Brief Resilient Coping Scale.....	51
	Psychological Vulnerability Scale	52
	Personal Mastery Scale	52
	Revised Academic Hardiness Scale.....	53
	Cognitive Adaptability Index.....	54
	Rosenberg Self-Esteem Scale	54
	Marlowe-Crowne Social Desirability Scale.....	55
	Abbreviated Santa Clara Religious Faith.....	56
	Political Stance.....	56
	Internal Consistency.....	57
	Data Analyses	57
V.	RESULTS	60
	Scale Development	60
	Variance	60
	Initial Look at Discriminant Validity.....	62
	Initial Examination of Test Retest Reliability	63
	Item-Total Statistics.....	64
	Hypothesis 1.....	65
	Hypothesis 2.....	71
	Hypothesis 3.....	73
	Hypothesis 4.....	73
	Hypothesis 5.....	76

VI.	DISCUSSION.....	78
	Hypothesis 1.....	79
	Hypothesis 2.....	82
	Hypothesis 3.....	86
	Hypothesis 4.....	89
	Hypothesis 5.....	92
	Reliability.....	94
	Strengths and Limitations	96
	Nursing Implications.....	100
	Future Research	103
Appendix		
A.	TABLE 1: NCLEX SUCCESS: A LITERATURE REVIEW	106
B.	TABLE 2: COMPARISON OF ACTIVATED RELATED CONSTRUCTS COMPARED TO CONTROL.....	111
C.	STUDENT ACTIVATION MEASURE: FIRST DRAFT	113
D.	STUDENT ACTIVATION MEASURE: REVISION 1	116
E.	RESEARCH INSTRUMENTS	119
F.	FIGURE 1: MODEL OF ACTIVATION.....	125
G.	FIGURE 6: REVISED MODEL OF ACTIVATION.....	127
	REFERENCES	129

LIST OF TABLES

Table	Page
1. NCLEX-RN Success: A Literature Review.....	107
2. Comparison of Activated Constructs with Respect to Control.....	112
3. Demographic and Background Characteristics of Associate Degree and Baccalaureate Degree Students.....	45
4. Internal Consistency of Other Measures Administered in this Study.....	57
5. Item Statistics of the 35-Item SAM.....	61
6. Item-Total Statistics of the 34-Item SAM.....	64
7. Total Variance Explained: Unrotated Factor Solution.....	66
8. Total Variance Explained: Varimax Rotation.....	67
9. Total Variance Explained: Oblique Rotation.....	68
10. Total Variance Explained: Varimax Rotation Forcing Two Factors.....	69
11. Factor Loadings Forcing Two Factors.....	70
12. Item-Total Statistics for the 20-Item SAM.....	71
13. Convergent Validity of the 20-Item SAM and its Two Factors.....	72
14. Discriminant Validity of the 20-Item SAM and its Two Factors.....	73
15. Mean Scores on the SAM and its Two Factors by Semester of Study.....	74
16. Independent Samples t-tests for Program of Study.....	77

LIST OF FIGURES

Figure	Page
1. A Model of Activation	126
2. Histogram of the 35-Item SAM	61
3. Scree Plot: Unrotated Factor Solution	66
4. Means Plot of Semester in Nursing Program and Factor 1	75
5. Means Plot of Semester in Nursing Program and the 20-Item SAM.....	76
6. A Model of Activation Revised	128

CHAPTER I

INTRODUCTION

With the current nursing shortage and with a limited number of nursing student positions, it is critical that nursing programs have high retention and graduation rates, as well as high first-time National Council Licensure Examination for Registered Nurses (NCLEX-RN) pass rates: every empty slot in a nursing program and every failure to pass the NCLEX-RN contributes to the continuing nursing shortage.

The Health Resources and Services Administration (HRSA, 2004) reported a current moderate shortage of registered nurses (RN) at the national level, and a continual increase in the severity of the nursing shortage through the year 2020. According to the Nursing Supply and Demand Models (HRSA, 2004), the number of graduates from nursing programs is a determinant of the RN supply, and would be required to increase by 90% from the year 2000 to the year 2020 to meet the projected increased demand of 41% for RN services. These data suggest that the U.S. had a shortage of 168,000 RNs in 2003, and this shortage is expected to reach one million RNs if current trends continue, meeting only 64% of the projected demand (HRSA, 2004). As of December 2006, American hospitals had a shortage of approximately 116,000 RNs (American Hospital Association, 2007), but there were also shortages of nurses in settings other than hospitals.

If a nursing program graduate fails the NCLEX-RN, the graduate is not allowed to function as a nurse, thus delaying nursing practice for 46 days until the graduate is

permitted to retake the examination (Kentucky Board of Nursing, 2008b). The pass rate for first-time United States educated examination takers from January to March 2008 is reported to be 87.9% for baccalaureate degree and 86.6% for associate degree nursing candidates (National Council of State Boards of Nursing, 2008b). At Western Kentucky University, the pass rate for baccalaureate degree nursing graduates was 86% in 2006 and 89% in 2007; the pass rate 87% in 2006 and 90% in 2007 (South Campus) and 67% in 2006 and 100% in 2007 (Glasgow Campus) for associate degree nursing graduates (Kentucky Board of Nursing, 2008).

The number of enrollments in nursing programs, and thus the number of graduates from nursing programs, is limited by the size of the current cohort available, which is smaller compared to the baby boomer generation (Kimball & O'Neil, 2002). Nevertheless, 40,000 qualified applicants were turned away from nursing programs in 2007 because of lack of admission slots and an insufficient number of faculty (American Association of Colleges of Nursing, 2008). These factors increase the urgency that currently filled slots remain filled and graduates are successful in passing the NCLEX-RN.

Multiple academic and nonacademic factors have been identified that predict a student's successful completion of a nursing program and first-time passing of the NCLEX-RN (Campbell, & Dickson, 1996). These factors have been used to identify students at-risk for failure and to develop interventions that promote success. Academic factors that have been studied include standardized comprehensive nursing examination performance, nursing course grades, and cumulative grade point averages (Barkley, Rhodes, & Dufour, 1998; Daley, Kirkpatrick, Frazier, Misook, & Moser, 2003; Higgins,

2005; Morrison, Free, & Newman, 2006). Nonacademic factors, such as demographics, lack of confidence, test anxiety, and life events that can have an impact on NCLEX-RN performance have been studied (DiBartolo & Seldomridge, 2005; Higgins, 2005).

However, nursing research findings have also been unable to consistently identify student characteristics that predict successful completion of a nursing program and/or success on the NCLEX-RN (Campbell & Dickson, 1996; Stark, Feikema, & Wyngarden, 2002).

Accuracy is low in predicting which students are likely to fail the NCLEX-RN (Giddens & Gloeckner, 2005; Haas, Nugent, & Rule, 2004; Stark et al., 2002).

The majority of the items on the NCLEX-RN are written at the application or higher levels of cognitive ability (National Council of State Boards of Nursing, 2007).

Critical thinking skills are essential for the mastery of nursing knowledge, the acquisition of entry-level nursing competence, and passing the NCLEX-RN examination. Key to success in a nursing program is the ability to apply reflectively and contextually in the clinical setting the nursing knowledge that was mastered in the classroom, and to make evidence-based clinical judgments (Alfaro-Lefevre, 2006; Hicks, 2001; Simpson & Courtney, 2002). Critical thinking behaviors have been identified that demonstrate nursing knowledge, intellectual skills and competencies (nursing process and decision-making), affective components, and critical thinking characteristics and attitudes that are essential to professional nursing practice (Alfaro-Lefevre, 2006; Scheffer & Rubenfeld, 2000).

Statement of the Problem

To develop critical thinking skills and to be successful in a nursing program, as well as to pass the NCLEX-RN, nursing students must self-regulate their learning and actively participate in their own intellectual growth (Simpson & Courtney, 2002). To actively participate or to become activated, students must have the necessary knowledge, skills, and confidence to take an active role in their own learning. Students who passed the NCLEX-RN on the first attempt were found to have accepted responsibility for their own learning (Eddy & Epeneter, 2002), and it is recommended that future students take actions to succeed that reflect a sense of self-responsibility for their success (Frith, Sewell, & Clark, 2005). Although an NCLEX-RN Risk Appraisal Instrument (Barkley, Rhodes, & Dufour, 1998) has been developed to assess a nursing student's risk of NCLEX-RN failure based on school records, an instrument has not yet been developed to measure nursing student's level of activation.

Purpose of the Study

The purpose of this study was to validate an instrument that measures nursing student activation and to examine whether such an instrument can be used to identify stages of activation of nursing students. The instrument was based on critical thinking indicators, academic and non-academic factors that reflect taking responsibility for one's own learning, and knowledge of the NCLEX-RN study plan. Correlations between this new measure of activation and previously validated instruments that measure similar and different concepts were examined. Furthermore, differences in level of activation among

semesters in a nursing program and between associate and baccalaureate nursing programs were examined.

Research Questions

The research questions are

1. What are the psychometric properties of the Student Activation Measure?
2. Is student activation a developmental process in associate and baccalaureate nursing students?
3. Is there a difference in student activation between associate and baccalaureate nursing students?
4. What are the relationships among student activation and the constructs personal mastery, cognitive adaptation, resilience, hardiness, psychological vulnerability, self-esteem, strength of religious faith, political stance, and social desirability?
5. Are these relationships consistent with the proposed theoretical framework (i.e. the Model of Activation)?

Significance of the Study

To address the issue of the current and future nursing shortage, a decreasing supply of nurses along with an increasing demand for nurses, it is imperative to facilitate academic success for students who are enrolled in associate and baccalaureate nursing programs and to maximize first-time NCLEX-RN pass rates for the graduates of these nursing programs. Because nursing education requires critical thinking and clinical judgment, nursing knowledge and skills, and an understanding of the NCLEX-RN study

plan, students must take an active role in their own learning to be successful.

Development of an Activation Model as well as a Student Activation Measure that addresses issues specific to success in a nursing program provides a means of identifying students who may be at-risk for failure. Knowledge of a student's stage of activation and its relationship to academic success may help nursing educators identify strategies that promote success.

Central to nursing education is the nursing process (Carpenito, 2002) that leads to the development of an individualized plan of care for the patient with short-term and long-term goals, nursing interventions, and ongoing assessment, evaluation, and revision. Application of the nursing process can be broadened to include nursing students (in place of patients) and an individualized plan of study (in place of a plan of care). To extend the nursing process to the student population, the plan of study is ideally developed in collaboration with an activated student who sets personal, attainable goals with proximal subgoals, and who develops academic interventions (in place of nursing interventions) to reach those goals.

The development of an Activation Model provides a theoretical framework for nursing education and for the implementation of academic interventions based on the nursing process and a student's stage of activation. *Assessment* of a student's knowledge, skills, and capability will identify a student's stage of activation and assist the educator in identifying students at risk for failure and in guiding the *planning of interventions* to support or increase the student's level of activation. Setting attainable *goals* and proximal subgoals with the student, as well as retraining the student to think in terms of success as a result of personal effort, increases the student's confidence and perceived personal

control. The interventions identify the actions and behaviors required to reach goal attainment. The plan of study is *evaluated* for student attainment of goals and effectiveness of interventions with revisions made accordingly. This collaboration between nursing students and educators would be a first step toward developing a nursing education system that supports student activation and self-responsibility for learning.

In theory, the Model of Activation, to be elaborated in the next chapter, is a general model that can be applied to any person or population planning to make change or seeking to reach a goal, or to any situation where having the required knowledge, skills, and confidence will increase a person's perceived personal control and lead to activation: the performance of actions and behaviors that lead to goal attainment.

CHAPTER II

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Theoretical Framework

A Model of Activation (see Figure 1) was developed based on the construct of perceived personal control, and activation-related constructs pertaining to control. This Model of Activation was used as the theoretical framework in the development and testing of a Student Activation Measure.

Perceived Personal Control

Perceived personal control is the subjective belief “that one can determine one’s own internal states and behavior, influence one’s environment, and/or bring about desired outcomes” (Wallston, Wallston, Smith, & Dobbins, 1987, p. 5). Most persons maintain an illusion of control with a positive attributional bias towards perceived personal control. This illusory belief is not necessarily based on an objective appraisal of reality and usually overestimates the actual amount of personal control in a situation (Shapiro, Schwartz, & Astin, 1996; Walker, 2001; Wallston, 2001).

According to Skinner (1996), perceived personal control refers to the connection between an agent and an end (or outcome). Agents with access to at least one effective action or behavior believe that they can intentionally produce a desired outcome. A related construct, locus of control, also refers to a belief regarding the causal relationship between an agent and an end, that is, who (or what) is responsible for the outcome (Walker, 2001; Wallston, 2001). A person with an internal locus of control orientation

believes outcomes are a direct consequence of the person's own actions, while an external locus of control orientation indicates that outcomes are a direct consequence of others' actions or chance (Wallston). "Internals" perceive more personal control than "externals."

Dimensions of perceived control include whether the control is primary and behavioral (where one attempts to take direct action to change the situation by influencing the environment), or secondary and cognitive (where one attempts to change oneself by influencing one's emotional reactions, reinterpreting events or reframing one's perceptions) (Skinner, 1996; Walker, 2001; Wallston, 2001). The dimensions of primary and secondary control have often been compared to problem-focused and emotion-focused coping (Walker). Other factors that affect perceived control include a situation-specific vs. global focus of perceptions, the desire for control, and the temporal dimension of control (Frazier, Steward, & Mortensen, 2004; Skinner; Wallston).

According to Jewell and Kidwell (2005), a person with high perceived control is more likely to form an intention to engage in and initiate a specific behavior. The more skills, abilities, and personal resources perceived as available, and the fewer perceived obstacles to the performance of a behavior, the more a situation is perceived as controllable (Jewell & Kidwell). Persons with high perceived control have been found to exert more effort, persist in the face of obstacles, seek information, problem-solve, and be action-oriented and optimistic (Skinner, 1996).

Perceived personal control can include the subjective belief that one can influence and predict daily life events (Perry, 2001). Individual differences in perceived control are responsible for cognitive, emotional, and behavioral consequences, affecting motivation

and achievement striving. College students who have high perceived personal control were found to exert more effort, perform better, have higher final grades, be mastery oriented, and modify the environment to achieve their goals (Perry; Perry, Hladkyj, Pekrun, & Pelletier, 2001). College students high in perceived academic control and also high in preoccupation with failure had the best college performance of all study groups, suggesting that students who were high in preoccupation with failure were actively engaged in a causal search for their failures, and being also high in perceived academic control attributed controllable causes, such as effort and learning strategies, to failures and adjusted their actions accordingly (Perry et al., 2001; Perry, Hladkyj, Pekrun, Clifton, & Chipperfield, 2005). Nursing students who have an internal locus of control over academic outcomes were found to use self-regulated learning strategies, such as support-seeking, which in turn led to higher academic performance (Ofori & Charlton, 2002). Control-enhancing interventions, such as attributional retraining, which restructure causal attributions of failure as controllable and modifiable, and the teaching of self-regulated learning strategies, increase the belief that goals are attainable and improve performance (Ofori & Charlton; Perry).

Perceived personal control is the key control construct because it “involves the self as agent, the self’s actions and behaviors as the means, and an effected change in the social or physical environment as the outcome” (Skinner, 1996, p. 558). The following discussions of self-efficacy, cognitive adaptation, optimism, hardiness, and resilience will show how perceived personal control is central to each of these constructs (see Figure 1). The self as agent begins with beliefs that increase one’s confidence or capability, or create a positive focus or positive illusions, and that contribute a unique focus to

perceived personal control. Perceived personal control, in turn, leads to activation and, thus, to actions and behaviors to effect change and attain goals.

Self-Efficacy

Self-efficacy is the belief that one can successfully perform a specific behavior required to produce a specific outcome (Bandura, 1977). According to social cognitive theory (Bandura, 1989), individuals are agents who intentionally produce their own action, and are actively engaged in their own development. Adults can readily differentiate between the confidence in their capability to perform a specific behavior and the belief that a specific behavior produces a desirable outcome (Hofstetter, Sallis, & Hovell, 1990).

Self-efficacy beliefs are affected by four sources of information: successful performance accomplishments, vicarious experiences, verbal persuasion, and physiological states, and may vary in magnitude, generality, and strength (Bandura, 1977; Bandura, 1982). Self-efficacy that is increased through vicarious experiences results from social comparison, the appraisal of one's capabilities in relation to the capabilities and attainments of others who are similar or slightly more capable than oneself in the attributes that are being compared (Bandura, 1977; Bandura, 1997). Self-efficacy beliefs affect daily life where continual choices and decisions have to be made regarding which action to take, how much effort to invest, and how long to persevere in the face of obstacles (Bandura, 1977; Bandura, 1982).

Self-efficacy beliefs produce their effects through cognitive, motivational, and affective processes (Bandura, 1994). Motivational processes attribute success to personal capability, create the expectation that particular actions will produce specific outcomes,

and develop personal standards that allow the creation of outcome expectations and specific goals. Setting proximal subgoals that are attainable increases the perception of personal causation, knowledge of one's capabilities, and motivation (Bandura, 1977; Bandura, 1994; Bandura, 1997). Persons with high self-efficacy set challenging goals, see obstacles as challenges to be mastered, and sustain involvement in and commitment to challenging activities (Bandura, 1994; Bandura & Schunk, 1981; Pajares, 2002). Persons who are high in self-efficacy visualize success scenarios (Bandura, 1989). In their self-appraisals, they slightly overestimate their capability; this self-enhancing, positive illusion fosters motivation and perseverance, and increases level of performance (Bandura, 1989; Bandura, 2001). Self-efficacy beliefs are not based on the cause of a behavior. However, causal attribution of a successful behavior to oneself as well as causal attribution of failure to insufficient effort or to deficient knowledge and skills rather than a lack of capability can increase one's perception of self-efficacy (Bandura, 1977; Bandura, 1989; Bandura, 1994).

Persons who are high in self-efficacy recover more quickly from setbacks and persist in the face of difficulties and day-to-day chronic stresses (Bandura, 1989). Self-efficacy for a specific behavior requires having the knowledge, skills, and confidence in one's ability to mobilize the required resources and to perform the specific skill in a specific context (Marks, Allegrante, & Lorig). Nursing students who were high in self-efficacy expected higher course grades, used self-regulated learning strategies, and had fewer academic worries (Andrew & Vialle, 1998; Ofori & Charlton, 2002). Nursing students who completed a nursing program scored higher in nursing academic self-

efficacy and on internal locus of control, and had higher grade point averages than students who withdrew from the nursing program (Harvey & McMurray, 1994).

One's beliefs about perceived personal control have been found to be an antecedent of perceived competence (C.A. Smith, Dobbins, & Wallston, 1991). Like self-efficacy, perceived competence is also a belief that one is capable of interacting effectively with the environment and producing a desired outcome (C.A. Smith, et al., 1991; M.S. Smith, Wallston, & Smith, 1995). While self-efficacy is situation-specific, perceived competence predicts both generalized and domain-specific outcomes (C.A. Smith et al., 1991).

In summary, central to the concept of self-efficacy is the belief in one's capability to successfully produce a specific outcome, thereby being in control of one's actions and behaviors. College students make choices and decisions on a daily, if not hourly or more frequent, basis regarding which actions to take and which behaviors to perform to achieve academic success. In a meta-analysis of 109 studies (Robbins et al., 2004) examining psychosocial and study skill factors of college students, academic self-efficacy, academic-related skills, and academic goals were the strongest predictors of student retention. Academic self-efficacy was also the best predictor of grade point average (Robbins et al.).

Optimism

Optimism is the belief that good things will happen, and this belief is stable across time and situations (Scheier & Carver, 1985). If the expectancy of an outcome is positive, a person believes that the outcome is attainable, and engages in making an effort to overcome obstacles and to reach the goal (Scheier & Carver, 1985; Scheier & Carver,

1987; Scheier et al., 1989). Generalized outcome expectancies focus on the probability of whether an outcome will or will not occur rather than on what causes the outcome to occur or whether one is capable of producing the outcome (Scheier & Carver, 1987).

Optimism is related to explanatory style. An explanatory style refers to the way a person interprets an event or outcome and the way one thinks about the causes of successes and failures (Seligman, 1998). How one thinks about the causes of an event or outcome affects beliefs about personal control and has behavioral consequences.

Optimists interpret good outcomes as being permanent, pervasive and personal and bad outcomes as temporary, specific, and external. Optimists also maintain some positive illusions: belief in more control than in actuality and distortion of reality to benefit them. In a study (Dzurec et al., 2006) of postbaccalaureate and baccalaureate nursing students, 94% and 97% respectively of the nursing students were classified as having positive explanatory styles.

Schneider (2001) also defines optimism as an explanatory style that focuses on the positive aspects of a past, present, or future situation. This optimism is not explicitly a positive illusion; however, it takes into account that knowledge is not precise, and that personal meaning gives a range of interpretations to the significance of situations as well as enhances its positive aspects. Realistic optimism also considers situational and social constraints, while focusing on opportunities and meaningful outcomes. In a study of college students, overly optimistic students had the lowest cumulative grade point averages and highest voluntary withdrawal rates (Ruthig, Perry, Hall & Hladkyj, 2004). However, with attributional retraining (maintaining optimism and altering causal attributions of success to controllable factors of effort and strategy), overly optimistic

students became more realistically optimistic and achieved the highest cumulative grade point averages and lowest voluntary withdrawal rates (Haynes, Ruthig, Perry, Stupnisky, & Hall, 2006; Ruthig et al.).

According to Schneider (2001), there are three types of realistic optimism. The first type is *leniency for the past*, which involves looking at past situations by reframing and finding the favorable aspects, and includes looking at future situations as having the best possible outcome with maximal personal effort and with minimal obstacles. The second type, *appreciation for the present*, involves looking at the positive aspects of, and making the best of, present situations. The third type, *opportunity seeking for the future*, promotes active engagement: seeing opportunities and challenges in the present that motivate one to move toward a goal with persistence, flexibility, and creativity (Schneider).

In summary, central to the construct of optimism is a positive focus: the belief that good things will happen, thereby influencing one's belief about personal control with consequences on one's actions, behaviors, and ability to be successful in achieving outcomes. Optimism influences the choices and decisions college students make on a daily basis regarding which actions to take and which behaviors to perform to achieve academic success.

Cognitive Adaptation

Taylor (1983) found that women with breast cancer who were successful in adjusting to their chronic illnesses made cognitive adaptations to maintain three positive illusions, which are perceptions that differ from reality but remain within realistic boundaries: greater control than can be supported; optimistic future orientation; and

unrealistic positive views of themselves (Taylor; Taylor & Brown, 1988). The cognitive efforts related to personal control, optimism for the future, and self-enhancement enabled the women with breast cancer to adapt psychologically to their chronic illness and return to normalcy (Taylor; Taylor & Armor, 1996; Taylor & Brown). The positive illusions of self-enhancement, control, and optimism have beneficial effects, not only after a threatening event such as chronic illness, but also in the everyday lives of normal, healthy individuals by being associated positively with self-determined motivation, which in turn was associated positively with mental health (Ratelle, Vallerand, Chantal, & Provencher, 2004).

Mindset, deliberative or implemental, also may have an effect on positive illusions (Taylor & Gollwitzer, 1995). In a deliberative mindset, positive illusions may be suspended to think realistically about goal setting, while in an implemental mindset, positive illusions may enhance cognitions and motivations to implement actions to achieve a determined goal (Armor & Taylor, 2003; Taylor & Gollwitzer). Positive illusions are also more evident in the abstract as inspiration and motivation, rather than in specific situations (Taylor, Lerner, Sherman, Sage, & McDowell, 2003). In a study of college students, optimism was found to have direct and indirect effects on students' cumulative grade point averages, while self-esteem and internal locus of control had indirect effects through the use of more active coping strategies, less avoidant coping strategies, and increased motivation to succeed (Aspinwall & Taylor, 1992).

In summary, central to the construct of cognitive adaptation are the positive illusory beliefs of personal control, optimism, and self-enhancement. These illusory beliefs are within realistic boundaries and work synergistically to influence one's actions

and behaviors to adjust to setbacks such as academic failure, that is, to regain mastery over one's course of studies (succeed), find meaning in the failure experience, and regain self-esteem.

Hardiness

Kobasa (1979) introduced the existential concept of psychological hardiness when study participants were found not only to survive enormous stresses but also to thrive. Highly stressed executives who remained healthy were found to differ from executives who became ill under high stress. To explain individual differences in the response to stress, Kobasa proposed that a personality structure, psychological hardiness, was a buffer of the stress and illness relationship. Hardy persons possessed the three general characteristics of control, the belief that one can influence events; commitment to the activities of life; and challenge, the perception of change as opportunity (Kobasa). Psychological hardiness has a cognitive appraisal aspect that is the basis for experiencing and finding meaning, and an action aspect that is the basis for using coping strategies that interact directly with the stressor (Kobasa, Maddi, & Kahn, 1982). Hardy persons use transformational coping, transforming events so that they were experienced as less stressful (Kobasa, Maddi, & Puccetti, 1982), and engage in positive health behaviors, possibly delaying or preventing the onset of illness symptoms (Kobasa, Maddi, Puccetti, & Zola, 1985).

According to Maddi (2004), hardiness is a set of beliefs about oneself, the world, and the interaction between oneself and the world that provides the courage and motivation to change stressful events into opportunities. Maddi (1994) developed a hardiness model based on the accumulated research on hardiness. According to Maddi's (1999) model, as

acute and chronic stress accumulate, strain reactions (physiological and psychological effects of stress) increase, and may lead to wellness breakdown. Resistance factors (hardy beliefs of commitment, control, and challenge; hardy coping, hardy social support, and hardy health practices) buffer the effects of stress and strain, and hardiness and social support have motivational effects on health practices and coping (Maddi, 1999).

