THE EFFECT OF NURSING FACULTY PRESENCE ON STUDENTS' LEVEL OF ANXIETY, SELF-CONFIDENCE, AND CLINICAL PERFORMANCE DURING A CLINICAL SIMULATION EXPERIENCE

BY

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Submitted to the graduate degree program in Nursing and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Date defended: April 6, 2012

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Date approved: April 17, 2012

Abstract

Nursing schools design their clinical simulation labs based upon faculty's perception of the optimal environment to meet the students' learning needs, other programs' success with integrating high-tech clinical simulation, and the funds available. No research has been conducted on nursing faculty presence during a summative evaluation. The faculty's decision of where to position themselves during a summative evaluation should not be based on convenience, preference, or tradition but on evidence from research. The purpose of this study, partially guided by the Nursing Education Simulation framework, was to determine the effect of nursing faculty presence on students' level of state anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. Data were collected for the quasi-experimental two group pretest-posttest study from a total of 91 participants during the Fall 2011 and Spring 2012 semesters at a large university in the north central region of the United States. Five research questions were posed and analyzed using various statistical procedures. The results indicated there were no statistically significant differences in the level of state anxiety, self-confidence, clinical performance and satisfaction of nursing students who were in the experimental group (Group A) and those in the control group (Group B). Results indicated, however, that there was a statistically significant difference in change in the state anxiety scores from pretest to posttest by group. The nursing faculty's presence in the simulation lab

during a summative evaluation of a simulation experience resulted in a significant rise in the state anxiety level of the nursing students in the experimental group, yet this didn't impact the students' overall clinical performance during the clinical simulation experience. In conclusion, the results provided evidence to support nursing faculty positioning themselves in the control room or at a remote viewing location for a summative evaluation in order to avoid increasing students' level of state anxiety.

Acknowledgements

I would like to thank my committee members for their guidance, support, time, and patience throughout my dissertation research. It seems I will start and end the doctoral program with Dr. Karen Wambach, who served as my faculty advisor and the chair of my dissertation committee. She has been a wonderful mentor during the entire doctoral program and someone I will strive to emulate as I continue to grow as a nursing educator and researcher. I extend sincere gratitude to Dr. Wanda Bonnel who shared her extensive knowledge of nursing education and clinical simulation as well as Dr. Kathy Fletcher who shared her expertise in clinical simulation and research. I would like to thank Dr. Margaret Kraft who opened many doors at Loyola University Chicago and continues to assist with extending my network within the university. A special thanks to Dr. Omar Ahmad and Dr. Wen Liu who served as the fifth committee members and provided valuable viewpoints from individuals outside of nursing as well as research knowledge.

God has once again given me the opportunity to pursue a dream to further my education. I thoroughly enjoyed the journey and I am eternally grateful for the love and support I received from my family and friends during the process.

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Chapter One: Introduction

Problem and Significance

Undergraduate nursing programs across the United States have been striving to expand and improve the nursing students' experience in the clinical simulation lab by incorporating the use of high-fidelity patient simulators. Nursing schools design and build their clinical simulation labs based upon the faculty's perception of the optimal environment to meet the students' learning needs, other nursing programs' success with integrating high-tech clinical simulation, and the funds available for the project. The cost of building a clinical simulation lab is estimated to be $200-$250 per square foot excluding equipment and supplies, therefore available funds is often a major deciding factor in the size and type of clinical simulation lab that is built (N. Coker, personal communication, June 21, 2010).

Nursing leaders in simulation have provided detailed descriptions of how to set up a clinical simulation lab. For example, Spunt (2007) suggested a separate control room approximately 150 square feet in size be placed adjacent to a 1-2 bed simulation lab. It is suggested that the two rooms be separated by a one-way mirror so that nursing faculty will have a full view of the simulation area. A control room houses the audio and visual equipment along with high-tech equipment for the high-fidelity patient simulator, which decreases noise level in the simulation room. If the scenario being used during the clinical simulation

experience calls for the high-fidelity patient simulator to speak and interact with the students, the person providing the voice for the high-fidelity patient simulator will remain out of the students' sight in the control room. The control room within a clinical simulation lab has a distinct purpose and, if the funds are available, should logically be incorporated into the plans when building or remodeling a clinical simulation lab. The addition of the control room provides a choice to the nursing faculty as to where they should be present during a summative evaluation. Not all clinical simulation labs have a control room so in those situations the nursing faculty do not have a choice and are present in the room during the summative evaluation. Gaining support for "making best choices about nursing faculty presence" was the focus of this study.