RN nursing students in a baccalaureate completion program were found to have moderately high levels of hardiness, with scores on commitment and control being higher than scores on challenge (Patton & Goldenberg, 1999). However, hardiness was related to lower levels of anxiety but was not predictive of academic success. One possible explanation is that RN nursing students in a baccalaureate completion program have already passed the NCLEX-RN, and their moderately high levels of hardiness may be related to their commitment to obtain an advanced degree. Nursing administration students also were found to have moderately high levels of hardiness, with increasing levels of commitment and challenge throughout the program, while levels of control remained constant (Judkins, Arris, & Keener, 2005). In a third study (Hegge, Melcher, & Williams, 1999), generic and RN completion baccalaureate nursing students scored slightly higher than the national mean for hardiness. A highly significant relationship was found between hardiness and students' self-reported grade point averages. The increase in grade point average was slight, perhaps related to a selective admission process into the nursing program and a narrow range of high grades for nursing students (Hegge et al.).

In summary, central to the construct of psychological hardiness is the construct of control, and the use of transformational coping to decrease the stressfulness of life events. Although commitment and challenge are components of psychological hardiness, they do

not appear to be unique to psychological hardiness, and also are actions/behaviors that are a consequence of having control, self-efficacy, optimism, and cognitive adaptation.

Resilience

Resilience is typically discussed as a trait, describing protective factors that are internal and external qualities predisposing to resilience; as a process of rebounding after adversity that results in the attainment of internal and external qualities that are resilient; and as an innate capacity for transformation that is a motivational force within all persons (Bernard & Marshall, 2001; Hunter & Chandler, 1999; Jacelon, 1997; Richardson, 2002; Sinclair & Wallston, 2004).

In a concept synthesis of resilience, Polk (1997) describes four dimensions of resilience. Dispositional resilience includes physical and psychosocial characteristics of a person, such as personal competence and control over the environment. Relational resilience involves roles and relationships, while philosophical resilience covers personal beliefs, optimism, and positive meaning. Situational resilience refers to a person's skills at cognitive appraisal, problem solving, control, and action. These patterns of resilience are protective factors that individually and synergistically allow a person to successfully adapt after adversity (Polk).

Three critical protective factors for the development of resilience are 1) caring relationships that 2) convey high expectations and 3) invite the opportunity for participation and contribution with guidance and meaningful responsibilities. Nurturing of the three critical protective factors leads to the development of the resilient attributes of social competence, problem-solving skills, autonomy, and a sense of purpose and of a bright future (Bernard, 2004; Bernard & Marshall, 1997). High expectations convey the

message that one has the capability to make decisions and achieve a successful outcome within a specific context, leading to intrinsic motivation, active engagement, and the attribution of success to oneself (Bernard, 2004). Fostering resilience in nursing students is essential for the development of resilient nurses who can cope with the chaos of the practice environment and “transform a disastrous day into a growth experience” (Hodges, Keeley, & Grier, 2005, p. 550).

Resilience also focuses on the dynamic process of positive adaptation within the context of adversity (Luthar, Cicchetti, & Becker, 2000). The protective processes that contribute to resilience include the attributes of the individual, family, and social environment, and explain how the protective factors affect outcomes. The protective processes fall into categories that are protective-stabilizing when competencies are stable despite increasing adversity, protective-enhancing when competencies increase as risk increases, and protective-reactive when competencies are advantageous when risk is low (Luthar et al., 2000). The process of resilience also has been viewed as using positive emotions to bounce back from negative events, with optimism being the chronic expression of positive emotions (Tugade, Fredrickson, & Barrett, 2004).

Resilient coping, defined as “a tendency to effectively use cognitive appraisal skills in a flexible, committed approach to active problem solving despite stressful circumstances” (Sinclair & Wallston, 2004, p. 95), refers to the dynamic process of positive adaptation within the context of significant threat. Persons who are high in resilient coping are optimistic, committed, creative, and actively problem solve. They believe in their capability to reach a positive and successful outcome in the face of adversity (Sinclair & Wallston).

In summary, key to the construct of resilience is the ability to rebound after adversity. Persons who are resilient have effected change: they have made decisions, solved problems, and were involved and committed, and reframed obstacles as opportunities. Having a sense of control, self-efficacy, optimism, cognitive adaptation, and hardiness leads to actions and behaviors that, after an encounter with adversity resulting in positive outcomes, becomes manifest as resilience.

Summary of Theoretical Framework

Three factors (see Figure 1) appear to be essential to support the belief of perceived personal control and for the development of activation: (1) having the requisite knowledge, along with (2) the ability to perform the necessary skills, and (3) the confidence that one can successfully apply the knowledge and perform the skills. These three factors contribute to one's perceived personal control and subsequently to becoming activated.

Perceived personal control, including perceived personal control within the hardiness construct, implies an internal locus of control orientation indicating that outcomes are a direct consequence of one's own actions, while control within the self-efficacy construct implies that outcomes are a direct consequence of one's personal capability. Control within the optimism construct is not based on one's own actions or capability, but rather on probability. However, the attribution of a successful outcome (e.g., goal attainment) to personal capability increases self-efficacy, optimism, and resilience. A control-enhancing intervention, such as attributional retraining, which restructures causal attributions of failure as controllable and modifiable, increases the belief that goals are attainable (Perry, 2001).

Perceived personal control, the belief that one's own behavior produces a desired outcome (Wallston et al., 1987), is a common and core component of optimism, cognitive adaptation, self-efficacy, hardiness, and resilience (see Table 1). It is important to note that each of these constructs is a belief about oneself, and each of these beliefs contributes an additional belief or perspective to perceived personal control. With a positive focus, a person believes that a desired outcome will occur (optimism). With the requisite knowledge and skills, a person believes that one has the capability to successfully perform the required behavior to produce a specific outcome in a specific situation (self-efficacy).

A person may believe that one's own behavior will produce a desired outcome (perceived personal control), and the desired outcome will occur (optimism), along with having a positive view of oneself (self-enhancement). If these beliefs are three positive illusions within realistic boundaries, the person is cognitively adapting. Or a person may believe that one's own behavior will produce a desired outcome (perceived personal control) while being committed to the activities of daily life (commitment) and perceiving change as an opportunity (challenge). Such a person is hardy. After encountering and overcoming adversity, a person who believes that he or she can produce a desired outcome and that the desired outcome will be a successful one is resilient.

In reviewing the construct of perceived personal control, and the control-related constructs of optimism, cognitive adaptation, self-efficacy, hardiness, and resilience, it was noted that these control-related constructs contribute to perceived personal control and activate a person to perform similar actions and behaviors. A person who takes action to influence the environment and change the situation demonstrates commitment: being

motivated, making decisions, problem solving, and being involved. A person who takes action to influence his or her emotions and change the self demonstrates challenge: reframing the situation and seeing barriers as opportunities. Once the activated student engages in these positive actions and behaviors, the outcome or effected change is goal attainment, successful completion of a nursing program, and passing the NCLEX-RN examination on the first attempt.

Literature Review

Although studies have reported that perceived control (Ofori & Charlton, 2002; Perry, 2001; Perry et al., 2001; Perry et al., 2005), self-efficacy (Andrew & Vialle, 1998; Harvey & McMurray, 1994; Ofori & Charlton, 2002), optimism (Dzurec et al., 2006; Haynes et al., 2006; Ruthig et al., 2004), cognitive adaptation (Aspinwall & Taylor, 1992, hardiness (Judkins et al., 2005; Hegge et al., 1999; Patton & Goldenberg, 1999), and resilience (Hodges et al., 2005) in college students have positive effects on college performance, student retention, and persistence to graduation, there are no studies that report the effect of these variables on successful first-time completion of the NCLEX-RN. A review of the literature (see Table 1) of academic and nonacademic variables that have an effect on NCLEX-RN success is needed to identify the variance that is explained by these variables, the variance that remains to be explained, the difficulty of predicting which students will fail, and the gaps in the literature that support the inclusion of a construct, student activation, based on perceived control and control-related constructs as a possible antecedent to NCLEX-RN success.

A review of the literature in the databases of CINAHL, PubMed, PsychInfo, and Google Scholar was performed using the search words of *baccalaureate nursing students*,

associate degree nursing students, nursing program success, NCLEX-RN success, and academic success yielded 60 articles. Seventeen of the articles were studies addressing the effects of academic and nonacademic variables on the outcome of NCLEX-RN success. In 1988, the NCLEX-RN was modified to a pass/fail format, and, in 1994, the paper and pencil format changed to computer adaptive testing (CAT). To minimize the potential effects of the change in format of the NCLEX-RN, studies prior to 1994 were not included in this review. In addition to these changes, it is important to consider that the passing standard of the NCLEX-RN was increased on the NCLEX-RN logistic scale by .06 log odds units in 1995, .07 log odds units in 1998 (Wendt, 1998), .07 log odds units in 2004 (NCSBN, 2005), .07 log odds units in 2007 (Wendt & Kenny, 2007), and with the addition of alternative format questions in 2005 (NCSBN, 2006).

Academic Variables and NCLEX-RN Success

Since the adoption of the CAT format for the NCLEX-RN in 1994, the majority of the studies in the literature on predictors of successful first-time completion of the licensure examination focused on academic variables. The major academic variables studied included grades in specific nursing courses (Barkley et al., 1998; Beeman & Waterhouse, 2001; Beeson & Kissling, 2001; Bentley, 2006; Crow, Handley, Morrison, & Shelton, 2004; Daley et al., 2003; Haas et al., 2004; Roncoli, Lisanti, & Falcone, 2000; Sayles, Shelton, & Powell, 2003; Seldomridge & DiBartolo, 2004), cumulative grade point average (Arathusik & Aber, 1998; Beeson & Kissling; Bentley; Crow et al.; Daley et al.; Haas et al.; Seldomridge & DiBartolo; Sayles et al.; Yin & Burger, 2003), and scores on standardized examinations (Barkley et al.; Beeson & Kissling; Daley et al.; Higgins; Seldomridge & DiBartolo; Stuenkel).

Grades in Nursing Courses

In a study of 81 students in a bachelor of science in nursing program, Barkley et al. (1998) investigated the relationship between grades in six nursing courses (adult health I and II, psychiatric mental health, pediatric, obstetric, and critical care nursing) and performance on the NCLEX-RN. Strong correlations were found between grades in the pediatric and psychiatric mental health nursing courses with performance on the NCLEX-RN, and moderate correlations between grades in the remaining courses and performance on the NCLEX-RN. The probability of failure for the NCLEX-RN increased with the number of Cs that a student earned in clinical or nursing theory courses (Barkley et al). Bentley (2006) also reported that for nursing students in both accelerated and traditional nursing programs the number of Cs in clinical nursing courses was significantly negatively correlated with NCLEX-RN success.

Beeman and Waterhouse (2001) also found a significant correlation between the number of Cs that a student earned in nursing courses and performance on the NCLEX-RN. Their study of 289 graduates from traditional and accelerated baccalaureate nursing programs found that the number of C+ grades or lower in nursing theory courses had the highest negative correlation with NCLEX-RN success, followed by grades in specific nursing courses. Graduates who passed the examination had significantly higher grades in all didactic nursing courses. More than 94% of the students who passed and more than 92% of the students who failed were correctly classified by discriminant analysis. Approximately 31% of the variance in passing and failing was accounted for by the discriminant analysis (Beeman & Waterhouse). In a study of 351 baccalaureate nursing students, Haas et al. (2004) used nursing cumulative grade point average as a predictor

variable in discriminant analysis. The discriminant analysis function correctly classified 61.2% of the students who failed and 71% of the students who passed the NCLEX-RN.

In a sample of 505 generic, transfer, and second-degree graduates of a baccalaureate nursing program, Beeson and Kissling (2001) identified that students who passed the NCLEX-RN examination made fewer grades of C or below in nursing courses than students who failed. From logistic regression, the investigators developed a simple formula to predict NCLEX-RN performance based on the number of Cs or lower grades in nursing courses through the junior year and the percent correct on the Mosby Assessment Test. In the validation sample, the formula predicted 85.7% of the students who passed and 66.7% of the students who failed. Once again, the number of Cs or lower in nursing courses was found to be the most significant predictor of NCLEX-RN failure (Beeson & Kissling).

Seldomridge and DiBartolo (2004) also used logistic regression analyses to determine the predictors of NCLEX-RN success. In a sample of 186 graduates of a traditional baccalaureate program, models were developed that included predictors of medical-surgical course test averages, the number of Cs in nursing courses, and overall grade point average at the end of junior-year and senior-year nursing courses. At the end of the junior-year nursing courses, medical-surgical test averages accurately predicted 98.7% of the students who passed, but only 5.6% of the students who failed. At the end of senior-year nursing courses, a combination of National League for Nursing Comprehensive Achievement Test for baccalaureate students, and the medical-surgical test averages predicted 94% of passes and 33.3% of failures. The authors concluded that

although a variable may have been accurate in predicting success, the variable was less accurate at predicting failure (Seldomridge & DiBartolo, 2004).

In a national survey of 160 baccalaureate generic nursing programs, 36.3% of the programs reported using specific course grades as a predictor of NCLEX-RN success (Crow et al., 2004). In two cohorts (total $N = 224$) of graduating senior baccalaureate nursing students, Daley et al. (2003) reported that the student's grade in a senior-level didactic medical-surgical nursing course was one of two variables consistently associated with success on the NCLEX-RN. Sayles et al. (2003) also found that the last course in the nursing curriculum (circulation and oxygenation) predicted success on the NCLEX-RN in a sample of 68 graduates of an associate nursing degree program. In a comparison of a random sample of 19 baccalaureate students from four graduating classes who passed the NCLEX-RN with 19 students who had no record of passing the licensure examination, Roncoli et al. (2000) also reported that nursing students with As and Bs in nursing courses were significantly more likely to pass than students with Cs in nursing courses or who repeated nursing courses.

Cumulative Grade Point Average

In addition to grades in specific nursing courses, cumulative grade point average is another variable that has frequently been found to correlate with NCLEX-RN success. In a national survey of 160 baccalaureate generic nursing programs (Crow et al., 2004), 29.4% of the programs reported using cumulative grade point average as a predictor of success on the NCLEX-RN. In a study of 79 generic and transfer baccalaureate nursing students, Arathusik and Aber (1998) found significant but low correlations of cumulative undergraduate nursing program grade point average and success on the NCLEX-RN.

Students with higher cumulative grade point averages were more successful on the NCLEX-RN. Beeson and Kissling (2001) in a study of 505 generic, transfer, and second-degree baccalaureate nursing students found that higher grade point average at graduation, as well as higher nursing grade point average at the end of sophomore and junior years, was significantly correlated with NCLEX-RN success.

Daley et al. (2003) reported that, in their study of 224 of graduating senior baccalaureate nursing students, students who were successful on the NCLEX-RN had higher final cumulative grade point averages. In a study of 351 baccalaureate nursing students, Haas et al. (2004) also found that there was a significant statistical difference in cumulative nursing grade point average between students who were successful on the NCLEX-RN and students who failed. Students who passed had a grade point average that was approximately 0.3 point higher than students who failed. Nursing cumulative grade point average also was used in as a predictor variable for NCLEX-RN success in a discriminant function analysis. In this study, 38.7% of the students who were predicted to pass the NCLEX-RN by the function actually failed the licensure examination (Haas et al.).

In their sample of 68 graduates of an associate nursing degree program, Sayles et al. (2003) reported that cumulative grade point average in courses that counted toward the associate of nursing degree was significantly correlated with success on the NCLEX-RN. Yin and Burger (2003) also studied predictors of NCLEX-RN success in 325 associate degree nursing graduates. The authors found that the college cumulative grade point average prior to admission to the nursing program was the strongest predictor of NCLEX-RN success; cumulative science grade point average also correlated positively

with success. For every 0.1 increase in grade point average, the odds of passing the NCLEX-RN increased three times (Yin & Burger).

In their sample of 186 graduates of a traditional baccalaureate program, Seldomridge and DiBartolo (2004) also found that students who were successful on the NCLEX-RN had a higher grade point average at the end of the first semester of nursing courses and at the completion of the nursing program. However, Bentley (2006) found that cumulative science grade point average was predictive of NCLEX-RN success for traditional baccalaureate nursing students, but was not predictive of success for accelerated baccalaureate nursing students. Using linear regression, Bentley developed a model of predictors of success on the NCLEX-RN: science cumulative grade point average, exit HESI examination, and the number of Cs in clinical courses. The model correctly predicted 99.5% of the students who passed the NCLEX-RN. However, it predicted only 9% of the students who failed (Bentley).

Scores on Standardized Examinations

In addition to grades in specific nursing courses and cumulative grade point averages, scores on standardized examinations is a third variable that has frequently been found to correlate with NCLEX-RN success. In a study of 81 students in a baccalaureate nursing program, Barkley et al. (1998) found a significant correlation between NCLEX-RN success and students' scores on the psychiatric, pediatric, obstetric, and adult National League for Nursing (NLN) Achievement Tests, with the strongest correlation being with the adult NLN Achievement Test. The authors developed a Risk Appraisal Instrument that included nine variables (scores on four NLN achievement tests and grades in five nursing courses) and that was used to develop a profile of a student's risk

for failure or success on the NCLEX-RN. The Risk Appraisal Instrument correctly classified 95% of the students who passed the NCLEX-RN and 77% of the students who failed, accounting for 61% of the variance in NCLEX-RN performance (Barkley et al.). In a study of 538 baccalaureate nursing students in a traditional or accelerated nursing program, Waterhouse and Beeman (2003) used an adaptation of the Risk Appraisal Instrument to rate students as high or low risk for NCLEX-RN failure with correct classification of 71.7% of the students: 60.8% of the students who failed were classified as high risk and 74.1% of the students who passed were classified as low risk (Waterhouse & Beeman).

In their study of 505 generic, transfer, and second-degree baccalaureate nursing students, Beeson and Kissling (2001) reported that students who passed the NCLEX-RN scored higher on the Mosby Assessment Test (MAT) than students who failed. Score on the MAT was used, along with the number of Cs or lower in nursing courses through the junior year, to develop a logistic regression equation predictive of student performance on the NCLEX-RN (Beeson & Kissling).

Daley et al. (2003) compared a cohort of 121 baccalaureate nursing students who took the MAT with a cohort of 103 baccalaureate nursing students who took the Health Education Systems Incorporated (HESI) exit examination. In the MAT cohort, 10.7% of the students failed the NCLEX-RN, while 6.8% of the HESI cohort failed. However, the HESI exit examination for this cohort was optional and only two of the seven students who failed actually took the examination. Students in both cohorts who were successful on the NCLEX-RN scored significantly higher on the respective examinations. The HESI exit examination demonstrated greater sensitivity (100%), specificity (91%), positive

(22%) and negative (100%) predictive value than the MAT (Daley et al.). In a study of 213 students enrolled in associate degree nursing programs, Higgins (2005) found a significant correlation between scores on the HESI exit examination and NCLEX-RN success. Bentley (2006) also reported a significant correlation between scores on the HESI exit examination and success of the NCLEX-RN for both accelerated and traditional baccalaureate nursing students.

In a study of 312 baccalaureate nursing students, Steunkel (2006) looked at the predictive ability of NLN Achievement Tests and the NLN Diagnostic Readiness Test (DRT). Discriminant function analysis identified the NLN community health examination as the best predictor of NCLEX-RN success, accounting for 15% of the variance in NCLEX-RN performance and correct identification of 24% of the students who failed the licensure examination. Addition of the NLN adult care examination accounted for 24% of the variance and increased the identification of students who failed to 29% (Steunkel). In a study of 186 graduates from a traditional baccalaureate nursing program, Seldomridge and DiBartolo (2004) used variables from three time periods (pre-admission, end of junior year, and end of senior year) to develop a model using logistic regression analysis. In this model, the score on the NLN Comprehensive Achievement Test for Baccalaureate Students correctly predicted 94.7% of students who were successful on the NCLEX-RN and 25% of the students who failed. Addition of the pathophysiology grade to the model increased the correct prediction of students who failed to 50% and dropped prediction of students who were successful to 93.3% (Seldomridge & DiBartolo).

Summary of Literature Review on Academic Variables

In a review of literature on academic variables and NCLEX-RN success, few variables are consistently associated with success on the NCLEX-RN. Findings support a positive relationship between three major cognitive/academic variables (nursing course grades, cumulative grade point average, and scores on standardized tests) and NCLEX-RN success.

There are many threats to the external and internal validity of these studies, and generalization of the study findings to the population of nursing students beyond the study sample may be affected by major differences between the nursing programs studied. Among these differences are type of nursing program (generic, accelerated, baccalaureate, associate), length of the nursing program (number of years), variation in nursing program curriculum, sequencing of the nursing courses within the curriculum, course content, variations in grading scales, timing of the study within the program (freshman, sophomore, junior, or senior year), timing of the study relative to NCLEX-RN passing standards, and diversity of students within the program (demographics, traditional or non-traditional, second-degree or transfer student). The studies also lack a conceptual framework.

However, the predictive ability of nursing course grades, cumulative grade point average, and standardized tests was found to be higher for students who passed the NCLEX-RN than for students who failed (Barkley et al., 1998; Beeson & Kissling, 2001; Beeman & Waterhouse, 2001; Bentley, 2006; Haas et al., 2004; Seldomridge & DiBartolo, 2004; Stuenkel, 2006). It would be expected that these three cognitive/academic variables would correlate, because they are all measures of the same

outcome, student success, with each variable being measured at a different level of generality. Individual course grades measure student success at the most specific level: one nursing course. Cumulative grade point averages and standardized test scores measure a more general level of success: an average of all nursing courses within a nursing program over the semesters of study or an estimate of success at varying semesters within a nursing program. The NCLEX-RN measures success at the most general level: after completion of a nursing program and prior to entry into nursing practice.

Nonacademic Variables and NCLEX-RN Success

Since the adoption of the CAT format for the NCLEX-RN in 1994, few researchers have looked at nonacademic variables in relation to NCLEX-RN success. In a study of 79 generic and transfer baccalaureate nursing students, Arathuzik and Aber (1998) identified a sense of competency in taking tests that require critical evaluation and thinking to be correlated with NCLEX-RN success. Giddens and Gloeckner (2005) also investigated the relationship of critical thinking to performance on the NCLEX-RN. In a study of 218 baccalaureate nursing students, the group of students who passed the NCLEX-RN had statistically higher mean scores on the California Critical Thinking Skills Test (analysis, evaluation, inference, deductive reasoning, inductive reasoning, and total scores) than the group of students who failed. Discriminant function analysis correctly classified 98% of the students who passed the NCLEX-RN and incorrectly classified 79% of the students who failed (Giddens & Gloeckner).

In qualitative interviews with 19 graduates of a baccalaureate nursing program (10 who passed and 9 who failed the NCLEX-RN), Eddy and Epeneter (2002) identified

a theme of *internal learner-specific issues*, and this theme included a student's perception of responsibility for learning. Students who passed the NCLEX-RN were more proactive in test preparation and took responsibility for their own learning, while students who failed the NCLEX-RN attributed their failure to others (Eddy & Epeneter).

This literature review leads to the question: Why do some students who are predicted to fail the NCLEX-RN pass, and why do even more students who are predicted to pass the NCLEX-RN fail? Is it possible that some students who were predicted to fail and made aware of their risk for failure became activated and engaged in their own learning? Is it possible that some students who were predicted to pass were never really activated, thus they failed to engage in their own learning, or simply put forth the minimal effort to get by on a test by test, course by course, basis?

Based on the conceptual framework model of activation and a literature review of academic and nonacademic variables that have an effect on NCLEX-RN success, a student activation measure was developed to identify what may be a gap in identifying which students will pass and which students will fail the licensure examination. This gap may be an activated student who has the knowledge, skills, and confidence to be successful and who takes an active role in his/her own learning.

Assumptions

1. Students want to be successful on the NCLEX-RN.
2. Critical thinking skills, responsibility for one's own learning, and knowledge of the NCLEX-RN study plan contribute to activation of associate and baccalaureate nursing students.

3. Student activation can be measured.
4. Activation of associate and baccalaureate nursing students will have an effect on NCLEX-RN performance.

Hypotheses

1. The Student Activation Measure (SAM) measures a unidimensional construct of activation.
2. There is a positive relationship between the construct of student activation and the constructs of personal mastery, cognitive adaptation, resilience, hardiness, self-esteem, and psychological vulnerability.
3. There is no relationship between the construct of student activation and the constructs of strength of religious faith, political stance, and social desirability.
4. Student activation is a developmental process in associate and baccalaureate nursing students.
5. Students in a baccalaureate of science in nursing program will score higher on the SAM than students in an associate of science in nursing program.

CHAPTER III

DEVELOPMENT OF THE STUDENT ACTIVATION MEASURE

The belief that nursing students must have the knowledge, skills, and confidence, as well as the critical thinking skills to apply that knowledge and make clinical judgments, and take an active role in their own learning to be successful in a nursing program and on the NCLEX-RN prompted the development of the Student Activation Measure (SAM). This belief was strengthened during a literature review on the Patient Activation Measure (Hibbard, Stockard, Mahoney, & Tusler, 2004), which is a unidimensional scale that has been used to identify developmental stages of patient activation. The activation concept seemed applicable to students in programs of nursing.

Patient Activation

A review of the construct of patient activation is necessary to understand the origins of the activation concept. The Patient Activation Measure (Hibbard et al., 2004; Hibbard, Mahoney, Stockard, & Tusler, 2005) assesses a patient's knowledge, skills, and confidence necessary for chronic illness self-management. Persons with chronic illnesses are faced with making day-to-day choices to self-manage their care: whether and how to follow medical recommendations, make lifestyle changes, deal with the psychosocial and physiological impact of chronic illness, and monitor symptoms and prevent complications (Hibbard, 2004; Wagner et al., 2001). Therefore, persons with chronic illnesses are in control of their actions and behaviors, and they may choose or not choose

to perform chronic illness-related tasks (Bodenheimer, Wagner, & Grumbach, 2002), that is, to be activated, and informed, engaged partners with a proactive healthcare team to successfully self-manage their chronic illness (Hibbard, et al., 2004).

The concept of patient activation describes patients who move sequentially through four developmental stages: (1) believing that taking an active role in self-care is important, and seeking information regarding their chronic illness and options for care; (2) having the knowledge, skills, and confidence to perform self-care according to their capability, interacting with the healthcare provider and following recommendations; (3) being an active participant in self-care, maintaining lifestyle changes and preventing complications; and (4) continuing to perform self-care on a day-to-day basis, having the confidence to handle new situations, and not allowing their chronic illness to interfere with daily life (Hibbard, 2004; Hibbard et al., 2004; Hibbard & Peters, 2003).

Interventions for patients with chronic illness in Stage I of activation increase the patient's belief that he or she has an active role in controlling his or her actions and behaviors. Interventions in Stage II increase a patient's knowledge and confidence to perform self-care: if a patient sets and meets proximal subgoals, and if a patient is taught that the causes of success in reaching these subgoals come from within the self, a patient's perceived personal control and self-efficacy may be increased, as well as optimism that goals are attainable. Attributional retraining (Forsterling, 1985) restructures a patient's understanding about chronic illness self-care, changing the way one thinks about successes and failures. With time and effort, one can be successful in taking small steps toward a larger goal. Interventions in Stage III and Stage IV would support a patient in taking action: preparation to collaborate with healthcare providers,

and living with the day-to-day challenges of chronic illness (Hibbard et al., 2004; Hibbard et al., 2005).

Although activation has been studied in a patient population with chronic illness, activation goes beyond the patient population, for example to activation of nursing students who are completing a nursing program or preparing to pass the NCLEX-RN. Do nursing students have the knowledge, skills, and confidence necessary to be successful in passing the NCLEX-RN on their first attempt? Do nursing students believe that taking an active role in their education is important? Do nursing students have the knowledge, skills, and confidence to successfully complete their nursing program, interacting with the faculty and following recommendations for success? Are nursing students active participants in their own learning, maintaining lifestyle changes and implementing strategies that support student success? Do nursing students continue to maintain lifestyle changes and implement strategies that support student success on a day-to-day basis, having the confidence to handle new situations, and not allowing distractions to interfere with their daily student activities? If a nursing student's stage of activation can be identified, educators can implement interventions accordingly to increase or support student activation.

Critical Thinking and Nursing

Critical thinking indicators also were included in the student activation measure. In a review of the literature on critical thinking in nursing education, Simpson and Courtney (2002) concluded that critical thinking experiences were necessary in nursing education to develop critical thinking abilities necessary in clinical practice. A panel of

86 nurse experts developed the following consensus statement on critical thinking in nursing, identifying the related habits of the mind and cognitive skills involved in the process:

Critical thinkers in nursing exhibit these habits of the mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information-seeking, logical reasoning, predicting, and transforming knowledge. (Scheffer & Rubenfeld, 2000, p.357)

Alfaro-LeFevre (2004) also identified 22 behaviors that demonstrate the characteristics and attitudes of a critically thinking nurse that include behaviors, such as being self disciplined and being alert to context, identified by key authors and noted in key nursing documents.

Student Activation Measure

The guidelines for scale development (DeVellis, 2007) were followed in the development of the SAM. First, the development of the SAM began with identification of the content domain of activation: the knowledge, skills, confidence, and motivation to be successful as itemized in the Patient Activation Measure (Hibbard et al., 2004) and adapted to nursing students; the knowledge and skills necessary for success on the NCLEX-RN as outlined by the NCLEX-RN study plan (National Council of State Boards of Nursing, 2006a); and the critical thinking skills essential for the development of clinical judgment as reflected by critical thinking indicators (Alfaro-LeFevre, 2006).

Second, an item pool was generated. The initial version of the SAM consisted of 33 items (see Appendix A). Twenty-six items were written to reflect having the knowledge, skills, confidence, and self-regulation necessary to be successful in nursing courses and the nursing program. Four of the 26 items were modified to reflect having the knowledge, skills, and confidence to be successful in passing the NCLEX-RN. Seven additional items were written to reflect critical thinking indicators.

Third, the format for measurement was determined. A Likert scale format was selected. Nine possible response options were selected ranging from strongly disagree (1) to strongly agree (9). This range of responses was selected because nursing students have been through a selective admission process, and the differences in the levels of activation may be better detected with a scale that has a larger range of responses.

Before review of the items by experts, these 33 items were administered on the last day of class to one cohort (n=58) final semester senior nursing students from the Bachelor of Science in Nursing program at Western Kentucky University to determine the clarity of the items. The students anonymously took the initial version of the SAM. Following completion of the questionnaire, the students were informed of the purpose of the questionnaire and asked to complete three tasks: (1) list any items that are not clear and how the item could be revised, (2) list any items that do not apply and that should be deleted, and (3) list any additional items that you recommend. Revisions were made based on student recommendations to increase item clarity. The revised version of the SAM also consisted of 33 items (see Appendix B).

Fourth, the item pool was reviewed by experts. Expert opinion on the items in the measure for content validity was requested from the members of my dissertation

committee; Linda Norman, the senior associate dean for academic affairs at Vanderbilt University School of Nursing; and the faculty of the BSN and ADN programs at WKU. My dissertation committee has extensive experience in scale development and the proposed correlated constructs. The revised version of the SAM used in this dissertation study consisted of 35 items based on expert recommendations.

CHAPTER IV

METHODOLOGY

Research Design

The research design for this scale development and validation study consisted of a multi-group, two-phase data collection procedure (see Appendix C). Phase one consisted of a cross-sectional correlation design to establish the psychometric properties of the current revised version of the SAM, and to refine the SAM based on further testing in the classroom setting. A measure of social desirability was administered to establish discriminant validity. Approximately two weeks after administration of the questionnaires in phase one, the SAM was administered to determine test-retest reliability. Phase two consisted of administration of the SAM to establish the psychometric properties of the SAM. Measures of control-related and activation-related constructs were also administered to establish concurrent and construct validity. A measure of religiosity and a measure of political stance were administered to establish discriminant validity. Approximately two to four weeks after administration of the questionnaires in phase two, the SAM was administered to a subsample to determine test-retest reliability.

Description of the Research Setting

This study was conducted at Western Kentucky University. Western Kentucky University is located in Bowling Green, Kentucky. The College of Health and Human

Services main campus houses the four-year program leading to a bachelor of science in nursing degree. The Bowling Green Community College of Western Kentucky University South and extended Glasgow campuses house the two-year program leading to an associate of science in nursing degree. Currently, the bachelor of science in nursing program admits 40 students per semester, and the associate of science in nursing program admits 70 students per semester (40 on the South campus, and 30 on the extended Glasgow campus).

Sampling and Study Plan

Nature and Size of the Sample

The convenience sample (N=442) selected for this scale development and validation study consisted of bachelor of science in nursing and associate of science in nursing students currently enrolled in nursing programs at Western Kentucky University. Each nursing program has a four-semester sequence of medical-surgical nursing courses. The medical-surgical course in which a subject was enrolled identified the semester in the program of study. Each participant completed a demographic and background information questionnaire. Data collected for the subjects included age, race, sex, marital status, number of children, campus, type of nursing program, semester in nursing program, cumulative grade point average, previous degree, plan to pursue a future degree, person responsible for educational expenses, required grade point average to maintain a scholarship, and number of hours worked per week. Demographic data and background information are summarized in Table 3. In summary, the sample in this study was primarily female, Caucasian, and single, with a moderately high cumulative grade point

average and a plan to pursue a higher degree, as well as with primary responsibility for their own educational expenses.

To determine if associate degree and baccalaureate degree students differed on demographic variables or background characteristics that might influence activation, chi-square tests of independence, with alpha of $<.05$, were run on the categorical variables and Student's independent samples t-tests on the continuous variables. No significant differences were found between associate and baccalaureate degree students for sex, race, plan to pursue a higher degree, or having a previous degree. For comparisons (see Table 2), the following codes were used; male and female, $X^2(1, N=442) = .003, p=.957$; Caucasian and non-Caucasian, $X^2(1, N=442) = 2.89, p=.089$; plan to pursue a higher degree (yes or no), $X^2(1, N=431) = .488, p=.485$; and having a previous degree (yes or no), $X^2(1, N=431) = 1.13, p=.288$.

Significant statistical differences were found between associate degree and baccalaureate degree students on age, marital status, number of hours worked, and cumulative grade point average. For comparison, the following code was used: single and married, $X^2(1, N=442) = 54.49, p<.001$. In addition, significant statistical differences were found for age ($t = 7.824, df = 400.745, p<.001$), number of hours worked ($t = 5.306, df = 398.846, p<.001$), and cumulative grade point average ($t = -9.515, df = 401.997, p<.001$). Examination of demographic variables and background characteristics showed that baccalaureate degree students were younger, more likely to be single, worked fewer hours, and had higher cumulative grade point averages than associate degree students.

A sample size of 442 would be appropriate for determining the psychometric properties of the SAM. DeVellis (2003) suggests that 300 subjects is an adequate

number. In an analysis of nursing studies, Polit and Sherman (1990) found the average effect size for t-tests analyses in nursing studies was 0.35. Effect sizes in the range of

Table 3. Demographic and Background Characteristics of Associate Degree and Baccalaureate Degree Students

Characteristic	Associate Degree (n=257) Frequency (%)	Baccalaureate Degree (n=185) Frequency (%)	Combined Sample (n=442) Frequency (%)
Semester			
Fundamentals	53(21)	39(21)	92(21)
Medical-Surgical I	47(18)	39(21)	86(19)
Medical-Surgical II	60(23)	41(22)	101(23)
High Acuity	97(38)	66(36)	163(37)
Sex			
Female	233(91)	168(91)	401(91)
Male	24(9)	17(9)	41(9)
Race			
Caucasian	240(93)	165(89)	405(92)
African American	6(2)	8(4)	14(3)
Other	6(2)	10(5)	16(4)
Missing	5(2)	4(2)	9(2)
Marital Status			
Single	85(33)	135(73)	220(50)
Married/Partnered	151(59)	44(23)	195(44)
Other	21(8)	6(6)	27(6)
Previous Degree			
Previous Degree	58(23)	34(18)	92(21)
No Previous Degree	198(77)	150(81)	348(79)
Missing	1(1)	1(1)	2(0)
Plan Higher Degree			
Plan	200(78)	138(75)	338(76)
No Plan	50(19)	43(23)	93(21)
Undecided	5(2)	1(1)	6(1)
Missing	2(1)	3(1)	5(1)
Work Status			
Employed	174(68)	111(60)	285(64)
Unemployed	78(30)	72(39)	150(34)
Missing	5(2)	2(1)	7(2)
	M (SD)	M (SD)	M (SD)
Age	30(8.7)	24(6.4)	28(8.4)
Cumulative GPA	3.29(0.35)	3.60(0.28)	3.40(0.43)

0.20 to 0.40 are common for nursing studies (Polit & Beck, 2004). For a sample size of approximately 300-400 and alpha set at .05, an effect size of 0.15 can be detected with a power of .80 (Polit & Beck). Desired power was set at .80 with an alpha at .05.

Criteria for Sample Selection

A subject in the study must be a current student who is admitted to either the bachelor of science in nursing or associate of science in nursing program at Western Kentucky University and who is in the first to fourth semester of the program of study. Students admitted to the program have already been through a selective admission process.

Methods for Subject Recruitment

I spoke with the department head of the bachelor of science in nursing program, and the program director of the associate of science in nursing program regarding a general overview of my proposal. The department head and program director stated that they would assist me with the implementation of my dissertation research.

The department head and the program director granted me permission to email their respective faculty members to determine which faculty members would be willing to allow administration of questionnaires in their classrooms. If a faculty member from each level did not allow administration of questionnaires during class times, the department head and program director assisted in scheduling a time outside of class time to administer the questionnaires. The faculty members who were willing to allow administration of questionnaires in their classrooms were contacted via email to schedule a time for administration of the questionnaires within the timeline of the study.

An overview of the study was provided to a faculty member in the bachelor of science in nursing program who agreed to administer the questionnaires at all study sites. This faculty member is an assistant professor who teaches medical-surgical nursing and a doctoral student completing her research course sequence. She had no existing relationship with the students of the associate degree program. She had an existing relationship as course and clinical nursing instructor of the first-semester senior class of the baccalaureate program, and with the nursing students at all levels who are members of the Kentucky Association of Nursing Students as faculty representative. To protect against undue influence or coercion, the questionnaires were administered in the classroom setting. Questionnaires were distributed to all students and the students had the opportunity to return the questionnaires without completing them. The person obtaining informed consent read a scripted presentation.

The following protocol was followed for phases one and two. After a scripted presentation and allowance of time for questions, the students were asked to read an informed consent form and to complete the questionnaires if they agreed to participate in the study. Participation was voluntary. Students who participated were eligible for a drawing of nursing books, such as an NCLEX-RN review book and medical-surgical nursing study guides. The office associate of the nursing department asked representatives of the book companies who supply the nursing departments' textbooks to donate nursing books. The number of books donated allowed for drawing of one book per class of students who completed the questionnaires.

Strategies to Ensure Human Subjects Protection

Human subjects' rights were protected through informed consent (see Appendix D). The Institutional Review Board (IRB) policies and procedures of Vanderbilt University and Western Kentucky University were followed. An IRB application was submitted first to Vanderbilt University and subsequently to Western Kentucky University for approval of this dissertation research. A waiver for documentation of informed consent was approved by the IRBs. I completed the seminar, Research Involving Human Subjects, presented by the Office of Sponsored Programs at Western Kentucky University, and the web-based Collaborative IRB Training Initiative (CITI) course required by Vanderbilt University for all students conducting human subjects' research. I was accountable to both IRBs for this study.

Anonymity of the subjects was maintained. The questionnaires were administered to participants one time and no identifying information was collected. The completed questionnaires were kept in a locked file cabinet in the researcher's office at Western Kentucky University.

Data Collection Methods

Procedures

At the beginning of the scheduled time in the classroom setting, the faculty member who was assisting me handed out informed consent forms to the nursing students. A scripted presentation was read, allowing ample time to answer subjects' questions. After reviewing the informed consent forms, the subjects were given a packet

of questionnaires. In phase one of the study, the subjects completed the SAM along with measures of social desirability, religiosity and political stance (to be described below) to establish the discriminant validity of the current revised version of the SAM. The subjects also completed a demographic form and background information form. The total number of items in the questionnaires was approximately 45. Therefore, it was estimated that it would take approximately 10 minutes to complete the questionnaires. To assess test-retest reliability, the subjects completed the SAM a second time approximately two weeks later.

Phase two followed the same protocol as phase one and consisted of the administration of the SAM to establish its psychometric properties. Measures of control-related and activation-related constructs (described below) were administered to establish concurrent and construct validity. A measure of social desirability and of political stance was administered to a subsample to establish discriminant validity. The subjects also completed a demographic form and a background information form. The total number of items from the questionnaires was approximately 110 items. Therefore, it was estimated that it would take approximately 45 minutes to complete the questionnaires. To assess test-retest reliability, the subjects completed the SAM a second time approximately two to four weeks later.

Instruments

To test for convergent validity, the correlations between the SAM and existing valid and reliable instruments that measure similar concepts were examined. For that purpose, the following instruments were administered: the short form of the Patient Activation Measure (Hibbard et al., 2005), the Personal Mastery Scale (Pearlin, Menaghan, Lieberman, & Mullan, 1981), the Cognitive Adaptability Index (Wallston,

unpublished), the Rosenberg Self-Esteem Scale (Rosenberg, 1965), Psychological Vulnerability Scale (Sinclair & Wallston, 1999), the Brief Resilient Coping Scale (Sinclair & Wallston, 2004), and the Revised Academic Hardiness Scale (Benishek, Feldman, Wolf-Shipon, Mecham, & Lopez, 2005). The shortened (10-item) version of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972), the Abbreviated Strength of Religious Faith Questionnaire (Plante, Vallaeys, Sherman, & Wallston, 2002), and a single-item political conservative-liberal scale were administered as tests for discriminant validity, as these instruments should not correlate with the SAM.

Demographic and Background Information Form. A demographic and background information form was developed to be administered in phase one and phase two. Information on the following variables was collected: age, race, sex, marital status, number of children, campus, type of nursing program, semester in nursing program, cumulative grade point average, previous degree, plan to pursue a future degree, person responsible for educational expenses, required grade point average to maintain a scholarship, and number of hours worked per week. The medical-surgical course in which the student is currently enrolled determined the assigned semester of study. Each program has a 4-semester sequence of medical-surgical courses.

Student Activation Measure. Student activation is defined as a level of engagement in learning and self-management that a student has in reaching his or her academic goals. Student activation was measured in phase one using the instrument developed before this study, revised for clarity after student feedback, and revised for content, conciseness, and clarity after receiving expert feedback from my committee and

nursing faculty. After psychometric analysis of phase one data, the items were remained unchanged, and the SAM was administered for validation in phase two.

Patient Activation Measure. Patient activation is defined as a level of engagement in health maintenance and self-management that a healthcare consumer has in reaching his or her health goals. The Patient Activation Measure (Hibbard et al., 2005) assesses a patient's knowledge, skills, and confidence for self-management. The short form of the Patient Activation Measure was administered to establish the convergent validity of the SAM. A person who is activated in the maintenance of his or her health also may be activated in the pursuit of his or her academic goals.

The short form of the Patient Activation Measure is a 13-item, unidimensional, Guttman-like measure. The original 22-item Patient Activation Measure and the 13-item Patient Activation Measure were found to have similar psychometric properties (Hibbard et al., 2005). The calibration scale for the 13-item measure ranged from a 38.6 to 53.0. Although acceptable, reliability of the 13-item measure was lower for persons without chronic illness (Rasch person real reliability 0.78 and model reliability 0.82). The following subgroups scored higher on both forms of the Patient Activation Measure: those who are female, younger, have more education, and better self-reported health. The 13-item measure accounted for 92% of the variance of the estimated activation in the 22-item measure, and correlated with measures of preventive behaviors, disease-specific management behaviors, and consumeristic behaviors (Hibbard et al.).

Craig Swanson, a representative for the University of Oregon at Insignia Health, was contacted regarding obtaining a licensing agreement for use of the short-form of the

Patient Activation Measure. For a doctoral student, a minimum fee of \$50.00 was charged for the licensing agreement.

Brief Resilient Coping Scale. Key to the construct of resilience is the ability to rebound after adversity. The Brief Resilient Coping Scale (Sinclair & Wallston, 2004) measures a person's report of their ability to cope with stress in a highly adaptive manner. The Brief Resilient Coping Scale was administered to establish the convergent validity of the SAM. A student who is activated and engaged in his or her own learning may be one who is able to rebound after an adverse event, such as a low grade on an examination. Resilience is considered a positive indicator of an activated student.

The Brief Resilient Coping Scale is a four-item measure using a 5-point response scale. In two samples of persons with rheumatoid arthritis, combined Cronbach's alpha reliability was .69. The test-retest correlation was .71. The Brief Resilient Coping Scale correlated positively with measures of coping, optimism, and self-efficacy, and negatively with measures of helplessness and psychological vulnerability (Sinclair & Wallston, 2004).

Psychological Vulnerability Scale. The Psychological Vulnerability Scale (Sinclair & Wallston, 1999) measures cognitions that promote harmful reactions to stress. The Psychological Vulnerability Scale was administered to establish the convergent validity of the SAM. Psychological vulnerability is considered a negative indicator of an activated student.

The Psychological Vulnerability Scale is a six-item measure, using a 5-point response scale, with 1 being "does not describe me at all" to 5 being "describes me very well." Response options 2, 3, and 4 are not labeled. In three samples of persons with

rheumatoid arthritis, Cronbach's alpha reliability ranged from .71 to .86. The test-retest correlation was .83. The Psychological Vulnerability Scale correlated negatively with measures of coping, optimism, and self-efficacy, and positively with measures of helplessness and negative affectivity (Sinclair & Wallston, 1999).

Personal Mastery Scale. Personal mastery is a form of perceived personal control. Pearlin's Mastery Scale (Pearlin, Menaghan, Lieberman, & Mullan, 1981) measures the extent to which a person views his or her life as being under personal control. The Personal Mastery Scale was administered to establish the convergent validity of the SAM. A student who is activated and engaged in his or her own learning may believe that he or she has personal control in acquiring the knowledge and skills to be successful in an academic program. Mastery is considered a positive indicator of an activated student.

The Personal Mastery Scale is a seven-item measure, using a 4-point response scale: "strongly agree," "agree," "disagree," and "strongly disagree." In interviews of 1106 adults, LISREL was used to develop a measurement model of personal mastery. Correlations of personal mastery scores at time 1 and time 2 (four years later) were .44 (Pearlin et al., 1981). In a study of 96 undergraduate college students, the Personal Mastery Scale was found to have a Cronbach's alpha of 0.76. Subjects high in mastery appeared to think about the future more often and more positively, and had more plans for the future (Pham, Taylor, & Seeman, 2001).

Revised Academic Hardiness Scale. Students who score high on academic hardiness have the ability to achieve academic goals through effort and self-regulation (control), make personal sacrifices to excel academically (commitment), and view academic challenges as opportunities (challenge) (Benishek, Feldman, Shipon, Mecham,

& Lopez, 2005). The Revised Academic Hardiness Scale measures three components: control of affect, commitment/control of effort, and challenge. The Revised Academic Hardiness Scale was administered to establish the convergent validity of the SAM. Academic hardiness is considered a positive indicator of student activation.

The Revised Academic Hardiness Scale is an 18-item scale, using a 4-point response scale, with 1 being “completely false” and 4 being “completely true.” The scores on the subscales of control, commitment, and challenge are combined for a composite score of academic hardiness. In a sample of 350 high school seniors and high school graduates, Cronbach’s alpha reliabilities were .91 (commitment/control of effort), .88 (challenge), .81 (control of affect), and .90 (composite). The test-retest correlations were .86, .88, .81, and .86 respectively. The Revised Academic Hardiness Scale correlated positively with cognitive risk tolerance and correlated negatively with anxiety and neuroticism (Benishek et al., 2005).

Dr. Feldman was contacted regarding use of the Revised Academic Hardiness Scale. The measure and its manual were provided at no cost following the receipt of a letter indicating that the data collected and relevant participant demographics would be provided for the purpose of further assessing the psychometric properties of the scale.

Cognitive Adaptability Index. Cognitive adaptability is defined as the tendency toward enhanced optimism about the future and enhanced beliefs about one’s ability to deal with the stressors of life (Wagner, Hilker, Hepworth, & Wallston, 2008). The Cognitive Adaptability Index is a measure of dispositional optimism and generalized perceived control. The Cognitive Adaptability Index was administered to establish the

convergent validity of the SAM. Cognitive adaptability is considered a positive indicator of student activation.

The Cognitive Adaptability Index is an 8-item measure, using a 6-point response scale, ranging from “strongly disagree” to “strongly agree.” In two samples of persons with rheumatoid arthritis, the Cognitive Adaptability Index predicted both positive and negative adjustment to chronic illness. (Wagner et al., 2008). Cognitive adaptability is also associated with self-reported indicators of mental health in nursing students and persons with human immunodeficiency virus (Wallston & Hilker, 2008). In these studies, Cronbach’s alpha was .82 and .83 respectively.

Rosenberg Self-Esteem Scale. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a measure of global self-esteem. The Rosenberg Self-Esteem Scale was administered to establish the convergent validity of the SAM. There should be a positive correlation between student activation and global self-esteem.

The Rosenberg Self-Esteem Scale is a 10-item self-report measure with statements reflecting overall feelings of self-worth and self-acceptance. The items are answered on a four-point scale, ranging from “strongly agree” to “strongly disagree”. In a sample of 508 undergraduate college students who were followed from their first to fourth year of college, Cronbach’s alpha reliabilities were ranged from .88 to .90 over six administrations of the Rosenberg Self-Esteem Scale (Robins, Hendin, & Trzeniewski, 2001). In this study (Robins et al.), the Rosenberg Self-Esteem scale correlated positively with measures of domain-specific self-evaluations (academic ability, general intellectual and verbal ability, and social skills), self-enhancement bias, and optimism.

Marlowe-Crowne Social Desirability Scale Short Form M-C2. The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) is a scale designed to measure social desirability bias (i.e., the tendency to respond in a socially desirable fashion regardless of an item's content). The Short Form of the Marlowe-Crowne Social Desirability Scale (MC-2; Strahan & Gerbasi, 1972) was administered to establish the discriminant validity of the SAM. There should be no correlation between the SAM and a measure of social desirability.

The Marlowe-Crowne Social Desirability Scale Short Form M-C2 is a 10-item scale with a true-false forced-choice format. The respondent states "true" if the statement is true or mostly true, and "false" if the statement is false or mostly false. In a sample of 500 university students, Kuder-Richardson reliabilities ranged from .62-.75 (Strahan & Gerbasi, 1972). In a study (Blake, Valdiserri, Neuendorf, & Nemeth, 2006) of 327 undergraduate college students, the Marlowe-Crowne Social Desirability Scale correlated strongly and positively with the Social Desirability Scale-17 (Stober, 2001), a measure of social desirability response with more contemporary reference and phrasing.

Abbreviated Santa Clara Strength of Religious Faith Questionnaire. The Abbreviated Santa Clara Strength of Religious Faith Questionnaire (Plante, Vallaey, Sherman, & Wallston, 2002) was developed to measure the strength of a person's religious faith, without the assumption of a specific religious denomination. The Abbreviated Santa Clara Strength of Religious Faith Questionnaire was administered to establish the discriminant validity of the SAM. There should be no correlation between the SAM and a measure of strength of religious faith.

The Abbreviated Santa Clara Strength of Religious Faith Questionnaire is a five-item scale, using four response options: “strongly disagree”, “disagree”, “agree”, and “strongly agree.” In a sample of 67 volunteers, 91% of whom were undergraduate college students, Cronbach’s alpha reliability was .83 (Sutton, et al., 2007). In a study of 102 undergraduate students (Plante & Boccaccini, 1997), strength of religious faith correlated with measures of self-esteem, interpersonal sensitivity, adaptive coping, hope and a measure of God control.

Political Stance. A single-item measure was used to identify a student’s political stance. The measure consists of a numeric rating scale with a sequence of numbers ranging from one to nine measuring a continuum of political stance from “highly conservative” (1), “somewhat conservative” (3), “neither” (5), “somewhat liberal” (7), to “highly liberal” (9). The student circles the number that indicates how politically liberal or conservative he or she is. This measure of Political Stance was administered to establish the discriminant validity of the SAM. There should be no correlation between the SAM and the measure of political stance.

Internal Consistency

Prior to proceeding with scale development and validation of the SAM, Cronbach’s alpha coefficients were calculated for the sample to assess internal consistency of the other measures in the study (see Table 4).

Data Analyses

Analyses were conducted using SPSS 16.0 statistical program package. All of the data was double entered to establish reliability of data entry. Descriptive analyses were run on the demographic data.

Table 4. Internal Consistency of the Other Measures administered in This Study

Scale (# items)	alpha
Patient Activation Measure (13)	.89
Brief Resilient Coping Scale (4)	.59
Psychological Vulnerability Scale (6)	.69
Personal Mastery Scale (7)	.71
Academic Hardiness Scale (18)	.81
Cognitive Adaptability Index (8)	.80
Marlowe-Crowne Social Desirability Scale (10)	.68
Rosenberg Self-Esteem Scale (10)	.85
Santa Clara Religious Faith (5)	.94
Political Stance (1)	na

Na = not applicable

In Phase One, descriptive analyses of the SAM was conducted and evaluated for each item of the measure. The mean score of other subjects was inserted into the data for missing values if there was less than 20% missing data on one subject. Missing data greater than 20% was deleted. The variance of the items scores and correlation of items with a measure of social desirability was inspected. The correlation matrix was inspected to determine if the SAM items were highly intercorrelated. Corrected item-scale correlation was computed. DeVellis (2003) recommends the use of corrected item-scale correlation because uncorrected item-scale correlation can inflate the correlation coefficient. An alpha between .70 and .80 is considered respectable, and an alpha between .80 and .90 is considered acceptable. Since DeVellis advises that during the

development stage alpha should be a bit higher, an alpha of .85 will be accepted for analysis. Correlation was conducted on the data of subjects who repeated the SAM to determine test-retest reliability. A test-retest reliability of 0.85 or greater was anticipated. This process led to a revised SAM with 33 items.

Hypothesis 1: The SAM measures a unidimensional construct of activation. An exploratory principal components factor analysis was conducted to identify the number of factors that best represent the data. A scree test also was conducted to assist in the selection of factors that were to be retained. Orthogonal rotation was conducted to preserve independence of factors if there appeared to be more than one factor.

Hypothesis 2: There is a positive relationship between the construct of student activation and the constructs of personal mastery, cognitive adaptation, resilience, hardiness, self-esteem, and patient activation, and a negative relationship with psychological vulnerability. Pearson product moment correlations were conducted to determine if the construct of student activation was positively or negatively correlated with control-related or activation-related constructs.

Hypothesis 3: There is no relationship between the construct of student activation and the constructs of social desirability, strength of religious faith, and political stance. Pearson product moment correlation was conducted to determine if the construct of student activation was unrelated to the construct of social desirability, strength of religious faith, and political stance.

Hypothesis 4: Student activation is a developmental process in associate and baccalaureate nursing students. To determine if there is a significant difference in

student activation between the means of multiple independent groups, analysis of variance was conducted.

Hypothesis 5: Students in the bachelor of science in nursing program will score higher on the SAM than students in the associate of science in nursing program. To determine if there is a significant difference in student activation between the means of two independent groups, Student's independent t-test was conducted.

CHAPTER V

RESULTS

This chapter presents the results of the statistical tests used to test the hypotheses in this scale development and validation study. Section one discusses the statistical analysis of the 35-item SAM. The following sections address the results of the statistical analyses for the five hypotheses in this dissertation research study. Section two addresses the dimensionality of the SAM and the resultant 20-item SAM. Section three reports the results of the convergent and discriminant validity of the 20-item SAM and its two correlated factors. Section four describes the relationship between student activation and semester of study. Section five identifies the relationship between student activation and program of study. Section six summarizes the results of the study findings.

Scale Development

Variance

The mean item score for the 35-item SAM was 7.60 (SD=0.92) out of 9.00. The distribution of the 35-item SAM was negatively skewed, with mean scores at the higher end of the distribution (see Figure 2). While four of the items (SAM10, SAM12, SAM19, SAM34) have a high variance, six of the items (SAM3, SAM6, SAM16, SAM21, SAM23, SAM35) have a variance of less than 1.5. The majority of the items have a range of scores from five to nine, with a mean of seven. Approximately 10% of each item's responses are below five. See Table 5.

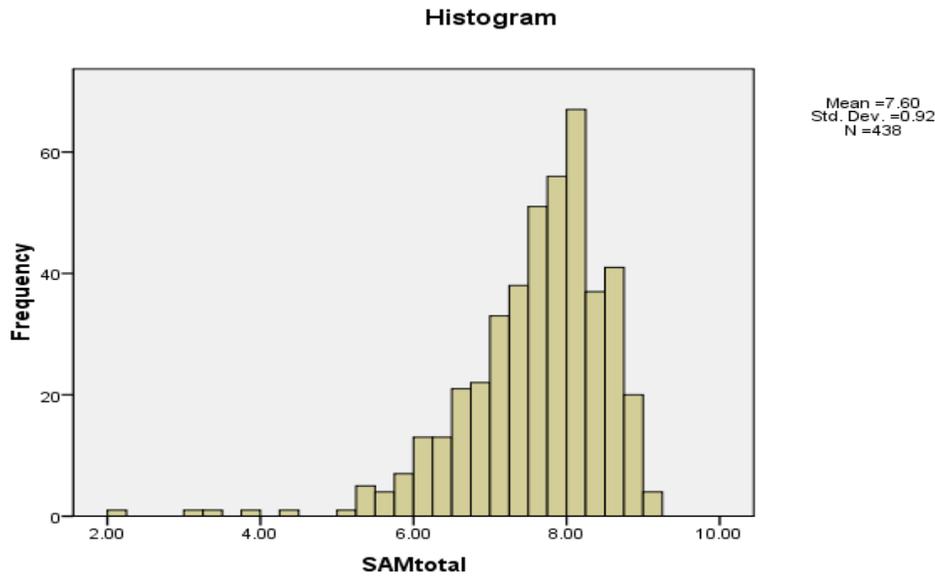


Figure 2. Histogram of the 35-item SAM

Table 5. Item Statistics of the 35-item SAM

Item	Mean	SD	Variance	Percent of Responses below 6
SAM1. I am confident that I know when I need assistance with my coursework.	7.77	1.41	1.99	8.4
SAM2. I am confident that I know when I can master the course content myself.	7.06	1.57	2.47	15.6
SAM3. I know I must take responsibility for my own learning.	8.48	1.15	1.33	3.2
SAM4. I know each of my nursing courses contributes to my knowledge and ability to practice safely as an entry level RN.	7.97	1.61	2.59	8.8
SAM5. I am able to handle problems associated with my coursework, such as class assignments and test taking.	7.37	1.52	2.31	11.1
SAM6. I gather data from the patient and from my patient assessment in the clinical setting.	8.19	1.17	1.37	3.0
SAM7. I can select a nursing diagnosis that is supported by the patient's signs and symptoms, and the results of diagnostic test.	7.37	1.55	2.40	12.0
SAM8. I am confident I can follow through on recommendations made by my course faculty to improve my course grades.	7.52	1.37	1.88	9.3
SAM9. I am eager to seek knowledge and understanding through observation and thoughtful questioning.	7.93	1.31	1.72	5.2
SAM10. For each medical-surgical course that I take, I study at least 6 hours per week.	6.63	2.50	6.25	33.5
SAM11. I know how to prevent problems with my course grades, such as participating in study groups.	7.21	1.64	2.70	14.4
SAM12. I review my course notes on a regular basis, such as each day or the next day after class.	6.01	2.32	5.30	39.2
SAM13. I manage my time and focus on priorities.	7.01	1.73	2.99	19.5
SAM14. I have implemented the recommended learning strategies by my course faculty, such as class and clinical	7.57	1.50	2.24	9.5

attendance, completion of reading assignments, and dedication of adequate study time.				
SAM15. I am confident that I can apply the knowledge that I have acquired through my coursework when I take the NCLEX-RN examination.	7.60	1.52	2.31	9.3
SAM16. Taking an active role in my own learning is the most important factor that determines my success in passing the NCLEX-RN.	8.18	1.15	1.33	3.4
SAM17. I have been able to maintain the commitment I have made to pass my courses, such as attend classes and clinicals, complete reading assignments, and dedicate adequate study time.	7.86	1.40	1.96	5.5
SAM18. I can follow through on the recommendations made by my course faculty to pass the NCLEX-RN examination.	7.61	1.45	2.10	8.5
SAM19. I am confident that I can discuss my concerns about academic success with faculty, even when he/she does not ask.	7.27	2.06	4.23	16.6
SAM20. I search for evidence, knowledge, and facts in the clinical setting by identifying relevant sources of information.	7.43	1.39	1.93	9.6
SAM21. I take responsibility for my own learning.	8.1	1.20	1.45	3.4
SAM22. I am confident that I can find the information that I need about the NCLEX-RN study plan.	7.70	1.49	2.12	8.9
SAM23. When all is said and done, I am responsible for my success in my coursework and in the nursing program.	8.23	1.18	1.36	3.4
SAM24. I understand course concepts and can apply them in the clinical setting.	7.70	1.29	1.66	5.5
SAM25. I am aware of the different strategies available to improve my course grades.	7.54	1.45	2.10	8.4
SAM26. I am confident that I can take actions that will prevent me from failing my nursing courses.	7.76	1.49	2.23	7.3
SAM27. I can maintain on a daily basis the recommended strategies to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	7.54	1.59	2.54	11.6
SAM28. I pursue a nursing degree with determination to overcome obstacles.	8.06	1.30	1.69	2.3
SAM29. Taking an active role in my own learning is the most important factor in determining my course grades.	8.08	1.24	1.55	3.0
SAM30. I can make clinical judgments according to guidelines I have learned in my courses.	7.64	1.33	1.76	7.2
SAM31. I can imagine alternatives and generate new ideas.	7.30	1.47	2.17	11.6
SAM32. I can recognize differences and similarities among patients and clinical situations.	7.71	1.31	1.73	5.1
SAM33. I can analyze a situation by separating or breaking whole into its parts.	7.28	1.51	2.28	12.5
SAM34. I am confident that I can spend the time required to read and study outside of class.	7.00	1.85	3.42	19.3
SAM35. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	8.26	1.18	1.39	3.9

Initial Look at Discriminant Validity of the SAM Items

One hundred ninety-two subjects completed the Shortened Marlowe-Crowne Social Desirability Scale. Each of the items of the 35-item SAM was correlated with the mean total score for the social desirability scale. Eighteen of the SAM items (SAM1, SAM5, SAM6, SAM8, SAM9, SAM11, SAM18, SAM19, SAM20, SAM21, SAM22,

SAM24, SAM25, SAM26, SAM30, SAM31, SAM32, SAM33) had no significant correlation with social desirability. Thirteen of the items (SAM2, SAM3, SAM10, SAM12, SAM14, SAM15, SAM16, SAM17, SAM23, SAM 28, SAM29, SAM34, SAM35) had correlations of .121 to .159 with social desirability. These correlations were significant at the 0.05 level (one-tailed). The remaining four items (SAM4, SAM13, SAM13, SAM27) had correlations of .183 to .237 with social desirability. These correlations were significant at the 0.01 level (one-tailed). At this time, all of the 35 SAM items were kept in the subsequent statistical analyses because the correlations with social desirability were low.

Initial Examination of Test-Retest Reliability of the SAM Items

One hundred thirty-three subjects were administered the SAM on two occasions at approximately a two to four week interval. The test-retest reliabilities for the items ranged from .291 to .725, and all stability coefficients were significant at the .001 level (1-tailed). Six of the items (SAM3, SAM10, SAM12, SAM13, SAM14, SAM26) had stability coefficients greater than 0.60. Thirteen items (SAM5, SAM7, SAM9, SAM17, SAM18, SAM19, SAM27, SAM29, SAM31, SAM32, SAM33, SAM34, SAM35) had stability coefficients greater than 0.50 but less than 0.60. Nine items (SAM1, SAM2, SAM6, SAM16, SAM23, SAM24, SAM25, SAM28, SAM30) had stability coefficients greater than 0.40 but less than 0.50, and six items (SAM8, SAM11, SAM15, SAM20, SAM21, SAM22) had stability coefficients greater than 0.30 but less than 0.40. One item (SAM4) had a stability coefficient of less than 0.20, and was dropped from the subsequent statistical analyses.

Item-Total Statistics

Using the SPSS.16 item analysis program to determine the scale’s internal consistency (reliability), it was determined that the remaining 34-item SAM had a Cronbach’s alpha of .945. Inspection of the inter-item correlation matrix showed positive correlations among the 34 items. The mean inter-item correlation was .375 with a variance of .015. Deletion of SAM10 and SAM12 would increase alpha to .948. SAM10 and SAM12 had low corrected item-total correlations, .354 and .325 respectively, and were deleted from subsequent analyses. Cronbach’s alpha for the remaining 32-item SAM was .956. The mean inter-item correlation increased to .418 with a variance of .011. Item-total statistics for the 34-item SAM are reported in Table 6.

Table 6. Item-Total Statistics for the 34-Item SAM

Item	Corrected Item-Total Correlation	Cronbach’s Alpha if Item Deleted
SAM1. I am confident that I know when I need assistance with my coursework.	.488	.945
SAM2. I am confident that I know when I can master the course content myself.	.497	.945
SAM3. I know I must take responsibility for my own learning.	.509	.944
SAM5. I am able to handle problems associated with my coursework, such as class assignments and test taking.	.511	.944
SAM6. I gather data from the patient and from my patient assessment in the clinical setting.	.600	.944
SAM7. I can select a nursing diagnosis that is supported by the patient’s signs and symptoms, and the results of diagnostic test.	.489	.945
SAM8. I am confident I can follow through on recommendations made by my course faculty to improve my course grades.	.585	.944
SAM9. I am eager to seek knowledge and understanding through observation and thoughtful questioning.	.590	.944
SAM10. For each medical-surgical course that I take, I study at least 6 hours per week.	.354	.948
SAM11. I know how to prevent problems with my course grades, such as participating in study groups.	.461	.945
SAM12. I review my course notes on a regular basis, such as each day or the next day after class.	.325	.948
SAM13. I manage my time and focus on priorities.	.558	.944
SAM14. I have implemented the recommended learning strategies by my course faculty, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.654	.943
SAM15. I am confident that I can apply the knowledge that I have acquired through my coursework when I take the NCLEX-RN examination.	.617	.943
SAM16. Taking an active role in my own learning is the most important factor that determines my success in passing the NCLEX-RN.	.629	.944
SAM17. I have been able to maintain the commitment I have made to pass my courses, such as attend classes and clinicals, complete reading assignments, and dedicate adequate study time.	.708	.943
SAM18. I can follow through on the recommendations made by my course faculty to pass the NCLEX-RN examination.	.730	.943

SAM19. I am confident that I can discuss my concerns about academic success with faculty, even when he/she does not ask.	.482	.945
SAM20. I search for evidence, knowledge, and facts in the clinical setting by identifying relevant sources of information.	.665	.943
SAM21. I take responsibility for my own learning.	.713	.943
SAM22. I am confident that I can find the information that I need about the NCLEX-RN study plan.	.621	.943
SAM23. When all is said and done, I am responsible for my success in my coursework and in the nursing program.	.638	.944
SAM24. I understand course concepts and can apply them in the clinical setting.	.728	.943
SAM25. I am aware of the different strategies available to improve my course grades.	.666	.943
SAM26. I am confident that I can take actions that will prevent me from failing my nursing courses.	.521	.944
SAM27. I can maintain on a daily basis the recommended strategies to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.661	.943
SAM28. I pursue a nursing degree with determination to overcome obstacles.	.619	.944
SAM29. Taking an active role in my own learning is the most important factor in determining my course grades.	.678	.660
SAM30. I can make clinical judgments according to guidelines I have learned in my courses.	.729	.943
SAM31. I can imagine alternatives and generate new ideas.	.665	.943
SAM32. I can recognize differences and similarities among patients and clinical situations.	.684	.943
SAM33. I can analyze a situation by separating or breaking whole into its parts.	.586	.944
SAM34. I am confident that I can spend the time required to read and study outside of class.	.549	.944
SAM35. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.708	.943

Hypothesis 1

The SAM measures a unidimensional construct of activation.

To test this hypothesis, a principal components factor analysis was run on the 32 SAM items that remained after deletion of three items. The unrotated factor solution showed five factors with an eigenvalue greater than one explaining 61.7% of the variance, with one major factor that explained 44.4% of the variance (See Figure 3 for the Scree plot and Table 7 for the eigenvalues.). The communalities of all the items were greater than .500, except for SAM1 (.485), SAM11 (.318), and SAM19 (.438). Inspection of the component matrix revealed the highest loadings for each factor to be on Factor 1, with loadings ranging from .480 to .788. According to DeVellis (2003), unrotated factors

Table 7. Total Variance Explained Unrotated Factor Solution

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	14.200	44.376	44.376
2	1.706	5.332	49.708
3	1.640	5.126	54.835
4	1.132	3.539	58.373
5	1.056	3.300	61.673

Extraction Method: Principal Component Analysis.

Scree Plot

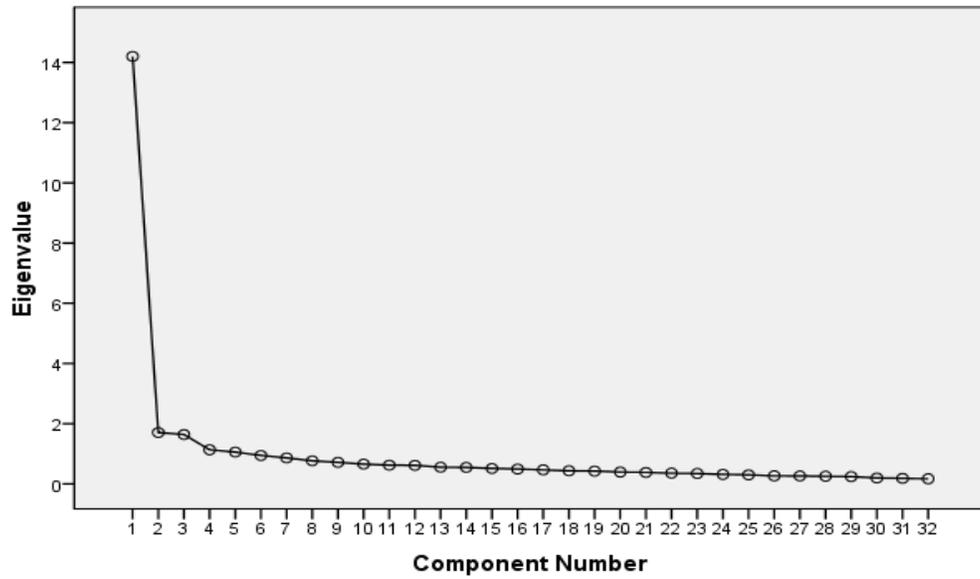


Figure 3. Scree Plot Unrotated Factor Solution

are meaningless mathematical abstractions. Therefore, to increase the ability to interpret the factors, first a Varimax (orthogonal) rotation was run to preserve the independence of the factors. An Oblimin (oblique) rotation was subsequently run as the factors were theoretically related.

Varimax rotation also showed five factors with an eigenvalue greater than one explaining 61.7% of the variance, but the percent variance allocated to each of the five factors was different than that seen with the unrotated solution (see Table 8). Seven items had high loadings on Factor 1 which explained 15.9% of the variance: SAM7 (.675), SAM20 (.631), SAM24 (.678), SAM30 (.671), SAM31 (.677), SAM32 (.724), and SAM33 (.735). Seven items had high loadings on Factor 2 which explained an additional 14.5% of the variance: SAM3 (.575), SAM16 (.562), SAM21 (.650), SAM23 (.765), SAM28 (.542), SAM29 (.671), and SAM35 (.673). Factor 3, Factor 4, and Factor 5 had fewer items with high loadings (5, 3, and 0 respectively).

Table 8. Total Variance Explained Varimax Rotation

Total Variance Explained			
Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.093	15.916	15.916
2	4.624	14.449	30.365
3	4.357	13.616	43.982
4	3.630	11.345	55.326
5	2.031	6.347	61.673

Extraction Method: Principal Component Analysis.

Because the five factors were conceptually correlated, an oblique rotation was also run. Because the factors in oblique rotation are correlated, the sums of squared loadings (see Table 9) cannot be added to obtain a total variance explained (DeVellis, 2003). Inspection of the pattern matrix showed that Factor 1 had high loadings by the same items with oblique rotation as with orthogonal rotation. Factor 4 of the oblique rotation had high loadings by the same items as Factor 2 of the orthogonal rotation. Factor 2, Factor 3, and Factor 5 had fewer items with high loadings (3, 4, and 0 respectively). Because oblique rotation yielded essentially the same results as orthogonal rotation, orthogonal rotation will be reported for the remaining factor analyses.

Table 9. Total Variance Explained Oblique Rotation

Total Variance Explained			
Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	10.004		
2	7.631		
3	8.678		
4	9.191		
5	1.198		

Extraction Method: Principal Component Analysis.

Two factors fit conceptually with my definition of the construct of activation. Therefore, a principal components factor analysis with a Varimax rotation forcing two factors was run. Results showed that those two factors explained 49.7% of the variance

(See Table 10). Factor 1 and Factor 2 each had 10 items that had high loadings of greater than .600 (See Table 11). Therefore, these 20 items were retained as the final version of the SAM and will be used in subsequent statistical analyses.

Inspection of the inter-item correlation matrix showed positive correlations among the 20 items. The mean inter-item correlation is .457 with a variance of .014. Item-total statistics are reported in Table 12. The Pearson correlation between Factor 1 and Factor 2 is .726 which is significant at the $p < 0.001$ level. Test-retest reliabilities for the 20-item SAM, Factor 1, and Factor 2 were .780, .747, and .778 respectively, and all were significant at the $p < 0.001$ level. Paired samples t-tests showed that the mean scores for the 20-item SAM ($t = -4.857$, $df = 127$, $p < .001$), Factor 1 ($t = -4.833$, $df = 127$, $p < .001$), and Factor 2 ($t = -3.520$, $df = 127$, $p = .001$) increased significantly from time one to time two administration. Cronbach's alpha for the 20-item SAM was .939, while the alphas for Factors 1 and 2 were .917 and .889 respectively.

Table 10. Total Variance Explained: Varimax Rotation Forcing 2 Factors

Total Variance Explained			
Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	8.354	26.106	26.106
2	7.553	23.603	49.708

Extraction Method: Principal Component Analysis.

Table 11. Factor Loadings Forcing 2 Factors

Item	Factor 1	Factor 2
SAM2. I am confident that I know when I can master the course content myself.		.599
SAM3. I know I must take responsibility for my own learning.		.759
SAM13. I manage my time and focus on priorities.	.638	
SAM14. I have implemented the recommended learning strategies by my course faculty, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.683	
SAM16. Taking an active role in my own learning is the most important factor that determines my success in passing the NCLEX-RN.		.621
SAM17. I have been able to maintain the commitment I have made to pass my courses, such as attend classes and clinicals, complete reading assignments, and dedicate adequate study time.	.680	
SAM18. I can follow through on the recommendations made by my course faculty to pass the NCLEX-RN examination.	.699	
SAM19. I am confident that I can discuss my concerns about academic success with faculty, even when he/she does not ask.		.600
SAM20. I search for evidence, knowledge, and facts in the clinical setting by identifying relevant sources of information.	.666	
SAM21. I take responsibility for my own learning.		.618
SAM23. When all is said and done, I am responsible for my success in my coursework and in the nursing program.		.716
SAM24. I understand course concepts and can apply them in the clinical setting.	.737	
SAM25. I am aware of the different strategies available to improve my course grades.		.613
SAM26. I am confident that I can take actions that will prevent me from failing my nursing courses.		.632
SAM29. Taking an active role in my own learning is the most important factor in determining my course grades.		.706
SAM30. I can make clinical judgments according to guidelines I have learned in my courses.	.691	
SAM31. I can imagine alternatives and generate new ideas.	.740	
SAM32. I can recognize differences and similarities among patients and clinical situations.	.701	
SAM33. I can analyze a situation by separating or breaking whole into its parts.	.691	
SAM35. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.		.656

In summary, principal components factor analysis supported the hypothesis that the SAM is a unidimensional measure with two highly correlated underlying factors. The two factors fit conceptually with the one dimension of the SAM. Factor 1 items involve *Taking Action*: implementing (SAM14), maintaining (SAM17), and following through (SAM18) as well as prioritizing (SAM 13), identifying relevant sources (SAM20), applying (SAM24), making judgments (SAM30), imagining and generating (SAM31), recognizing (SAM32), and analyzing (SAM33). Factor 2 items involve *Having Knowledge and Confidence*: being confident (SAM2, SAM19, SAM26), having

Table 12. Item-Total Statistics for the 20-Item SAM

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SAM2. I am confident that I know when I can master the course content myself.	.482	.939
SAM3. I know I must take responsibility for my own learning.	.558	.938
SAM13. I manage my time and focus on priorities.	.516	.939
SAM14. I have implemented the recommended learning strategies by my course faculty, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.586	.937
SAM16. Taking an active role in my own learning is the most important factor that determines my success in passing the NCLEX-RN.	.649	.936
SAM17. I have been able to maintain the commitment I have made to pass my courses, such as attend classes and clinicals, complete reading assignments, and dedicate adequate study time.	.709	.935
SAM18. I can follow through on the recommendations made by my course faculty to pass the NCLEX-RN examination.	.725	.935
SAM19. I am confident that I can discuss my concerns about academic success with faculty, even when he/she does not ask.	.492	.941
SAM20. I search for evidence, knowledge, and facts in the clinical setting by identifying relevant sources of information.	.683	.936
SAM21. I take responsibility for my own learning.	.752	.935
SAM23. When all is said and done, I am responsible for my success in my coursework and in the nursing program.	.703	.936
SAM24. I understand course concepts and can apply them in the clinical setting.	.756	.934
SAM25. I am aware of the different strategies available to improve my course grades.	.692	.935
SAM26. I am confident that I can take actions that will prevent me from failing my nursing courses.	.547	.938
SAM29. Taking an active role in my own learning is the most important factor in determining my course grades.	.721	.935
SAM30. I can make clinical judgments according to guidelines I have learned in my courses.	.754	.934
SAM31. I can imagine alternatives and generate new ideas.	.679	.936
SAM32. I can recognize differences and similarities among patients and clinical situations.	.722	.935
SAM33. I can analyze a situation by separating or breaking whole into its parts.	.613	.937
SAM35. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	.757	.935

knowledge of course requirements (SAM25, SAM35) and knowing one must take responsibility for learning (SAM3, SAM16, SAM21, SAM23, SAM29). The 20-item SAM and its two 10-item factors are reliable and sensitive to change over time.

Hypothesis 2

There is a positive relationship between the construct of student activation and the constructs of personal mastery, cognitive adaptation, resilience, hardiness, self-

esteem, and patient activation, and a negative relationship with psychological vulnerability.

To test this complex hypothesis, separate Pearson product-moment correlations were run between the 20-item SAM, its two factors, and the Personal Mastery Scale, Cognitive Adaptability Index, Brief Resilient Coping Scale, Revised Academic Hardiness Scale, Rosenberg Self-Esteem Scale, Patient Activation Measure, and the Psychological Vulnerability Scale (see Table 13). All the correlations were positive and significant at the 0.01 level (1-tailed), except for psychological vulnerability which was negative but also significant at the 0.01 level (1-tailed). The total SAM, Factor 1 and Factor 2 had the highest correlations with the constructs of self-esteem, resilient coping, and cognitive adaptability, followed by personal mastery and academic hardiness.

Correlations of self-esteem, resilient coping, cognitive adaptability, and academic hardiness were highest with the total SAM, and correlations with Factor 1 were higher than correlations with Factor 2 for those four measures. Personal mastery had the highest correlation with Factor 2, and correlations with the total SAM were higher than

Table 13. Convergent Validity of the 20-item SAM and its Two Factors

	Total SAM	Factor 1	Factor 2
Personal Mastery Scale	.505**	.453**	.511**
Cognitive Adaptability Index	.666**	.641**	.613**
Brief Resilient Coping Scale	.657**	.633**	.596**
Revised Academic Hardiness Scale	.479**	.452**	.442**
Rosenberg Self-Esteem Scale	.658**	.642**	.604**
Patient Activation Measure	.371**	.380**	.323**
Psychological Vulnerability Scale	-.299**	-.303**	-.266**

**Correlation is significant at the 0.01 level (1-tailed)

correlations with Factor 1. The correlations of the SAM with the constructs of patient activation and psychological vulnerability showed a slightly different pattern; correlations of these constructs were highest with Factor 1 rather than with the total SAM, and, as before, correlations with the total SAM were higher than with Factor 2. Hypothesis 2 was supported; the SAM and its two factors have convergent validity.

Hypothesis 3

There is no relationship between the construct of student activation and the constructs of social desirability, strength of religious faith, and political stance.

To test this hypothesis, correlations were run between the total SAM, its two factors and the following measures: the Shortened Marlowe-Crowne Social Desirability Scale, the Abbreviated Santa Clara Strength of Religious Faith Questionnaire, and the single-item measure of Political Stance (See Table 14). There was no correlation between the total SAM or Factors 1 and 2 with political stance. There were low, but significant correlations of the total SAM and Factor 2 with social desirability, and Factor 1 was positively correlated with strength of religious faith. Hypothesis 3 was fully supported for political stance and was partially refuted for social desirability (total SAM and Factor 2) and strength of religious faith (Factor 1).

Table 14. Discriminant Validity of the 20-item SAM

	SAM total	Factor 1	Factor 2
Social Desirability	.133*	.074	.139*
Strength of Religious Faith	.157	.234*	.051
Political Stance	-.039	-.015	-.055

*Correlation is significant the 0.05 level (1-tailed)

Hypothesis 4

Student activation is a developmental process in associate and baccalaureate nursing students.

To test this hypothesis, three one-way ANOVAs were run to determine if there was a significant difference in student activation among the semesters of study in the nursing programs. Semester in the nursing program was the independent variable and mean scores on the total SAM and its two factors were the dependent variables. Group membership was as follows: Fundamentals (n=89); Medical-Surgical I (n=86); Medical-Surgical II (n=100); and High Acuity (n=163). For SAM total and Factor 1, High Acuity (the fourth semester) had the highest mean scores, and for Factor 2 Medical-Surgical II (the third semester) had the highest mean scores (see Table 15). Medical-Surgical I (the second semester) had the lowest mean scores for SAM total, Factor 1, and Factor 2. The assumption of homogeneity of variance was met for each of the three one-way ANOVAs, indicating that the groups have approximately equal variance on the dependent variables.

No significant difference by semester was found in the mean scores for SAM total ($F(3, 434) = 2.205, p = 0.087$) and Factor 2 ($F(3, 436) = 0.876, p = 0.454$) among the semesters of study. Because the F ratio for Factor 1 ($F(3, 431) = 3.349, p = 0.019$) was statistically significant, at least two of the mean scores for Factor 1 among the semesters of study statistically differed from each other. A Scheffe post hoc test was run for

Table 15. Mean Scores on the SAM and Factors 1 and 2 by Semester of Study

	Fundamentals	Medical-Surgical I	Medical-Surgical II	High Acuity
SAM total	7.59	7.53	7.74	7.83
Factor 1	7.38	7.30	7.51	7.71
Factor 2	7.85	7.77	7.97	7.94

Factor 1 to determine which of the mean scores for Factor 1 differed significantly from one another. The Medical-Surgical I semester differed significantly from the High Acuity semester ($p = 0.045$). Examination of mean scores (See Table 15) showed that the High Acuity semester had mean scores of 7.71, while the Medical-Surgical I semester had mean scores of 7.30. It is interesting to note that the mean scores for the Medical-Surgical I semester were lower on Factor 1 than the mean scores for the Fundamentals semester (7.38).

Linear contrasts were then run to determine if there was a linear relationship between the 20-item SAM, as well as Factors 1 and 2, and semester of study. Semester in the nursing program was the independent variable and mean scores on the total SAM and the factors were the dependent variables. Results showed that there was a linear between-semester effect for Factor 1 ($F(1, 431) = 6.857, p = 0.009$), and a linear between-semester effect for the 20-item SAM ($F(1, 431) = 3.898, p = 0.049$). There was no linear effect for Factor 2 ($F(1, 431) = 1.071, p = 0.301$). See Figures 4 and 5.

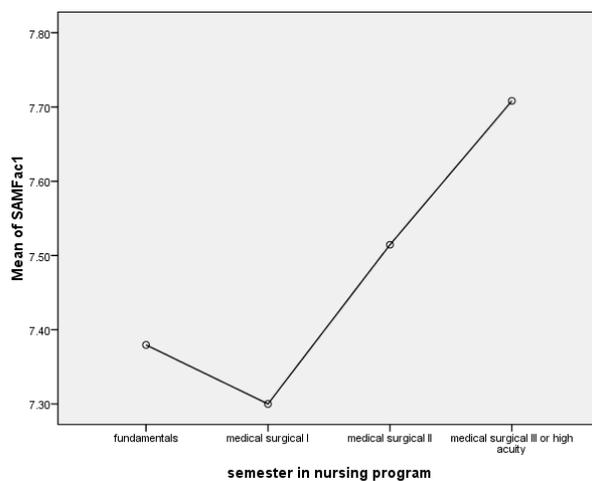


Figure 4. Means Plot of Semester in Nursing Program and Factor 1

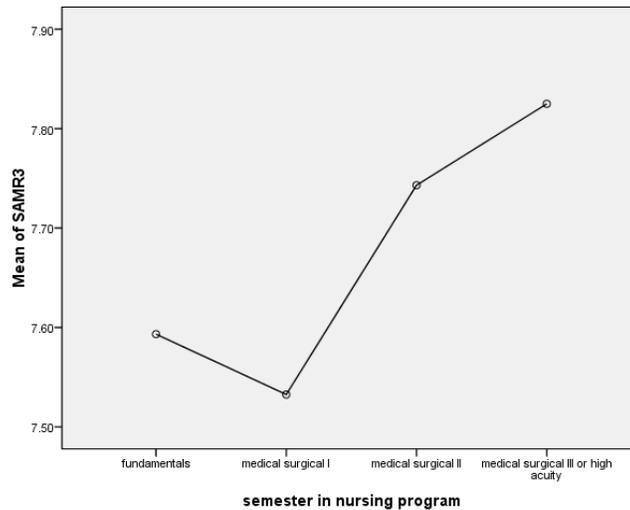


Figure 5. Means Plot of Semester in Nursing Program and the total 20-item SAM

Hypothesis 5

Students in the bachelor of science in nursing program will score higher on the SAM than students in the associate of science in nursing program.

To test this hypothesis, three Student's independent samples t-tests were run to determine if there was a significant difference in student activation between associate and baccalaureate degree nursing students (See table 16). The t-tests showed significant differences in activation between associate degree and baccalaureate degree students on the 20-item SAM ($t = -2.841$, $df = 435.294$, $p = 0.002$, 1-tailed), Factor 1 ($t = -1.851$, $df = 432.658$, $p = 0.032$, 1-tailed), and Factor 2 ($t = -3.461$, $df = 437.933$, $p < 0.001$, 1-tailed).

Mean item scores on the total 20-item SAM, Factor 1 and Factor 2 showed that baccalaureate students had higher levels of activation than associate degree students.

Because age, marital status, number of hours worked, and cumulative grade point average differed between associate and baccalaureate degree programs, they might account for the between-program differences in SAM scores. Three one-way ANCOVAs were run with

the total SAM, Factor 1 and Factor 2 as the dependent variables, and with type of

Table 16. Independent-Samples t-tests for Program of Study

	Associate Degree		Baccalaureate Degree		t-value
	M	SD	M	SD	
20-item SAM	7.60	1.09	7.85	.76	-2.84*
Factor 1	7.44	1.22	7.62	.85	-1.85**
Factor 2	7.77	1.09	8.07	.79	-3.46*

*p<.01 **p<.05

program as the independent variable. Age, cumulative grade point average, marital status (married/partnered or single) and hours worked were entered as covariates. After controlling for these four variables, program no longer had a significant effect on the total SAM ($F(1, 400) = 2.775, p = 0.097$) or on Factor 1 ($F(1, 397) = 1.135, p = 0.287$). However, program continued to have a significant effect on Factor 2 ($F(1, 402) = 4.332, p = 0.038$).

Hypothesis 5 was supported for the 20-item SAM, Factor 1, and Factor 2.

However, after controlling for age, cumulative grade point average, marital status, and hours worked, hypothesis 5 was not supported for the 20-item SAM and Factor 1.

Hypothesis 5 continued to be supported for Factor 2.

A summary and discussion of all of the results will be presented in Chapter VI along with the strengths and weaknesses of the study, implications for nursing, and recommendations for future research.

CHAPTER VI

DISCUSSION

The purpose of this study was to further develop and validate an instrument that measures nursing student activation and to examine whether such an instrument could be used to identify stages of activation of nursing students. A summary of the key findings follows. In Phase one, the initial 35-item SAM was examined for variance of the items, test-retest reliability of the items, and an indication of discriminant validity of the 35 items. After examination of the statistical analyses of the 35-item SAM, 3 items were dropped. In Phase Two, the remaining 32-item SAM was initially subjected to principal components analysis. The first principal components analysis with Varimax rotation yielded five factors, with the first factor explaining a high percentage of the variance. However, a second factor fit conceptually with the construct of activation.

Principal components analysis with two forced factors yielded two conceptually related factors that explained a high percentage of the variance, each having 10 items with high loadings; the first factor addressed *Taking Action* (conceptualized as taking an active role and then maintaining that active role on a day to day basis), and the second factor addressed *Having Knowledge and Confidence* (conceptualized as believing that having an active role is important and having the required knowledge, skills, and confidence). Although the 20-item SAM had two factors, the SAM was determined by the investigator to be a unidimensional measure with Factors 1 and 2 as indicators of different stages of activation. The 20-item SAM along with the two 10-item factors was

used for the remaining statistical analyses. The 20-item SAM, Factor 1 and Factor 2 showed good test-retest reliability, convergent validity, and discriminant validity. Cronbach's alpha (internal consistency) was high.

No statistically significant differences were found among the semesters of study in the nursing program for the 20-item SAM and for Factor 2. For Factor 1, results showed that mean scores for Medical-Surgical I students (i.e., those in their second semester) were significantly lower than the mean scores for the High Acuity (fourth semester) students. Students in the bachelor of science in nursing program were found to have significantly higher mean scores on the 20-item SAM, Factor 1 and Factor 2 than students in the associate of science in nursing program. However, after controlling for age, cumulative grade point average, marital status, and hours worked, nursing program was found to have a significant effect only on Factor 2. A detailed discussion of the findings of the study for each of the five hypotheses follows.

Hypothesis 1

The SAM measures a unidimensional construct of activation. The first hypothesis of this dissertation research study addressed the dimensionality of the 32-item SAM. The SAM was developed to measure the construct of student activation. Student activation was defined as the level of engagement in learning and self-management that a student has in reaching his or her academic goals.

The construct of student activation grew from a review of the construct of patient activation (Hibbard et al., 2005). An activated patient has the knowledge, skills, and confidence required for management of his or her chronic illness. A patient with a

chronic illness progresses through four stages of activation in his or her self-care --- from believing that having an active role is important, to having the required knowledge, skills, and confidence, to taking an active role, and then maintaining that active role on a day to day basis (Hibbard, 2004; Hibbard et al., 2004; Hibbard & Peters, 2003). Therefore, from my perspective as a nurse educator, it was believed that nursing students need to progress through similar stages of activation to be successful in an academic program: from believing that having an active role in learning is important, to having the required knowledge, skills, and confidence to be successful, to taking an active role in their own learning, and maintaining that active role on a day to day basis.

Principal components analysis of the 32-item SAM yielded five factors with one factor explaining 44% of the variance, and the four remaining factors explaining an additional 17.3% of the variance. Twenty items had loadings greater than .600 on Factor 1. The scree test (see Figure 3) showed one substantive factor with a steep slope. The elbow of the scree plot could have been placed after Factor 1; however, there were two other factors before the scree plot leveled off to a nearly flat line, indicating the possibility of one or two additional meaningful factors. With orthogonal and oblique rotations, no one factor explained more than 16% or 10% of the variance respectively. Review of the items with high loadings on each factor supported the presence of possibly two factors whose items contributed to the construct of student activation. Principal components analysis forcing two factors and with an orthogonal rotation showed each of the two factors had 10 items that loaded highly (see Table 10). The two factors explained 49.7% of the variance.

The items that had high loadings on each factor were examined for content. Factor 1 items address taking action to be successful and these actions are cognitive, as well as physical. Factor 1 has three items that address strategies to be successful: implementation of strategies, maintenance of commitment, and following through on recommendations. The remaining seven items address critical thinking strategies: prioritizing, searching for evidence, applying concepts, making clinical judgments, imagining alternatives, recognizing differences and similarities, and analyzing situations. In nursing education, critical thinking experiences are necessary to develop the clinical judgment that is necessary in nursing practice (Courtney, 2002); that is, to apply contextually in the clinical setting the knowledge that was mastered in the classroom (Alfaro-Lefevre, 2006). *Taking Action* fits conceptually with the third and fourth stages of patient activation (Hibbard et al., 2004) which involve taking an active role and then maintaining that active role on a day to day basis.

Factor 2 has five items that address knowing that one must take responsibility and an active role: for learning, for NCLEX-RN success, and for course and program success. Factor 2 also has five items that addressed having confidence and knowledge: to be able to master course content, to be able to discuss concerns about academic success, to be able to take actions to prevent failing courses, and to have knowledge of course requirements. Eddy and Epeneter (2002) identified a theme of internal learner-specific issues related to passing the NCLEX-RN, which included a student's perception of taking responsibility for learning. *Having knowledge and confidence* fits conceptually with the first and second stages of patient activation (Hibbard et al., 2004) which involve

believing that having an active role is important and having the required knowledge, skills, and confidence.

While Factor 2 assesses earlier stages of activation than Factor 1, Factor 1 explained a higher percentage of the variance in the mean item score of the total SAM than Factor 2. Based on principal components factor analysis and on the conceptual fit of Factor 1 and Factor 2 with the construct of activation, it was concluded that the 20-item SAM is a unidimensional measure that measures student activation, with Factors 1 and 2 as indicators of stage of activation.

Hypothesis 2

There is a positive relationship between the construct of student activation and the constructs of personal mastery, cognitive adaptation, resilience, hardiness, self-esteem, and patient activation, and a negative relationship with psychological vulnerability.

Convergent validity of the SAM was established by examining the relationship of the 20-item SAM, Factor 1, and Factor 2 with activation-related constructs. According to the theoretical framework and model of activation developed for this dissertation research study (see Figure 1), it was expected that the construct of student activation would be positively correlated with the constructs of personal mastery (Personal Mastery Scale), cognitive adaptation (Cognitive Adaptability Index), resilience (Brief Resilient Coping Scale), hardiness (Revised Academic Hardiness Scale), self-esteem (Rosenberg's Self-Esteem Scale), and patient activation (Patient Activation Measure), and negatively correlated with psychological vulnerability (Psychological Vulnerability Scale). The

correlations of the 20-item SAM, Factor 1, and Factor 2 with the above stated measures were all found to be in the predicted direction, and all were highly statistically significant.

The highest correlations were between the 20-item SAM, Factor 1, and Factor 2 and the Cognitive Adaptability Index, Brief Resilient Coping Scale, Revised Academic Hardiness Scale, Rosenberg's Self-Esteem Scale, and the Personal Mastery Scale. The Cognitive Adaptability Index (Wagner, Hilker, Hepworth, & Wallston, 2008) measures dispositional optimism and generalized perceived control; the Brief Resilient Coping Scale (Sinclair & Wallston, 2004) measures the ability to cope with stress in a highly adaptive manner; the Revised Academic Hardiness Scale (Benishek et al., 2005) measures the ability to achieve academic goals through effort and self-regulation; Rosenberg's Self-Esteem Scale (Rosenberg, 1965) measures global self-esteem, which is composed of feelings of self-worth and feelings of self-efficacy, and the Personal Mastery Scale (Pearlin et al., 1981) measures the extent to which a person views his or her life as being under personal control.

In the conceptual model of activation, activation leads to taking action by changing the situation and influencing the environment (commitment) or changing oneself by influencing emotions (challenge). Cognitive adaptability, resilient coping, academic hardiness, and self-esteem were all most highly correlated with the 20-item SAM, and correlated more highly with Factor 2, *Taking Action*, than with Factor 1, *Having Knowledge and Confidence*. Personal mastery had the highest correlation with Factor 2, over the total SAM and Factor 1. In particular, Factor 2 had three items that addressed strategies to be successful: implementation of strategies, maintenance of commitment, and following through on recommendations.

Believing that one can perform a specific behavior to produce a specific outcome (self-efficacy; Bandura, 1977) increases activation. Nursing students who were high in self-efficacy used self-regulated learning strategies (Andrew & Vialle, 1998; Ofori & Charlton, 2002). The positive illusions of self-enhancement, personal control, and the expectancy of a positive outcome (cognitive adaptation) is associated with self-determined motivation (Ratelle et al., 2004). In a study of college students, optimism, self-esteem, and internal locus of control were found to have an effect on cumulative grade point average through increased motivation to succeed (Aspinwall & Taylor, 1992). College students who maintained a sense of optimism and attributed success to the controllable factors of effort and strategy achieved the highest grade point averages (Haynes et al. 2006; Ruthig et al., 2004). A highly significant relationship was also found between hardiness and student's self-reported grade point averages (Hegge et al., 1999), and persons high in resilient coping are optimistic and actively problem solve (Sinclair & Wallston, 2004). College students high in mastery also thought about the future more often and more positively, and had more plans for the future (Pham, Taylor, & Seeman, 2001).

Therefore, it was an expected finding that students who were activated would also possess self-efficacy, personal mastery, academic hardiness, cognitive adaptation, and resilient coping, and that these constructs would be significantly and moderately correlated to student activation (20-item SAM), having the necessary knowledge and confidence to be successful (Factor 2) and to taking action to be successful (Factor 1). The correlations with these measures obtained in this study (range from .442 to .666) were both significant and large.

As hypothesized, the 20-item SAM, Factor 1 and Factor 2 were also significantly and positively correlated with the Patient Activation Measure and negatively correlated with the Psychological Vulnerability Scale. Those two constructs were most highly correlated with Factor 1 (taking action to be successful), and correlated more highly with the 20-item SAM than with Factor 2. The Short Form of the Patient Activation Measure (Hibbard et al., 2005) measures the level of engagement a person has in health maintenance.

Student activation was expected to be correlated with patient activation because a person who is activated in one area of his or her life would possibly also be activated in another area of his or her life. The average age of the nursing students in my sample was 28 years (SD=8.38). Even though the non-chronic form of the Patient Activation Measure was administered in this study, several of the items of the Patient Activation Measure were related to health problems that probably did not apply to this population which had less exposure to the health care system *as patients* than did those studied by Hibbard et al.

Therefore, it was an expected finding that students who were activated would also possess a higher degree of patient activation, and that the Patient Activation Measure would be significantly correlated, but at a lower level with student activation (20-item SAM), having the necessary knowledge and confidence to be a successful student (Factor 2) and to taking action to be a successful student (Factor 1).

The 20-item SAM, Factor 1, and Factor 2 were significantly and negatively correlated with psychological vulnerability. The Psychological Vulnerability Scale (Sinclair & Wallston, 1999) measures a pattern of beliefs that reflect dependence on

achievement, or on external sources to establish one's sense of self worth. Psychological vulnerability was also correlated negatively with measures of optimism and self-efficacy in persons with rheumatoid arthritis (Sinclair & Wallston). In contrast, nursing students who had an internal (rather than external) locus of control orientation over academic outcomes were found to use self-regulated learning strategies which led to higher academic performance (Ofori & Charlton, 2002). As referenced above, nursing students who were high in self-efficacy also used self-regulated learning strategies (Andrew & Vialle, 2002; Ofori & Charlton). Therefore, it would be an expected finding that psychological vulnerability has a significantly low to moderate and negative correlation (-.299, -.303, -.266) with student activation (20-item SAM), having the necessary knowledge and confidence to be a successful student (Factor 2) and to taking action to be a successful student (Factor 1) respectively.

Hypothesis 2 was supported. The correlations of the 20-item SAM, Factor 1, and Factor 2 with activation-related measures supported the convergent validity of the SAM and its two factors and show that the SAM and its two factors share an underlying latent construct, activation, with activation-related measures. Because none of the correlations were higher than 0.67, the 20-item SAM, Factor 1 and Factor 2 measure a construct of student activation that is unique in itself, one that is not identical to the other activation-related constructs.

Hypothesis 3

There is no relationship between the construct of student activation and the constructs of social desirability, strength of religious faith, and political stance.

Discriminant validity was established by examining the relationship of the 20-item SAM, Factor 1, and Factor 2 with measures of social desirability, strength of religious faith, and political stance. It was expected that there would be no significant relationship between the 20-item SAM, Factor 1, and Factor 2 and the Shortened Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972), the Abbreviated Santa Clara Strength of Religious Faith Scale (Plante, et al., 2002), and political stance (Conservatism to Liberalism). According to the theoretical framework and model of activation (see Figure 1), these constructs should not contribute to activation.

As expected, there was no significant correlation between the 20-item SAM, Factor 1, or Factor 2 and political stance. Whether a student considered himself or herself politically conservative or politically liberal was not significantly correlated to student activation (20-item SAM), having the necessary knowledge and confidence to be a successful student (Factor 2) or to taking action to be a successful student (Factor 1). Similarly, social desirability was not significantly correlated to Factor 1, and strength of religious faith was not significantly related to the 20-item SAM or to Factor 2.

There was, however, a low but significant correlation of social desirability with the 20-item SAM and Factor 2 (See Table 14). If a student scores highly on the items in Factor 2, that student reports that he or she has the mindset required for performing behaviors that are socially desirable for a nursing student. That is, indicating that one must take responsibility and an active role for learning (for NCLEX-RN success, for course and program success, as well as being able to master course content, to discuss concerns about academic success, to take actions to prevent failing courses, and to have knowledge of course requirement) is socially desirable. Therefore, although a significant

correlation between Factor 2 and social desirability bias was not expected, a significant but low correlation with Factor 2 could be explained in terms of the fact that meeting student expectations is a socially desirable behavior for nursing students. The significant but low correlation of social desirability with the total 20-item SAM is probably secondary to the significant but low correlation of social desirability with Factor 2, because there is no significant correlation of Factor 1 with social desirability.

There was, in addition, a low but significant correlation of strength of religious faith with Factor 1 (see Table 14). Factor 1 includes items that address strategies to be a successful student: implementation of strategies, maintenance of commitment, and following through on recommendations, as well as critical thinking strategies: prioritizing, searching for evidence, applying concepts, making clinical judgments, imagining alternatives, recognizing differences and similarities, and analyzing situations. If a student scores highly on the items in Factor 1, the student may also consider himself or herself active in his or her faith, especially by maintaining a commitment, and his or her faith may have an impact on his or her decisions, as well as providing meaning and purpose in life, which could require the ability to think critically about one's faith: making judgments, imagining alternatives, searching for evidence, and analyzing situations. Therefore, although a significant correlation of strength of religious faith with Factor 1 was not expected, the significant but low correlation with Factor 1 could be explained in terms of the fact that if a nursing student has a strong religious faith, she is implementing strategies to maintain her faith that are similar to strategies to maintain academic success.

Despite the few significant correlations obtained, hypothesis 3 was supported. The lack of correlation or the presence of a significant but low correlation of the 20-item SAM, Factor 1, and Factor 2 with measures to establish discriminant validity supported the expected finding that these other measures were not similar to the construct of activation.

Hypothesis 4

Student activation is a developmental process in associate and baccalaureate nursing students. Student activation, the level of engagement in learning and self-management that a student has in reaching his or her academic goals, was hypothesized to be a developmental process: that is, students would progress from a lower, simpler stage to a more advanced or complex stage of activation as they progress in their education. Principal components analysis identified two factors underlying student activation. Factor 2 corresponds to the first and second stages of activation that involve the belief that having an active role is important and the possession of the required knowledge, skills, and confidence to be successful in a nursing program. Factor 1 corresponds to the third and fourth stages of activation that involve taking an active role in one's own learning and then maintaining that active role on a day to day basis. Student activation as a developmental process was examined by running one-way ANOVAs, and examining the mean scores for significant differences between semesters for the 20-item SAM, Factor 1, and Factor 2. In addition, linear contrasts were examined to determine if there was a linear relationship between the 20-item SAM, as well as Factors 1 and 2, and semester of study.

The mean scores between the semesters of study dropped a little from the Fundamentals semester to the Medical-Surgical I semester for the 20-item SAM, Factor 1, and Factor 2. This trend could possibly be explained by the fact that the questionnaires for approximately 75% (n=315) of the students were administered during the first month of the semester. Students in the Fundamentals semester had not yet been exposed to the amount of knowledge and skills that comprise a nursing program, and having been through a selective admission process, they were possibly overconfident in their capabilities to be successful. Students in that first semester also had not yet been exposed to the level of critical thinking and level of clinical judgment required to apply the knowledge learned in the classroom setting (Courtney, 2002). A consensus statement on critical thinking identified the related habits of the mind and cognitive skills involved in the process of critical thinking (Scheffer & Rubenfeld, 2000). Students in the Medical-Surgical I semester, who had completed one semester of nursing courses and a brief exposure to a second and more difficult semester of nursing courses, possibly made a more accurate determination of their knowledge, skill, ability and confidence than students just beginning the nursing program.

Mean scores increased from the Medical-Surgical I semester to the Medical-Surgical II semester to the High Acuity semester for the 20-item SAM and Factor 1, possibly now reflecting an actual and realistic growth in activation. However, for Factor 2, there was no significant change between semesters from the Medical-Surgical II semester to the High Acuity semester. Although knowledge and skills would be expected to have increased between these two final semesters, it is possible that, with immediate preparation focused on the NCLEX-RN and the reality of taking and passing the

NCLEX-RN within the first few months after graduation, it may be that the confidence of the students in their capability did not increase, accounting for no significant change in mean scores on Factor 2 for those in their last semester. Also, the net difference in the mean scores between Factor 1 and Factor 2 appears to decrease as the students progress from Semester 1 to Semester 4, with the net difference remaining stable from Semester 1 to Semester 3 (0.47 to 0.46) and decreasing for Semester 4 (0.23). It is possible that at the beginning of Semester 4, the students have acquired the majority of the knowledge and skills that are requisite for success in a nursing program, and as noted above, their confidence did not increase (Factor 2), while their strategies for success and critical thinking skills have continued to increase during the last two semesters (Factor 1).

The results of the one-way ANOVA showed that there was a significant difference between at least two of the mean scores for semester of study in the nursing program for Factor 1, and a Scheffé post hoc test showed that the significant difference was between the Medical Surgical I semester and the High Acuity semester. While the Fundamentals semester is considered the introductory course to medical-surgical nursing, the sequence of the Medical Surgical I, Medical Surgical II, and High Acuity semesters is content-intensive and application of this classroom content to clinical judgment requires the ability to think critically. Therefore, it would be expected that between the first and last courses of this three-course sequence the critical thinking skills of the students would have increased through practice in the application of these skills in multiple-choice examinations and clinical practice.

A test of linear contrasts also supported that there was a strong linear relationship between mean scores on Factor 1 and semester of study in the nursing program. Few

researchers have looked at non-academic variables in relation to NCLEX-RN success. Baccalaureate nursing students who passed the NCLEX-RN had statistically higher mean scores on the California Critical Thinking Skills test than the group of students who failed (Giddens & Gloeckner, 2005). Arathuzik and Aber also identified a sense of competency in taking tests that require critical evaluation and thinking to performance on the NCLEX-RN. The results of my study also support the finding that critical thinking (Factor 1) is a component of activation, and increased from semesters two to four of a nursing program.

Thus, hypothesis 4 was supported for Factor 1 and the total 20-item SAM, but not for Factor 2. The first and second stages of activation (assessed by Factor 2) might already have been achieved by the time these nursing students began their second medical-surgical nursing course (semester 3). The third and fourth stages of activation (assessed by Factor 1) follow a developmental process in this sample of nursing students, with the acquisition of strategies for success and of critical thinking skills (application of knowledge to making clinical judgments) being achieved by the end of semester 4.

Hypothesis 5

Students in the bachelor of science in nursing program will score higher on the SAM than students in the associate of science in nursing program. The results of Student's independent samples t-tests showed that there was a significant difference in mean scores of the 20-item SAM, Factor 1, and Factor 2 between associate degree students and baccalaureate degree students. Inspection of the mean scores showed that baccalaureate degree students had higher mean scores than associate degree students on

the 20-item SAM, Factor 1, and Factor 2. Examination of demographic variables and background characteristics showed that baccalaureate degree students were younger, single, worked less, and had higher cumulative grade point averages. Associate degree students who were older, married, and worked while in the nursing program had commitments outside of the classroom that could have affected their commitment to academics, resulting in lower cumulative grade point averages. Factor 2 of the 20-item SAM involves having knowledge and confidence as the first and second stages of activation. If a student has commitments outside of the classroom, time to acquire the knowledge and skills required to be successful is limited, thus having an impact on confidence in one's capability to be successful, to take responsibility for one's own learning, and to take recommended actions to be successful in the nursing program, thereby affecting cumulative grade average.

After controlling for age, cumulative grade point average, marital status and hours worked, type of nursing program did not have an effect on the total SAM or Factor 1. Therefore, these four confounding variables might have an effect on students' implementation of strategies for success and critical thinking skills (Factor 1). However, after controlling for age, cumulative grade point average, marital status and hours worked, type of nursing program did have an effect on Factor 2, indicating that these four confounding variables might not have an effect on acquisition of knowledge and skills, and having the confidence necessary to be successful (Factor 2). This might indicate that both baccalaureate and associate degree nursing programs should assess the demographic and background characteristics of their students to identify which student are at risk and need interventions to develop strategies for success and critical thinking skills.

Hypothesis 5 was supported for the 20-item SAM, Factor 1, and Factor 2. However, after controlling for age, cumulative grade point average, marital status and hours worked, hypothesis 5 was not supported for the 20-item SAM and Factor 1. Hypothesis 5 continued to be supported for Factor 2.

Reliability

Cronbach's alpha was higher than recommended (DeVellis, 2003) for the 20-item SAM and Factor 1. Cronbach's alpha for Factor 2 was in the desired range of .80 to .90. DeVellis recommended that a scale should be shortened if Cronbach's alpha was greater than .90. However, DeVellis also stated that during scale development, alpha may be kept higher to guard against deterioration in new research contexts. Therefore, possibly redundant items have not been removed from the scale at this time.

In this convenience sample of nursing students, the mean item scores for the 20-item SAM, Factor 1, and Factor 2 were negatively skewed. It was anticipated that the scores would be negatively skewed due to the selective admission process for admission to a nursing program. On a response format of one to nine, approximately 2.5 to 12.5 percent of the responses (11-55 students) were below six. Although this percentage is low, it is possible that students, who scored below six and, therefore, had lower levels of activation, may be the very students who would be likely to fail the NCLEX-RN. Accuracy is low in predicting which students are likely to fail the NCLEX-RN (Giddens & Gloeckner, 2005; Haas, Nugent, & Rule, 2004; Stark et al., 2002), and research findings have been unable to consistently identify student characteristics that predict success (Campbell & Dickson, 1996; Stark, Feikema, & Wyngarden, 2002). Identification of students who are low in activation would fill a gap in identifying those

students who are likely to fail the NCLEX-RN. An activated student who has the knowledge, skills, and confidence to be successful, and who takes an active role in his or her own learning should have the characteristic of the student who is likely to pass the NCLEX-RN.

Test-retest reliabilities of the 20-item SAM, Factor 1, and Factor 2 were greater than .70. If the stability coefficient for two sets of scores is .70 or greater, there is evidence of temporal stability; the higher the stability coefficient, the more stable the measure (Polit & Beck, 2004; Pyrczak, 2005). The second administration of the SAM items was done two to four weeks after the first administration. The SAM items were administered during the first month of the semester and the second administration was repeated later in the month.

The mean scores for the SAM, Factor 1 and Factor 2 increased significantly from time one to time two administration indicating that the SAM and its factors were sensitive to change over time. Results of paired-samples t-tests showed that the scores increased by 0.14 to 0.24 points resulting in mean scores of 7.98 to 8.32. Although the increase in scores was small, the time between measurements was also short. Therefore, the SAM noted a change in knowledge, skills, and confidence as well as a change in strategies for success and critical thinking over a period of two to four weeks. The students would have had time to become more involved in their coursework by the second administration and become more aware of the course requirements to be successful, thus increasing activation. Therefore, it is also possible that the students had an increase in the knowledge, skills, and confidence required to become activated, took more responsibility for their own learning, and learned to think more critically. However, it is also possible

that the students recalled the items from the first administration, and answered the items more thoughtfully, thus increasing the mean scores from time one to time two.

Strengths and Limitations

This dissertation research study developed and validated the Student Activation Measure. A strength of the study was the relatively large sample size (N=442). DeVellis (2003) suggests that 300 subjects is an adequate number for instrument development. For a sample size of approximately 300-400 and alpha set at .05, an effect size of 0.15 can be detected with a power of .80 (Polit & Beck, 2004). Effect sizes in the range of 0.20 to 0.40 are common for nursing studies (Polit & Beck). In this study, the effect sizes detected for differences between associate and baccalaureate students were .26 for the total SAM, .17 for Factor 1, and .32 for Factor 2 which were small to moderate effects.

A second strength of the study was the use of multiple, previously validated measures to determine convergent (n=7) and discriminant (n=3) validity of the SAM. The two-group, four-semester design was a third strength of the study. The two-group design allowed for comparison of student activation between associate-degree and baccalaureate degree nursing programs, as well as within group comparisons among semesters of study within the nursing programs. Identification of differences between programs and semesters can give insights to nursing educators regarding the implementation of interventions to increase student activation.

One limitation and threat to the external validity of this study was that the sample was a convenience sample of associate degree and baccalaureate degree nursing students in a nursing program at a single local university. This sample may not have been

representative of the general population of nursing students in the United States, and may not have been representative of students in other nursing programs, such as a post-RN or a graduate nursing program. In this sample, significant differences between types of program were found in age, marital status, number of hours worked, and cumulative grade point average. These differences between associate and baccalaureate students could be confounding variables that have an effect on student activation. After controlling for age, cumulative grade point average, marital status, and hours worked, the type of nursing program in this sample no longer had a significant effect on the total SAM or on Factor 1, but continued to have a significant effect on Factor 2. It might be that the content in the courses and the sequencing of the courses differ within each program's curriculum, thus having an effect on Factor 2, *Having Knowledge, Skills and Confidence*.

Because the construct of student activation is not specific to nursing, the students in this sample, who have been through a selective admission process and who are seeking a degree that requires a licensure examination for practice, also may not be representative of college students in the United States. Two of the items on the 20-item SAM concern the NCLEX-RN and one item concerns nursing courses. These three items could be modified by omitting the terms that reference nursing, making the 20-item SAM applicable to students in any academic setting who are pursuing an academic degree. Alternatively, these three items could be omitted. Decreasing the number of items in a scale could decrease the reliability of the scale, but the internal consistencies of the 20-item SAM and Factors 1 and 2 were very high in this dissertation sample indicating that they probably would remain high if the scale was shortened further.

A second limitation of this study was the exclusive use of self-report questionnaires. Self report could have been affected by the environment. The questionnaires were administered in the classroom setting: some of the students were administered the questionnaires upon return from a break after an examination, on the last day of class prior to graduation (those in phase one), or prior to a classroom lecture. Because the questionnaires were administered in the classroom setting, beliefs about one's knowledge, skills, and confidence or about responsibility for one's own learning, ability to take actions to be successful, and to think critically, could have been heightened or lessened depending on the experiences in the classroom prior to completion of the questionnaires.

Self-reports could also have been affected by the time of administration of the questionnaires during the semester. For the bulk of the students, those in Phase Two of the study, the questionnaires were administered during the first month of the fall semester when few examinations or papers had yet been completed or submitted. Administering the questionnaires during the last month of the semester, when the students had taken multiple examinations and had a general ideas of their successes and failures and final course grades, may have yielded different results. In addition to self-reports, data from academic records and NCLEX pass rates could have been collected. Qualitative methods, such as small focus groups, might also yield additional information about the critical components of the construct of student activation.

A third limitation of the study is that, in regard to hypothesis four, the study had a cross-sectional design. Other than the retest for the SAM for the purpose of examining stability, each subject completed questionnaires at only one point in time. Therefore,

cause and effect relationships could not be established. If the same subjects were studied longitudinally over their four semesters in a nursing program, developmental changes in student activation over time could be studied in the same group of students and in relation to other academic and non-academic variables.

A possible fourth limitation of this study was that the theoretical framework of activation (see Figure 1), developed by me for the purpose of the study, had not yet been tested. However, this theoretical framework was based on an extensive literature review of activation-related constructs that were well-researched in the literature, and contributed to perceived personal control. Research studies supported that each of these constructs contributed to activation, which led to changing situations and influencing the environment through commitment or primary control (Weisz, Rothbaum, & Blackburn, 1984) and/or to changing oneself and influencing one's emotions through challenge or secondary control (Weisz et al.) to reach goal attainment.

The results of this study show significant and moderate-to-high correlations between the SAM, Factor 1, and Factor 2 and the constructs of academic hardiness, personal mastery, resilient coping, cognitive adaptation, and self-efficacy. These five constructs are the key constructs in the model of activation. A *positive focus* and *positive illusions* are components of cognitive adaptation, which lead to increased *perceived personal control*. *Control*, *commitment*, and *challenge* are components of academic hardiness. While the Academic Hardiness measure purportedly assesses one belief (*control*) and two outcomes (*commitment* and *challenge*), the SAM adds to this assessment by including items that are indicators of confidence and of critical thinking. According to the Model of Activation, if a student is activated, he or she also takes

actions that demonstrate *commitment* and *challenge*. Belief in one's ability, *capability*, is a component of self-efficacy and personal mastery, which also leads to increased *perceived personal control*. Resilient coping measures one's ability to cope with stress in a highly adaptive manner. However, resilience does not appear in the initial model.

Having completed this dissertation study, I would make the following changes to the placement of these constructs in the Model of Activation (see Figure 6). I would add *resilience* to the model by including the construct of *overcoming adversity*. If a person who is activated meets and overcomes *adversity* to maintain actions and behaviors that lead to goal attainment, this victory would also lead to increased *perceived personal control*. At this time, I would also refine my model by moving *confidence* to the beginning of the model by *knowledge* and *skills* because stages one and two of activation (assessed by Factor 2) includes having the knowledge, skills, and confidence to be a successful student. Taking action to be successful (assessed by Factor 1) comprises stages three and four of activation, following stages one and two, and leads to goal attainment.

Nursing Implications

The development and validation of the SAM can have an impact on nursing education. The construct of student activation would add another variable to the three major academic predictors (nursing course grades, cumulative grade point average, and scores on standardized tests) and the non-academic predictors (sense of competency, responsibility for learning, and critical thinking) that have previously been associated with NCLEX-RN success.

The SAM would be an appropriate measure of level of student activation. While the score on the total SAM is an indicator of overall level of activation, Factors 1 and 2 both contribute to this total level of activation. Therefore, if a student's score on the SAM is low, it is critical to look at the scores on Factor 1 and Factor 2 to determine whether the student is low on knowledge, skills, confidence or whether the student is low on taking actions to be successful, including the cognitive actions of critical thinking. On this basis, nursing educators can focus on academic interventions based on level of student activation. However, having a high score on only one factor does not support that a student is activated. A student can have knowledge, skills and confidence required to be successful without taking actions to be successful. A student can also implement strategies to be successful and be able to think critically in a general academic sense without possessing the knowledge and skills necessary to be able to think critically and make clinical judgments within the nursing program. In the latter case, the student cannot progress from stages one and two to stages three and four to become an activated nursing student.

Identification of level of student activation would assist nursing educators in the development of nursing interventions that would be appropriate to increase student activation. If students had low scores on Factor 2, *Having Knowledge and Confidence*, interventions might focus on the acquisition of knowledge, development of skills, and increasing confidence in order to successful. At this stage, students must also believe that taking an active role and responsibility for their own learning is important. If students had low scores on Factor 1, *Taking Action*, interventions might focus on the implementation of strategies to be successful in course work and on the NCLEX-RN, as

well on the critical thinking skills that are necessary for the application of knowledge and skills learned in the classroom and laboratory settings to clinical judgment in the practice setting.

Some students who are predicted to fail the NCLEX-RN pass, while even more students who are predicted to pass the NCLEX-RN fail. Student activation may be the key variable or the missing link in the ability to predict students who are at risk to fail the NCLEX-RN. If students are identified as having low scores in student activation, and are made aware of their risk for failure, these students might become activated and engaged in their own learning, especially if they have prepared a plan in conjunction with nursing faculty, setting personal attainable goals with proximal subgoals, and developing academic interventions to reach those goals. It is possible that students who were predicted to pass and subsequently failed were never really activated, thus failing to engage in their own learning and just getting by on a test by test, course by course, basis.

The SAM can also have an impact on nursing practice. If nursing students become activated and acquire the necessary knowledge and skills to be successful in their nursing program, as well the confidence in their ability to be successful, these nursing students would be better prepared for entry into nursing practice. If nursing students become activated and take actions to be successful in their nursing program, as well as have the ability to think critically, these nursing students would be better prepared to apply their knowledge in the clinical setting and make clinical judgments in nursing practice. Therefore, an activated student may become an activated nurse.

The theoretical framework that I developed for this study adds a Model of Activation to nursing knowledge. The identification of a key construct (perceived

personal control) that is correlated with activation, as well as identification of other related psychological constructs (self-efficacy, optimism, cognitive adaptation, hardiness, and resilience) that are strongly correlated with perceived personal control, can also provide nursing educators with other non-academic variables that can be assessed to develop interventions to increase activation. In theory, the Model of Activation is a general model that can be applied to any person or population planning to reach a goal, or to any situation where having the required knowledge, skills, and confidence will increase a person's perceived personal control and lead to activation: the performance of actions and behaviors that lead to goal attainment. For nursing, an activated student will have a high probability of attaining the goal of NCLEX-RN success, and thus, on a student by student basis, have an effect on decreasing the nursing shortage.

Future Research

In this study, the 20-item SAM was developed and validated, and two correlated 10-item factors were identified and validated. Additional studies are needed to support the reliability and validity, as well as the dimensionality, of the SAM. To increase generalizability of the findings, the SAM should be administered to nursing students in other nursing programs. Type of nursing program, length of nursing program, variations in nursing program curricula, timing of the study within the program, and diversity of students within a nursing program are potential confounding variables to be considered in future studies.

Factor 1 of the SAM, *Taking Action*, includes taking action as in implementation of strategies to be successful, as well as taking action in the application of critical

thinking skills in making clinical judgments. In future studies, inclusion of measures of critical thinking would increase the convergent validity of the SAM. Factor 2 of the SAM, *Having Knowledge and Confidence*, includes having the knowledge and confidence necessary to take action. Correlation of students' grades with scores on Factor 2 of the SAM would demonstrate the predictive validity of the SAM.

Future research using the SAM should also look at interventions and nursing outcomes. What interventions increase a student's level of activation? Interventions should focus on a student's level of activation: acquisition of knowledge and skills specific to nursing; attributional retraining (attribution of success to time and effort rather than to ability) to increase confidence; fostering responsibility for one's learning; implementation of strategies to be successful with faculty guidance; and fostering critical thinking through case studies and patient care scenarios. Future research could also study the best time in a nursing program to implement interventions to increase student activation. Does the SAM predict success in nursing courses, nursing programs, or on the NCLEX-RN, thereby increasing student retention and decreasing the nursing shortage? Does an activated student who is successful and enters into nursing practice then become an activated nurse? An activated nurse might be one who stays current with the knowledge and skills necessary to maintain safe practice, who is confident in her ability to safely and effectively care for patients, and who can make clinical judgments that promote quality patient care.

In summary, the SAM is an instrument that can have an impact on nursing education and on nursing practice. An activated student is one who shows commitment and challenge in reaching his or her academic goals: successful completion of his or her

nursing program and successful completion of the NCLEX-RN. Every student who is successful contributes to alleviation of the nursing shortage. In addition, an activated student may become an activated nurse, who possesses the knowledge, skills, and confidence as well as implements the strategies and critical thinking skills, to make clinical judgments in patient care leading to improved patient outcomes.

APPENDIX A

NCLEX-RN Success: A Literature Review

Table 1. NCLEX-RN Success: A Literature Review

Study	Design	Purpose/Hypotheses	Sample	Predictors of Success
Arathusik, D. & Aber, C. (1998). Factors Associated with National Council Licensure Examination-Registered Nurse Success	Descriptive correlational design	To identify academic and nonacademic factors associated with NCLEX-RN success	79 generic and transfer baccalaureate nursing students	Sense of competency in taking tests that require critical evaluation and thinking
Barkley, T.W., Rhodes, R.S., & Dufour, C.A. (1998). Predictors of Success on the NCLEX-RN: Among Baccalaureate Nursing Students	Descriptive correlational design Development of RAI	Students' scores on standardized tests, and achievement in particular nursing courses can predict performance on the NCLEX-RN	81 baccalaureate nursing students	Adult NLN Achievement Test Pediatric nursing course Psychiatric Mental Health nursing course Predictor of Failure Number of Cs in nursing theory courses High score on RAI
Beeman, P.B., & Waterhouse, J.H. (2001). NCLEX-RN Performance: Predicting Success on the Computerized Examination	Descriptive correlational design Discriminant analysis	How accurately can success on the CAT NCLEX-RN be predicted? Which variables best predict success?	538 traditional and accelerated nursing students	Grades in individual nursing courses Predictor of Failure Number of C+ or lower in nursing theory courses
Beeson, S.A., & Kissling, G. (2001). Predicting Success for Baccalaureate Graduates on the NCLEX-RN	Descriptive correlational design Logistic Regression	To identify predictors of success for baccalaureate nursing students on the NCLEX-RN	505 baccalaureate nursing students	Higher average grade point average Fewer grades of C or below Scored higher on MAT
Crow, C.S., Handley, M., Morrison, R.S., & Shelton, M.M. (2004). Requirements and Interventions Used by BSN Programs to Promote and predict NCLEX-RN Success: A National Study	Descriptive correlational design Survey method: NCLEX-RN survey	What data were used by the BSN programs to predict NCLEX success for their students? To what extent did admission and progression requirements and other data predict NCLEX-RN success in the BSN programs?	160 generic baccalaureate nursing students	A comprehensive exam (90%) Cumulative grade point average (29.4%) Specific course grades (36.3%) NLN Mental Health and Community Health nursing at-risk scores Use of exit exam

<p>Daley, L.K., Kirkpatrick, B.L., Frazier, S.K., Misook, L.C., & Moser, D.K. (2003). Predictors of NCLEX-RN success in a Baccalaureate Nursing Program as a Foundation for Remediation</p>	<p>Descriptive correlational design</p>	<p>Are there nursing program variables associated with successful completion of the NCLEX-RN? What is the predictive ability of standardized tests to identify students in need of remediation prior to administration of the NCLEX-RN?</p>	<p>224 students baccalaureate nursing students</p>	<p>Final course grade for a senior-level didactic medical surgical nursing course Cumulative program grade point average HESI Exit Examination</p>
<p>Eddy, L.L., & Epeneter, B.J. (2002). The NCLEX-RN Experience: Qualitative Interview with Graduates of a Baccalaureate Nursing Program</p>	<p>Qualitative telephone interviews</p>	<p>To uncover themes that may help faculty understand the NCLEX-RN testing experiences from the graduates' point of view</p>	<p>19 baccalaureate nursing students</p>	<p>Responsibility for learning Proactive in test preparation</p>
<p>Giddens, J., & Gloeckner, G.W. (2005). The Relationship of Critical Thinking to Performance on the NCLEX-RN</p>	<p>Descriptive correlational design</p>	<p>To investigate the relationship of students' critical thinking skills and disposition to performance on the NCLEX-RN</p>	<p>218 baccalaureate nursing students</p>	<p>Higher CCTST scores at entry and exit Higher mean scores on 5/8 scales on the CCTDI at exit</p>
<p>Haas, R.E., Nugent, K.E., & Rule, R.A. (2004). The Use of Discriminant function Analysis to Predict student success on the NCLEX-RN</p>	<p>Descriptive correlational design Discriminant analysis</p>	<p>There is a significant relationship between study variables and students' pass/fail status on the NCLEX-RN. Student success on the NCLEX-RN can be predicted.</p>	<p>351 baccalaureate nursing students (main and outlying campus)</p>	<p>Higher nursing cumulative GPA</p>
<p>Higgins, B. (2005). Strategies for Lowering Attrition Rates and Raising NCLEX-RN Pass Rates</p>	<p>Descriptive correlational design Qualitative telephone interviews</p>	<p>To identify the relationship of variables in the application process to successful completion on the nursing program and passing of the NCLEX-RN</p>	<p>213 associate nursing students 10 nursing faculty 30 associate nursing students</p>	<p>Anatomy and Physiology course Preadmission science scores Hesi Exit Examination Faculty responses: three themes of teaching (critical thinking), item-test writing, and curriculum changes Student responses: four themes including review of</p>

				critical thinking skills.
Roncoli, M., Lisanti, P., & Falcone, A. (2000). Characteristics of Baccalaureate graduates and NCLEX-RN Performance	Descriptive correlational design	To determine if students who had no record of passing the NCLEX-RN differed in significant ways from students who passed the exam.	38 baccalaureate nursing students	Predictors of Failure Repeated nursing courses Repeated science courses
Sayles, S., Shelton, D., & Powell, H. (2003). Predictors of Success in Nursing Education	Descriptive correlational design	What is the relationship between performance on the NET and PreRN examination, and successful performance on the NCLEX-RN?	68 associate nursing students	Grade point average for courses toward the nursing degree NET math, reading and composite scores PreRN examination composite score Last nursing course in the curriculum.
Seldomridge, L.A., & DiBartolo. (2004). Can success and Failure be Predicted for baccalaureate graduates on the Computerized NCLEX-RN?	Descriptive correlational design	Which variables occurring after completion of junior-year nursing courses best predict success/failure on the NCLEX-RN? Which variables occurring between junior-year nursing courses and graduation best predict success/failure on the NCLEX-RN? Which overall combination of variables best predicts success/failure on the NCLEX-RN? Can success/failure on the NCLEX-RN be accurately predicted?	186 traditional native and transfer baccalaureate nursing students	Percentile score on the NLNCATBS Grade in pathophysiology Test average in advance medical/surgical course Test average in introductory medical/surgical course Higher grade point average
Stuenkel, D.L. (2006). At-risk Students: Do Theory Grades + Standardized Examinations = Success?	Descriptive correlational design	To what extent do standardized achievement tests and a diagnostic readiness examination predict NCLEX success for baccalaureate nursing students?	312 baccalaureate nursing students	End of semester 5: NLN Adult Care, NLN Pretest, Medical-Surgical I grades Medical-Surgical II grades End of semester 7: NLN Community Health NLN Pretest Community theory grade

<p>Waterhouse, J.K., & Beeman, P.B. (2003). Predicting NCLEX-RN Success: Can it be Simplified?</p>	<p>Descriptive correlational design</p>	<p>To compare the effectiveness of an adaptation of the RAI (Barkley et al., 1998) with more complex approaches to assessing the NCLEX-RN risk status.</p>	<p>538 traditional and accelerated baccalaureate nursing students</p>	<p>Advanced medical-surgical course Critical care course</p> <p>The adapted Risk Appraisal Instrument had a lower correlation with passing/failing and (71.7%) did not approach the 95.6% correct classification of the RAI.</p>
<p>Yin, T., & Burger, C. (2003). Predictors of NCLEX-RN Success of Associate Degree Nursing Graduates</p>	<p>Descriptive correlational design Logistic regression</p>	<p>To examine the relationship of pertinent variables identifiable at admission to nursing to the outcome variable of success on the NXLEX-RN on the initial attempt.</p>	<p>325 associate nursing students</p>	<p>Higher grade point average prior to program admission Higher grades on introductory psychology Higher grades on natural sciences</p>
<p>Bentley. R. (2006). An Epidemiological Study of NCLEX</p>	<p>Descriptive correlational design Linear regression</p>	<p>To determine if there is a significant relationship among selected variables and success on the NCLEX-RN licensure exam in the tradition and accelerated nursing students.</p>	<p>224 traditional and accelerated baccalaureate students</p>	<p>Higher science grade point average Higher scores on HESI exit examination Fewer Cs in clinical nursing courses Higher scores on HESI Medical Surgical specialty examination</p>

APPENDIX B

Comparison of Activation-Related Constructs With Respect to Control

Table 2. Comparison of Activation-Related Constructs with Respect to Control

Activation-related constructs	Definition of control within the construct	Key focus of the construct	Outcome attribution	Additional constructs (other than control)
Perceived personal control	Belief that one's own behavior produces a desired outcome	Internal locus of control orientation	Outcomes are a direct consequence of one's own actions	
Self-efficacy	Belief that one can perform a specific behavior to produce a specific outcome in a specific situation	Capability to successfully perform the required behavior	Outcomes are a direct consequence of one's personal capability	
Optimism	Belief that a desired outcome will occur	Expectancy of a positive outcome	Outcomes are <i>not</i> based on one's own actions or capability	
Cognitive adaptation	Belief that one can manage (cope with) adverse circumstances	Cognitive adaptability through use of positive illusions		Optimism Self-enhancement (self-esteem)
Hardiness	Belief that one can influence events	Existential view that life is a series of decisions	Outcomes are a direct consequence of one's own actions (including cognitions)	Commitment Challenge Transformational coping
Resilience	Belief in the ability to achieve a successful outcome	Adversity is antecedent	Outcomes are based on development of protective factors	

APPENDIX C

Student Activation Measure: Version 1

Student Activation Measure (Version 1)

Instructions: With **10** being **Strongly Agree** and **0** being **Strongly Disagree**, indicate how you would rate yourself on each of the following statements.

	Strongly Disagree	Strongly Agree
1. I am confident that I can tell when I need to get assistance or when I can master the course content myself.	0--1--2--3--4--5--6--7--8--9--10	
2. I know that I must take responsibility for my own learning.	0--1--2--3--4--5--6--7--8--9--10	
3. I know that each of my nursing courses contributes to my knowledge and ability to practice safely and effectively as an entry-level registered nurse.	0--1--2--3--4--5--6--7--8--9--10	
4. I am able to handle problems regarding my course grades.	0--1--2--3--4--5--6--7--8--9--10	
5. I gather data from subjective and objective sources in the clinical setting.	0--1--2--3--4--5--6--7--8--9--10	
6. I can make a nursing diagnosis that is supported by a patient's signs and symptoms, laboratory data, and diagnostic tests.	0--1--2--3--4--5--6--7--8--9--10	
7. I am confident that I can follow through on recommendations made by my course faculty to increase my knowledge and ability to practice safely as an entry-level registered nurse.	0--1--2--3--4--5--6--7--8--9--10	
8. I am eager to seek knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives.	0--1--2--3--4--5--6--7--8--9--10	
9. I know how to prevent problems regarding my course grades.	0--1--2--3--4--5--6--7--8--9--10	
10. I can manage my time and focus on priorities.	0--1--2--3--4--5--6--7--8--9--10	
11. I have made the changes, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time that are recommended by my course faculty.	0--1--2--3--4--5--6--7--8--9--10	
12. I am confident that I can apply the knowledge that I have acquired through my coursework in taking the NCLEX-RN	0--1--2--3--4--5--6--7--8--9--10	
13. Taking an active role in my own learning is the most important factor in determining my success in passing the NCLEX-RN.	0--1--2--3--4--5--6--7--8--9--10	
14. I have been able to maintain the changes I have made to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	0--1--2--3--4--5--6--7--8--9--10	
15. I am able to follow the recommendations made by my professors to pass the NCLEX-RN.	0--1--2--3--4--5--6--7--8--9--10	
16. I am confident that I can discuss my concerns about academic achievement with my professor even when he/she does not ask.	0--1--2--3--4--5--6--7--8--9--10	
17. I search for evidence, facts, or knowledge by identifying relevant sources of information	0--1--2--3--4--5--6--7--8--9--10	

- in the clinical setting.
18. I am confident that I can find the information I need about the NCLEX-RN study plan. 0--1--2--3--4--5--6--7--8--9--10
19. When all is said and done, I am responsible for my success in my coursework and in the nursing program. 0--1--2--3--4--5--6--7--8--9--10
20. I can think contextually, that is, I understand course concepts and can apply them in the clinical setting. 0--1--2--3--4--5--6--7--8--9--10
21. I know the different strategies available to improve my course grades 0--1--2--3--4--5--6--7--8--9--10
22. I am confident that I can take actions that will prevent me from failing my courses. 0--1--2--3--4--5--6--7--8--9--10
23. I can maintain on a daily basis the strategies that are recommended to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time. 0--1--2--3--4--5--6--7--8--9--10
24. I pursue a BSN degree with determination to overcome obstacles. 0--1--2--3--4--5--6--7--8--9--10
25. Taking an active role in my own learning is the most important factor in determining my course grades. 0--1--2--3--4--5--6--7--8--9--10
26. I can make clinical judgments according to established personal, professional, or social criteria. 0--1--2--3--4--5--6--7--8--9--10
27. I can imagine alternatives and generate new ideas. 0--1--2--3--4--5--6--7--8--9--10
28. I can recognize differences and similarities among persons or situations in the clinical setting. 0--1--2--3--4--5--6--7--8--9--10
29. I can analyze a situation, separating or breaking a whole into its parts to discover relationships. 0--1--2--3--4--5--6--7--8--9--10
30. I am confident that I can follow through on the time required to read outside of class. 0--1--2--3--4--5--6--7--8--9--10
31. I know the course requirements such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time that are necessary to pass my courses. 0--1--2--3--4--5--6--7--8--9--10
32. I am confident that I can maintain class and clinical attendance, completion of reading assignments, and dedication of adequate study time even under stress. 0--1--2--3--4--5--6--7--8--9--10
33. I am confident that I can figure out solutions when new situations or problems arise that could compromise my course grades. 0--1--2--3--4--5--6--7--8--9--10

APPENDIX D

Student Activation Measure: Revision 1

Student Activation Measure (Revision 1)

Instructions: With **10** being **Strongly Agree** and **0** being **Strongly Disagree**, indicate how you would rate yourself on each of the following statements.

	Strongly Disagree	Strongly Agree
1. I am confident that I can tell when I need to get assistance or when I can master the course content myself.	0--1--2--3--4--5--6--7--8--9--10	
2. I know that I must take responsibility for my own learning.	0--1--2--3--4--5--6--7--8--9--10	
3. I know that each of my nursing courses contributes to my knowledge and ability to practice safely and effectively as an entry-level registered nurse.	0--1--2--3--4--5--6--7--8--9--10	
4. I am able to handle problems regarding my course grades.	0--1--2--3--4--5--6--7--8--9--10	
5. I gather data from subjective and objective sources in the clinical setting.	0--1--2--3--4--5--6--7--8--9--10	
6. I can make a nursing diagnosis that is supported by a patient's signs and symptoms, laboratory data, and diagnostic tests.	0--1--2--3--4--5--6--7--8--9--10	
7. I am confident that I can follow through on recommendations made by my course faculty to increase my knowledge and ability to practice safely as an entry-level registered nurse.	0--1--2--3--4--5--6--7--8--9--10	
8. I am eager to seek knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives.	0--1--2--3--4--5--6--7--8--9--10	
9. I know how to prevent problems regarding my course grades.	0--1--2--3--4--5--6--7--8--9--10	
10. I can manage my time and focus on priorities.	0--1--2--3--4--5--6--7--8--9--10	
11. I have implemented the strategies that are recommended by my course faculty, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	0--1--2--3--4--5--6--7--8--9--10	
12. I am confident that I can apply the knowledge that I have acquired through my coursework when taking the NCLEX-RN.	0--1--2--3--4--5--6--7--8--9--10	
13. Taking an active role in my own learning is the most important factor in determining my success in passing the NCLEX-RN.	0--1--2--3--4--5--6--7--8--9--10	
14. I have been able to maintain the changes I have made to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.	0--1--2--3--4--5--6--7--8--9--10	
15. I am able to follow the recommendations made by my course faculty to pass the NCLEX-RN.	0--1--2--3--4--5--6--7--8--9--10	
16. I am confident that I can discuss my concerns about academic achievement with my course faculty even when he/she does not ask.	0--1--2--3--4--5--6--7--8--9--10	
17. I search for evidence, facts, or knowledge by identifying relevant sources of information in the clinical setting.	0--1--2--3--4--5--6--7--8--9--10	

- | | |
|--|----------------------------------|
| 18. I am confident that I can find the information I need about the NCLEX-RN study plan. | 0--1--2--3--4--5--6--7--8--9--10 |
| 19. When all is said and done, I am responsible for my success in my coursework and in the nursing program. | 0--1--2--3--4--5--6--7--8--9--10 |
| 20. I can think contextually, that is, I understand course concepts and can apply them in the clinical setting. | 0--1--2--3--4--5--6--7--8--9--10 |
| 21. I know the different strategies available to improve my course grades | 0--1--2--3--4--5--6--7--8--9--10 |
| 22. I am confident that I can take actions that will prevent me from failing my courses. | 0--1--2--3--4--5--6--7--8--9--10 |
| 23. I can maintain on a daily basis the strategies that are recommended to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time. | 0--1--2--3--4--5--6--7--8--9--10 |
| 24. I pursue a nursing degree with determination to overcome obstacles. | 0--1--2--3--4--5--6--7--8--9--10 |
| 25. Taking an active role in my own learning is the most important factor in determining my course grades. | 0--1--2--3--4--5--6--7--8--9--10 |
| 26. I can make clinical judgments according to established personal, professional, or social criteria. | 0--1--2--3--4--5--6--7--8--9--10 |
| 27. I can imagine alternatives and generate new ideas. | 0--1--2--3--4--5--6--7--8--9--10 |
| 28. I can recognize differences and similarities among persons or situations in the clinical setting. | 0--1--2--3--4--5--6--7--8--9--10 |
| 29. I can analyze a situation, separating or breaking a whole into its parts to discover relationships. | 0--1--2--3--4--5--6--7--8--9--10 |
| 30. I am confident that I can follow through on the time required to read and study outside of class. | 0--1--2--3--4--5--6--7--8--9--10 |
| 31. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time. | 0--1--2--3--4--5--6--7--8--9--10 |
| 32. I am confident that I can maintain class and clinical attendance, completion of reading assignments, and dedication of adequate study time even under stress. | 0--1--2--3--4--5--6--7--8--9--10 |
| 33. I am confident that I can figure out solutions when new situations or problems arise that could compromise my course grades. | 0--1--2--3--4--5--6--7--8--9--10 |

APPENDIX E

Study Instruments

Demographic and Background Characteristics Form

Age _____

Sex _____

Race _____

Type of Nursing Program: Associate ____ Baccalaureate ____

Campus of Nursing Program: Main ____ South ____ Glasgow ____

Semester in the Nursing Program:

Fundamentals ____ Med-Surg I ____ Med-Surg II ____

Med-Surg III/High Acuity ____

Previous degree: Yes ____ No ____

Plan to pursue a higher degree: Yes ____ No ____

Cumulative grade point average (GPA) _____

Marital Status:

Single ____ Married/Partnered ____ Separated ____ Divorced ____ Widowed ____

Number of children ____

Number of hours worked per week (Do not include course requirements) ____

Person who is responsible for my college expenses

Myself ____ Spouse/Partner ____ Parents ____ Student loan ____ Scholarship ____

If receiving a scholarship, what is the required GPA to maintain the scholarship?

No requirement ____ 2.0 ____ 2.5 ____ 3.0 ____ 3.5 ____

Circle the number that indicates how politically liberal or conservative you are.

1	2	3	4	5	6	7	8	9
Highly conservative		Somewhat conservative		Neither		Somewhat liberal		Highly liberal

Student Activation Measure Revision II (Kinder, 2007)

Instructions: With 1 being Strongly Disagree and 10 being Strongly Agree, circle the number that indicates how you would rate yourself on each of the following statements.

1. I am confident that I know when I need assistance with my coursework.
2. I am confident that I know when I can master the course content myself.
3. I know I must take responsibility for my own learning.
4. I know each of my nursing courses contributes to my knowledge and ability to practice safely and effectively as an entry-level RN.
5. I am able to handle problems associated with my coursework, such as class assignments and test taking.
6. I gather data from the patient and from my patient assessment in the clinical setting.
7. I can select a nursing diagnosis that is supported by the patient's signs and symptoms, and the results of diagnostic tests.
8. I am confident I can follow through on recommendations made by my course faculty to improve my course grades.
9. I am eager to seek knowledge and understanding through observation and thoughtful questioning.
10. For each medical-surgical nursing course that I take, I study at least 6 hours per week.
11. I know how to prevent problems with my course grades, such as participating in study groups.
12. I review my course notes on a regular basis, such as each day or the next day after class.
13. I manage my time and focus on priorities.
14. I have implemented the recommended learning strategies by my course faculty, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.
15. I am confident that I can apply the knowledge that I have acquired through my coursework when I take the NCLEX-RN examination.
16. Taking an active role in my own learning is the most important factor that determines my success in passing the NCLEX-RN examination.
17. I have been able to maintain the commitment I have made to pass my courses, such as attend classes and clinicals, complete reading assignments, and dedicate adequate study time.
18. I follow through on the recommendations made by my course faculty to pass the NCLEX-RN examination.
19. I am confident that I can discuss my concerns about academic success with faculty, even when he/she does not ask.
20. I search for evidence, knowledge, and facts in the clinical setting by identifying relevant sources of information.
21. I take responsibility for my own learning.
22. I am confident that I can find the information I need about the NCLEX-RN study plan.
23. When all is said and done, I am responsible for my success in my coursework and in the nursing program.
24. I understand course concepts and can apply them in the clinical setting.
25. I am aware of the different strategies available to improve my course grades.
26. I am confident that I can take actions that will prevent me from failing my nursing courses.
27. I can maintain on a daily basis the recommended strategies to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.
28. I pursue a nursing degree with determination to overcome obstacles.
29. Taking an active role in my own learning is the most important factor in determining my course grades.
30. I can make clinical judgments according to the guidelines I have learned in my nursing courses.
31. I can imagine alternatives and generate new ideas.
32. I can recognize differences and similarities among patients or situations in the clinical setting.
33. I can analyze a situation by separating or breaking a whole into its parts to discover relationships.
34. I am confident that I can spend the time required to read and study outside of class.
35. I know the requirements that are necessary to pass my courses, such as class and clinical attendance, completion of reading assignments, and dedication of adequate study time.

Marlowe-Crowne Social Desirability Scale (M-C 2; Strahan & Gerbasi, 1972)

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or mostly true, or false or mostly false, as it pertains to you personally.

1. I never hesitate to go out of my way to help someone in trouble. (T)
2. I have never intensely disliked anyone. (T)
3. There have been times when I was quite jealous of the good fortune of others. (F)
4. I would never think of letting someone else be punished for my wrong doings. (T)
5. I sometimes feel resentful when I don't get my way. (F)
6. There have been times when I felt like rebelling against people in authority even though I knew they were right. (F)
7. I am always courteous, even to people who are disagreeable. (T)
8. When I don't know something I don't at all mind admitting it. (T)
9. I can remember "playing sick" to get out of something. (F)
10. I am sometimes irritated by people who ask favors of me. (F)

Abbreviated Santa Clara Strength of Religious Faith Questionnaire
(Plante, Vallaeys, Sherman, & Wallston, 2002)

Please answer the following questions about religious faith using the scale below. Indicate the level of agreement (or disagreement) for each statement.

1 = strongly disagree 2 = disagree 3 = agree 4 = strongly agree

1. I pray daily.
2. I look to my faith as providing meaning and purpose in my life.
3. I consider myself active in my faith or church.
4. I enjoy being around others who share my faith.
5. My faith impacts many of my decisions.

Revised Academic Hardiness Scale (Benishek et al., 2005)
Sample Items

1. Doing well in school is as important to me as to my parents
2. I work hard for the grades I get.
3. If possible, I tend to avoid enrolling in difficult classes.

Cognitive Adaptability Index (Wallston, unpublished)

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. In uncertain times, I usually expect the best.	1	2	3	4	5	6
2. It is difficult for me to find effective solutions to the problems that come my way.	1	2	3	4	5	6
3. I'm always optimistic about my future.	1	2	3	4	5	6
4. I succeed in the projects I undertake.	1	2	3	4	5	6
5. Things never work out the way I want them to.	1	2	3	4	5	6
6. Typically, my plans don't work out well.	1	2	3	4	5	6
7. I rarely count on good things happening to me.	1	2	3	4	5	6
8. I am able to do things as well as most other people.	1	2	3	4	5	6

Psychological Vulnerability Scale (Sinclair & Wallston, 1999)

1. If I don't achieve my goals, I feel like a failure as a person.
2. I feel entitled to better treatment from others than I generally receive.
3. I am frequently aware of feeling inferior to other people.
4. I need approval from others to feel good about myself.
5. I tend to set my goals too high and become frustrated trying to reach them.
6. I often feel resentful when others take advantage of me.

Brief Resilient Coping Scale (Sinclair & Wallston, 2004)

1. I actively look for ways to replace the losses I have encountered in life.
2. I believe that I can grow in positive ways by dealing with difficult situations.
3. I look for creative ways to alter difficult situations.
4. Regardless of what happens to me, I believe I can control my reaction to it.

Personal Mastery Scale (Pearlin et al., 1981)

1. There is really no way I can solve some of the problems I have.
2. Sometimes I feel that I'm being pushed around in life.
3. I have little control over the things that happen to me.
4. I can do just about anything I really set my mind to.
5. I often feel helpless in dealing with the problems in my life.
6. What happens to me in the future mostly depends on me.
7. There is little I can do to change many of the important things in my life.

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

APPENDIX F

A Model of Activation

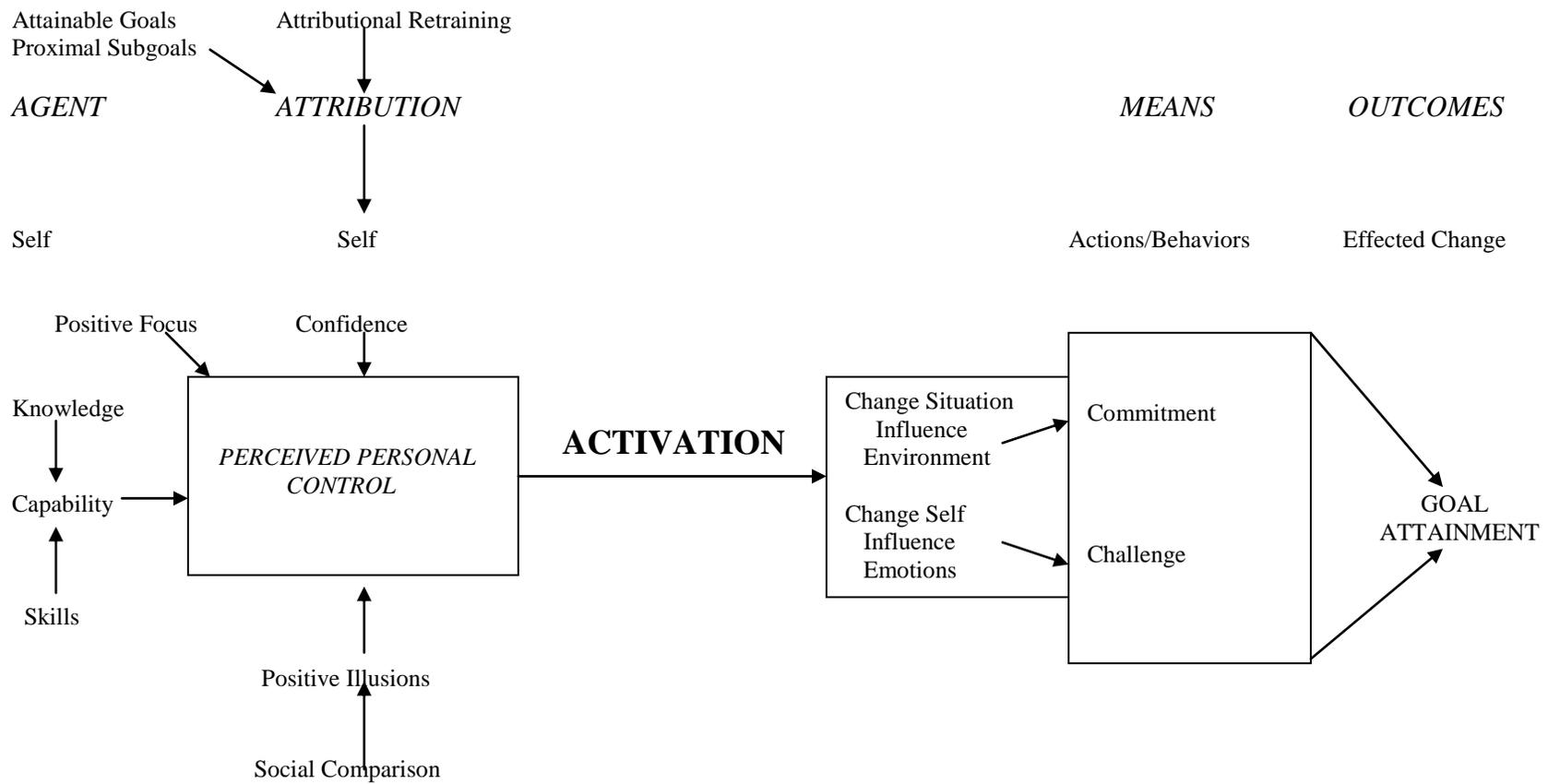


Figure 1: A Model of Activation

APPENDIX G

A Model of Activation (Revised)

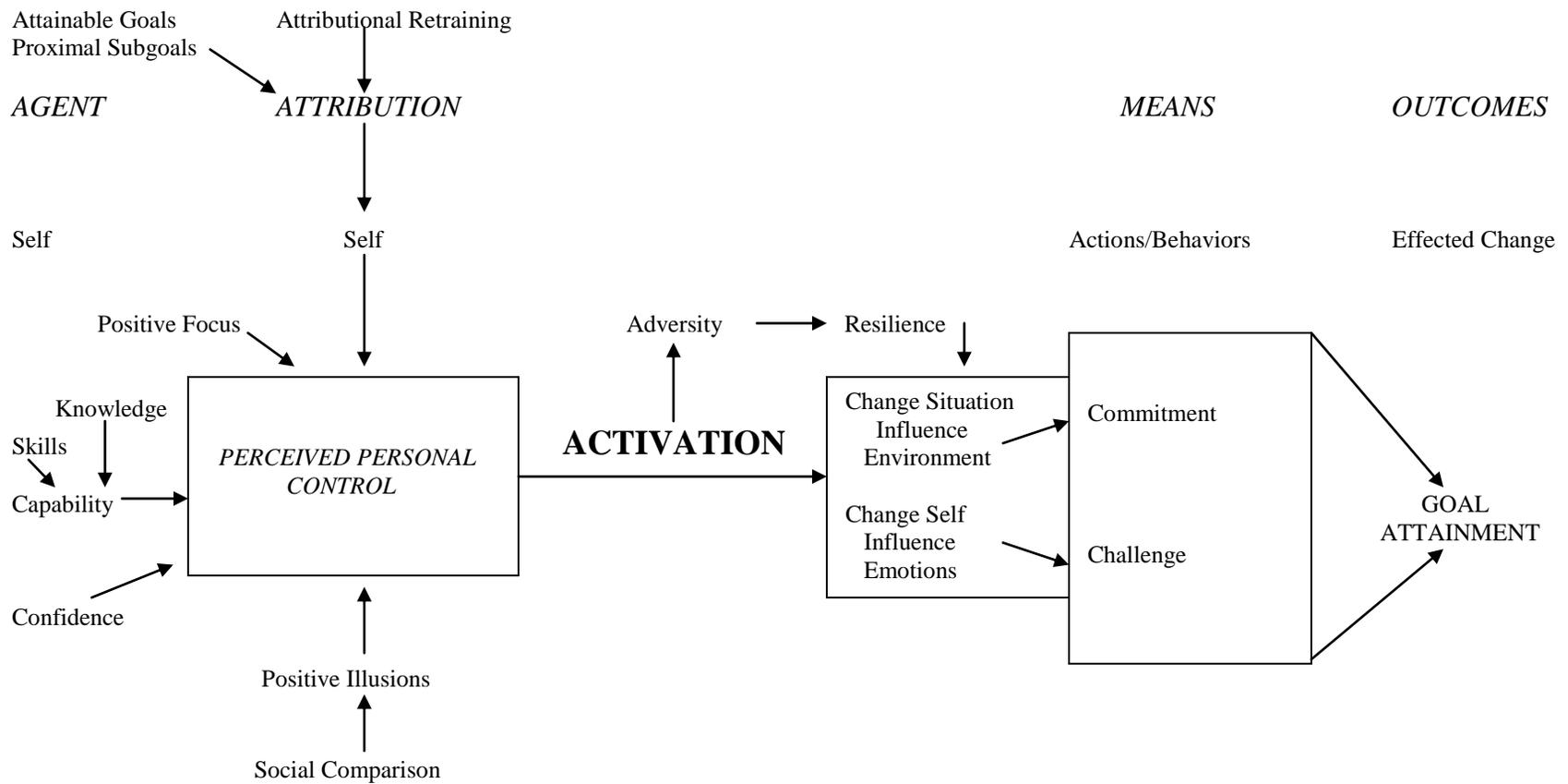


Figure 6: A Model of Activation (Revised)

REFERENCES

- Alfaro-LeFevre, R. (2004). *Critical thinking and clinical judgment: A practical approach*. St. Louis: Saunders.
- Alfaro-LeFevre, R. (2006). Critical thinking indicators (CTIs): 2006 evidence-based version. Available at www.AlfaroTeachSmart.com
- American Association of Colleges of Nursing. (2006). *Nursing shortage fact sheet*. Available at <http://www.aacn.nche.edu/Media/FactSheets/NursingShortage.htm>.
- American Hospital Association. (2006). Taking the pulse: The state of America's hospitals. Washington, DC: Author. Available at www.aha.org.
- Andrew, S. & Vialle, W. (1998). Nursing students' self-efficacy, self-regulated learning and academic performance in science. *The Australian Association for Research in Education*. Available at www.aare.edu.au/98pap/and98319.htm
- Arathuzik, D., & Aber, C. (1998). Factors associated with National Council Licensure Examination – registered nurse success. *Journal of Professional Nursing*, 14(2), 119-126.
- Armor, D.A., & Taylor, S.E. (2003). The effects of mindset on behavior: Self-regulation in deliberative and implemental frames of mind. *Personality and Social Psychology Bulletin*, 29(1), 86-95.
- Aspinwall, L.G., & Taylor, S.E. (1992). Modeling cognitive adaptation: A longitudinal investigation of the impact of individual differences and coping on college adjustment and performance. *Journal of Personality and Social Psychology*, 63(6), 989-1003.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122-146.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist* 44(9), 1175-1184.
- Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control* (8th ed.). New York: W.H.

Freeman.

- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Reviews: Psychology*, 52, 1-26.
- Bandura, A., & Schunk, D.H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, 41(3), 586-598.
- Barkley, T.W., Rhodes, R.S., & Dufour, C.A. (1998). Predictors of success on the NCLEX-RN: Among baccalaureate nursing students. *Nursing & Health Care Perspectives*, 19(3), 132-137.
- Beeman, P.B., & Waterhouse, J.K. (2001). NCLEX-RN performance: Predicting success on the computerized examination. *Journal of Professional Nursing*, 17(4), 158-165.
- Beeson, S.A., & Kissling, G. (2001). Predicting success for baccalaureate graduates on the NCLEX-RN. *Journal of Professional Nursing*, 17(3), 121-127.
- Benishek, L.A., Feldman, J.M., Shipon, R.W., Mecham, S.D., & Lopez, F.G. (2005). Development and evaluation of the revised academic hardiness scale. *Journal of Career Assessment*, 13(1), 59-76.
- Bentley, R. (2006). Comparison of traditional and accelerated baccalaureate nursing graduates. *Nurse Educator*, 31(2), 79-83.
- Bernard, B. (2004). *Turning the corner: From risk to resilience*. Minneapolis: University of Minnesota. Available from www.cce.umn.edu/nrrc.
- Bernard, B., & Marshall, K. (2001). *Competence and resilience research: Lessons for prevention*. Minneapolis: University of Minnesota, Center for the Application of Prevention Technologies.
- Blake, B.F., Valdiserri, J., Neuendorf, K.A., & Nemeth, J. (2006). Validity of the SDS-17 measure of social desirability in the American context. *Personality and Individual Differences*, 40(8), 1625-1636.
- Bodenheimer, T., Wagner, E.H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness: The chronic care model, Part 2. *Journal of the American Medical Association*, 288(15), 1909-1914.
- Campbell, A.R., & Dickson, C.J. (1996). Predicting student success: A 10-year review using integrative review and meta-analysis. *Journal of Professional Nursing*, 12(1), 47-59.

- Carpenito, L.J. (2002). *Nursing diagnosis: Application to clinical practice*. Philadelphia: Lippincott.
- Crow, C.S., Handley, M., Morrison, R.S., & Shelton, M.M. (2004). Requirements and interventions used by BSN programs to promote and predict NCLEX-RN success: A national study. *Journal of Professional Nursing, 20*(3), 174-186.
- Crowne, D.P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting and Clinical Psychology, 24*(4), 349-354.
- Daley, L.K., Kirkpatrick, B.L., Frazier, S.K., Chung, M.L., & Moser, D.K. (2003). Predictors of NCLEX-RN: Success in a baccalaureate nursing program as a foundation for remediation. *Journal of Nursing Education, 42*(9), 390-398.
- DeVellis, R.F. (2003). *Scale development: Theory and applications*(2nd ed.). Newbury Park, CA: Sage.
- DiBartolo, M.C., & Seldomridge, L.A. (2005). A review of intervention studies to promote NCLEX-RN success of baccalaureate students. *Nurse Educator, 30*(4), 166-171.
- Dzurec, L.C., Allchin, L., Engler, A.J., Szarlan, J., Polifroni, E.C., & Brewer, T. (2006). Toward a qualified yes: Personal characteristics of postbaccalaureate nursing students and implementation of the clinical leader role. *Journal of Professional Nursing, 22*(1), 15-22.
- Eddy, L.L., & Epeneter, B.J. (2002). The NCLEX-RN experience: Qualitative interviews with graduates of a baccalaureate nursing program. *Journal of Nursing Education, 41*(6), 273-278).
- Forsterling, F. (1985). Attributional retraining: A review. *Psychological Bulletin, 98*(3), 495-512.
- Frazier, P., Steward, J., & Mortensen, H. (2004). Perceived control and adjustment to trauma: A comparison across events. *Journal of Social and Clinical Psychology, 23*(3), 303-324.
- Frith, K.H., Sewell, J.P., & Clark, D.J. (2005). Best practices for NCLEX-RN readiness preparation for baccalaureate student success. *Computers, Informatics, Nursing, 23*(6), 322-329.
- Giddens, J., & Gloeckner, G.W. (2005). The relationship of critical thinking to performance on the NCLEX-RN. *Journal of Nursing Education, 44*(2), 85-89.
- Haas, R.E., Nugent, K.E., & Rule, R.A. (2004). The use of discriminant function analysis to predict student success on the NCLEX-RN. *Journal of Nursing*

Education, 43(10), 440-446.

- Harvey, V., & McMurray, N. (1994). Self-efficacy: A means of identifying problems in nursing education and career progress. *International Journal of Nursing Studies*, 31(5), 471-485.
- Haynes, T.L., Ruthig, J.C., Perry, R.P., Stupnisky, R.H., & Hall, N.C. (2006). Reducing the academic risks of over-optimism: The longitudinal effects of attributional retraining of cognition and achievement. *Research in Higher Education*, 47(7), 755-779.
- Health Resources and Services Administration (September, 2004). What is behind HRSA's projected supply demand and shortage of registered nurses? Available at <http://bhpr.hrsa.gov/healthworkforce/reports/behindrnprojections/5.htm>
- Hegge, M., Melcher, P., & Williams, S. (1999). Hardiness, help-seeking behavior, and social support of baccalaureate nursing students. *Journal of Nursing Education*, 38(4), 179-182.
- Hibbard, J.H. (2004). Moving toward a more patient-centered health care delivery system. *Health Affairs: Web Exclusive*, VAR133-VAR135.
- Hibbard, J.H., Mahoney, E.R., Stockard, J., & Tusler, M. (2005). Development and testing of a short form of the patient activation measure. *Health Services Research*, 40(6), 1918-1930.
- Hibbard, J.H., & Peters, E. (2003). Supporting informed consumer health care decisions: Data presentation approaches that facilitate the use of information in choice. *Annual Review of Public Health*, 24, 413-433.
- Hibbard, J.H., Stockard, J., Mahoney, E.R., & Tusler, M. (2004). Development of the patient activation measure (PAM): Conceptualizing and measuring activation in patients and consumers. *Health Services Research*, 39(4), 1005-1026.
- Higgins, B. (2005). Strategies for lowering attrition rates and raising NCLEX-RN pass rates. *Journal of Nursing Education*, 44(12), 541-547.
- Hodges, H.F., Keeley, A.C., & Grier, E.C. (2005). Professional resilience, practice longevity, and Parse's theory for baccalaureate education. *Journal of Nursing Education*, 44(12), 548-554.
- Hofstetter, C.R., Sallis, J.F., & Hovell, M.F. (1990). Some health dimensions of self-efficacy: Analysis of theoretical specificity. *Social Science & Medicine*, 31(9), 1051-1056.

- Hunter, A.J., & Chandler, G.E. (1999). Adolescent resilience. *Journal of Nursing Scholarship, 31*(1), 243-247.
- Jacelon, D.S. (1997). The trait and process of resilience. *Journal of Advanced Nursing, 25*, 123-129.
- Jewell, R.D., & Kidwell, B. (2005). The moderating effect of perceived control on motivation to engage in deliberative processing. *Psychology & Marketing, 22*(9), 751-769.
- Judkins, S., Arris, L., & Keener, E. (2005). Program evaluation in graduate nursing education: Hardiness as a predictor of success among nursing administration students. *Journal of Professional Nursing, 21*(5), 314-321.
- Kentucky Board of Nursing. (2007). NCLEX pass rates by nursing program. Available at <http://kbn.ky.gov/education/pon/school/nclex.htm>.
- Kimball, B., & O'Neil, E. (April, 2002). Health care's human crisis: The American nursing shortage. *Health Workforce Solutions for the Robert Wood Johnson Foundation*. Princeton, NJ: The Robert Wood Johnson Foundation.
- Kobasa, S.C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37*(1), 1-11.
- Kobasa, S.C., Maddi, S.R., & Kahn, S. (1982). Hardiness and health: a prospective study. *Journal of Personality and Social Psychology, 42*(1), 168-177.
- Kobasa, S.C., Maddi, S.R., & Puccetti, M.C. (1982). Personality and exercise as buffers in the stress-illness relationship. *Journal of Behavioral Medicine, 5*(4), 391-404.
- Kobasa, S.C., Maddi, S.R., Puccetti, M.C., & Zola, M.A. (1985). Effectiveness of hardiness, exercise and social support as resources against illness. *Journal of Psychosomatic Research, 29*(5), 525-533.
- Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*(3), 543-562.
- Maddi, S.R. (1994). The hardiness enhancing lifestyle program (HELP) for improving physical, mental, and social wellness. *Wellness lecture series*. Oakland, CA: University of California/Healthnet.
- Maddi, S.R. (1999). The personality construct of hardiness: Effects of experiencing, coping, and strain. *Consulting Psychology Journal, 51*(2), 83-94.
- Maddi, S.R. (2004). Hardiness: An operationalization of existential courage. *Journal of Humanistic Psychology, 44*(3), 279-298.

- Marks, R., Allegrante, J.P., & Lorig, K. (2005). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implications for health education practice (Part I). *Health Promotion Practice, 6*(1), 37-43.
- Morrison, S., Free, K.W., & Newman, M. (2006). Do progression and remediation policies improve NCLEX-RN pass rates? *Nurse Educator, 27*(2), 94-96.
- Munro, B.H. (2006). *Statistical methods for health care research*. Philadelphia: Lippincott.
- National Council of State Boards of Nursing (2006a). *NCLEX-RN Examination: Test Plan for the National Council Licensure Examination for Registered Nurses*. Available: www.ncsbn.org
- National Council of State Boards of Nursing. (2006b). *NCLEX examination pass rates*. Available: https://www.ncsbn.org/Table_of_Pass_Rates_2006.pdf.
- National Council of State Boards of Nursing. (2006c). *The NCLEX-RN examination passing standard revised for public safety*. Available: www.ncsbn.org/1090.htm.
- Ofori, R., & Charlton, J.P. (2002). A path model of factors influencing the academic performance of nursing students. *Journal of Advanced Nursing, 35*(5), 507-515.
- Patton, T.J.F., & Goldenberg, D. (1999). Hardiness and anxiety as predictors of academic success in first-year, full-time and part-time RN students. *Journal of Continuing Education in Nursing, 30*(4), 158-167.
- Pearlin, L.I., Menaghan, E.G., Lieberman, M.A., & Mullan, J.T. (1981). The stress process. *Journal of Health and Social Behavior, 22*(4), 337-356.
- Perry, R.P. (2001). Perceived (academic) control and causal thinking in achievement settings. *Canadian Psychology, 44*(4), 312-331.
- Perry, R.P., Hladkyj, S., Pekrun, R.H., Clifton, R.A., & Chipperfield, J.G. (2005). Perceived academic control and failure in college students: A three-year study of scholastic attainment. *Research in Higher Education, 46*(5), 535-569).
- Perry, R.P., Hladkyj, S., Pekrun, R.H., & Pelletier. (2001). Academic control and Action control in the achievement of college students: A longitudinal study. *Journal of Educational Psychology, 93*(4), 776-789.
- Pham, L.B., Taylor, S.E., & Seeman, T.E. (2001). Effects of environmental predictability and personal mastery on self-regulatory and physiological processes. *Personality and Social Psychology Bulletin, 27*, 611-620.
- Plante, T.G., & Boccaccini, M.T. (1997). The Santa Clara strength of religious faith

- questionnaire. *Pastoral Psychology*, 45(5), 375-387).
- Plante, T.G., Vallaes, C.L., Sherman, A.C., & Wallston, K.A. (2002). The development of a brief version of the Santa Clara Strength of Religious Faith Questionnaire. *Pastoral Psychology*, 50(5), 359-368.
- Polit, D.F. & Beck, C.T. (2004). *Nursing research: Principles and methods* (7th ed.). Philadelphia: Lippincott.
- Polit, D.F. & Sherman, R.E. (1990). Statistical power in nursing research. *Nursing Research*, 39 (6), 365-369.
- Polk, L.V. (1997). Toward a middle-range theory of resilience. *Advances in Nursing Science*, 19(3), 1-13.
- Pyrczak, F. (2005). *Evaluating research in academic journals* (3rd ed.). Glendale, CA: Pyrczak Publishing.
- Ratelle, C.F., Vallerand, R.J., Chantal, Y., & Provencher, P. (2004). Cognitive adaptation and mental health: A motivational analysis. *European Journal of Social Psychology*, 54,459-476.
- Richardson, G.E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58(3), 307-321.
- Robbins, S.B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychosocial Bulletin*, 130(2), 261-288.
- Roncoli, M., Lisanti, P., & Falcone, A. (2000). Characteristics of baccalaureate graduates and NCLEX-RN performance. *Journal of New York State Nurses Association*, 31(1), 17-25.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ruthig, J.C., Perry, R.P., Hall, N.C., & Hladkyj, S. (2004). Optimism and attributional retraining: Longitudinal effects on academic achievement, test anxiety, and voluntary course withdrawal in college students. *Journal of Applied Social Psychology*, 34(4), 709-730.
- Sayles, S., Shelton, D., & Powell, H. (2003, November/December). Predictors of success in nursing education. *Journal of the Association of Black Nursing Faculty*, 116-120. Available at http://findarticles.com/p/articles/mi_m0MJT/is_6_14/ai_112905385 .

- Scheffer, B.K., & Rubenfeld, M.G. (2000). A consensus statement on critical thinking in nursing. *Journal of Nursing Education*, 39(8), 352-358.
- Scheier, M.F., & Carver, C.S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4(3), 219-247.
- Scheier, M.F., & Carver, C.S. (1987). Dispositional optimism and physical well-being: The influence of generalized outcome expectancies on health. *Journal of Personality* 55(2), 169-210.
- Scheier, M.F., Matthews, K.A., Owens, J.F., Magovern, G.J., Lefebvre, R.C., Abbott, R.A., & Carver. (1989). Dispositional optimism and recovery from coronary artery bypass graft: The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1024-1040.
- Schiff, E. (2006). Preparing the health workforce. *A national dialogue: The secretary of education's commission on the future of higher education*. Available at <http://www.ed.gov/about/bdscomm/list/hiedfuture/reports/schiff.pdf>.
- Schneider, S.L. (2001). In search of realistic optimism: Meaning, knowledge, and warm fuzziness. *American Psychologist*, 56(3), 250-263.
- Seldomridge, L.A., & DiBartolo, M.C. (2004). Can success and failure be predicted for baccalaureate graduates on the computerized NCLEX-RN? *Journal of Professional Nursing*, 20(6), 361-368.
- Seligman, M. (1998). *Learned optimism: How to change your mind and your life* (2nd ed.). New York: Pocket Books.
- Shapiro, D.H., Schwartz, C.E., & Astin, J.A. (1996). Controlling ourselves, controlling our world: Psychology' role in understanding positive and negative consequences of seeking and gaining control. *American Psychologist*, 51(12), 1213-1230.
- Simpson, E., & Courtney, M. (2002). Critical thinking in nursing education: A literature review. *International Journal of Nursing Practice*, 8(2), 89-98.
- Sinclair, V.G., & Wallston, K.A. (1999). The development and validation of the psychological vulnerability scale. *Cognitive Therapy and Research*, 23(2), 119-129.
- Sinclair, V.G., & Wallston, K.A. (2004). The development and psychometric Evaluation of the brief resilient coping scale. *Assessment*, 11(1), 94-101.

- Siktberg, L.L., & Dillard, N.L. (2001). Assisting at-risk students in preparing for the NCLEX-RN. *Nurse Educator*, 26(3), 150-152.
- Skinner, E.A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, 71(3), 549-570.
- Smith, C.A., Dobbins, C.J., & Wallston, K.A. (1991). The mediational role of perceived competence in psychological adjustment to rheumatoid arthritis. *Journal of Applied Social Psychology*, 21(15), 1218-1247.
- Smith, M.S., Wallston, K.A., & Smith, C.A. (1995). The development and validation of the perceived health competence scale. *Health Education Research: Theory & Practice*, 10(1), 51-64.
- Stark, M.A., Feikema, B., & Wyngarden, K. (2002). Teaching strategies: Empowering students for NCLEX success: Self-assessment and planning. *Nurse Educator*, 27(3), 103-105).
- Strahan, R., & Gerbasi, K.C. (1972). Short, homogeneous versions of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology*, 28(2), 191-193.
- Steunkel, D.L. (2006). At-risk students: Do theory grades + standardized examinations = success? *Nurse Educator*, 31(5), 207-212.
- Stober, J. (2001). The social desirability scale-17 (SDS-17): Convergent validity, discriminant validity and relationship with age. *European Journal of Psychological Assessment*, 17(3), 222-232.
- Sutton, G.W., McLeland, K.C., Weak, K.L., Cogswell, P.E., & Miphouvieng, R.N. (2007). Does gender matter? Relationship of gender, spousal support, spirituality, and dispositional forgiveness to pastoral restoration. *Pastoral Psychology*, 55, 645-663.
- Taylor, S.E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161-1173.
- Taylor, S.E., & Armor, D.A. (1996). Positive illusions and coping with adversity. *Journal of Personality*, 64(4), 873-898.
- Taylor, S.E., & Brown, J.D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103(2), 193-210.
- Taylor, S.E., & Gollwitzer, P.M. (1995). Effects of mindset on positive illusions. *Journal of Personality and Social Psychology*, 69(2), 213-236.

- Taylor, S.E., Lerner, J.S., Sherman, S.K., Sage, R.M., & McDowell, N.K. (2003). Are self-enhancing cognitions associated with healthy or unhealthy biological profiles? *Journal of Personality and Social Psychology*, 85(4), 605-615.
- Wagner, E.H., Austin, B.T., Davis, C., Hindmarsh, M., Schaefer, J., & Bonomi, A. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs*, 20(6), 64-78.
- Wagner, L.J., Hilker, K.A., Hepworth, J.T., & Wallston, K.A. (July 8, 2008). *AIDS and Behavior*. Available at <http://www.springerlink.com.proxy.library.vanderbilt.edu/content/d584614x125w104g/fulltext.pdf>.
- Walker, J. (2001). *Control and the psychology of health*. Philadelphia: Open University Press.
- Wallston, K.A. (2001). Conceptualization and operationalization of perceived control. In Baum, A., Revenson, T. & Singer, J.E. (Eds.) *The handbook of health psychology* (pp. 79-58). Mahwah, NJ: Erlbaum.
- Wallston, K.A., & Hilker, K.A. (2008). *Correlates of cognitive adaptability in persons with rheumatoid arthritis*. Unpublished manuscript.
- Wallston, D.A., Wallston, B.S., Smith, S., & Dobbins, C. (1987). Perceived control and health. *Current Psychological Research*, 6, 5-25.
- Weisz, J.R., Rothbaum, F.M., & Blackburn, T.C. (1984). Standing in and standing out: The psychology of control in America and Japan. *American Psychologist*, 39(9), 955-969.
- Wendt, A. (1998). NCLEX-RN: Passing standard. *Nurse Educator*, 23(1), 25.
- Yin, T., & Burger, C. (2003). Predictors of NCLEX-RN success of associate degree nursing graduates. *Nurse Educator*, 28(5), 232-236.