Nursing faculty have close contact and interaction with the nursing students in the simulation room during formative teaching and evaluation. Yet nursing faculty are provided with little or no direction from nursing simulation leaders on where nursing faculty should position themselves during a summative evaluation. Nursing faculty could be present in the simulation room during the clinical simulation experience while conducting the summative evaluation or could observe through the one-way mirror in the control room to conduct the summative evaluation. No prior research has been conducted on nursing faculty presence in the simulation room or in the control room. The nursing faculty's decision of where to position themselves during a summative evaluation should

not be based on convenience, preference, or tradition but on evidence from research.

There was no evidence from published research on the optimal environment for nursing students in regard to faculty presence during a summative evaluation in the clinical simulation lab and how faculty presence affects the students' anxiety level, self-confidence, or clinical performance. Does the nursing faculty presence during a summative evaluation in the clinical simulation lab positively or negatively affect student anxiety level, self-confidence, and clinical performance? Does the separation of nursing faculty and nursing students positively or negatively affect student anxiety level, self-confidence, and clinical performance during a summative evaluation?

The findings from this study have laid the foundation of nursing education research on nursing faculty presence within the clinical simulation lab. If evidence was found that the presence of nursing faculty during a summative evaluation in the clinical simulation lab hindered students, then there would be a greater need for nursing programs to generate funding to allow for a control room to be included in the building or remodeling plans of a clinical simulation lab. If evidence was found that the presence of nursing faculty in the clinical simulation lab had a positive effect on the students, then control rooms would continue to serve the purpose of housing the audio and visual equipment, support equipment for the simulator, and the operator but would not serve as a viewing place for

nursing faculty. If evidence was found that the presence of nursing faculty in the clinical simulation lab had no effect on the students, nursing faculty could make the decision of where to position themselves based on their preference with supporting evidence that their presence or lack of presence in the simulation lab does not affect the students' anxiety level, self-confidence, and/or clinical performance. It was the researcher's intent that by the conclusion of this study nursing faculty would know that where they position themselves during a summative evaluation in the clinical simulation lab was based on empirical evidence.

Purpose

A review of the literature revealed several research studies which have investigated nursing students' self-confidence and/or clinical performance during a clinical simulation experience, but there was no quantitative research found that specifically focused on nursing students' level of anxiety or referenced nursing faculty presence during these experiences (Alinier, Hunt, & Gordon, 2004; Brannan, White, & Bezanson, 2008; Henneman & Cunningham, 2005; Hicks, Coke, & Li, 2009; Hravnak, Beach, & Tuite, 2007; Scherer, Bruce, Graves, & Erdley, 2003; Spunt, Foster, & Adams, 2004). The purpose of the quasi-experimental study was to determine the effects of nursing faculty presence on students' level of anxiety, self-confidence, and clinical performance during a summative evaluation clinical simulation experience. The nursing students'

perceptions of their level of anxiety and self-confidence along with the nursing faculty summative evaluations of the students' clinical performance were investigated to determine if there was a difference in these parameters based on nursing faculty presence or lack of presence in the simulation room during the clinical simulation experience.

Research Questions

1. After controlling for trait anxiety, what is the difference in the level of state anxiety, self-confidence, and clinical performance of nursing students who were evaluated by a nursing faculty member present in the simulation room and those who were evaluated by a nursing faculty member outside of the simulation room through a one-way mirror during a summative evaluation?
2. After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is present in the simulation room completing a summative evaluation during the clinical simulation experience?
3. After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is not present in the

simulation room during the clinical simulation experience but is observing and completing a summative evaluation through the one-way mirror?

4. Is there a difference between students in the experimental group (Group A) and students in the control group (Group B) in the amount of change that occurs from pretest to posttest in state and trait anxiety scores?
5. What is the effect of nursing faculty presence on the students' satisfaction level during a summative evaluation of a clinical simulation experience?

Conceptual Framework

The Nursing Education Simulation Framework (NESF) was developed and tested during the National League for Nursing (NLN)/Laerdal Simulation Study (Jeffries, 2005). See Figure 1 for a depiction of this framework that is reprinted with permission from the National League for Nursing. The NESF provided a useful framework to guide the development and implementation of simulated learning experiences as well as the evaluation of learning outcomes within a clinical simulation lab. The framework consists of five components: the teacher, the student, educational practices, simulation design characteristics, and outcomes. Each component was operationalized into specific variables which guided the research study.

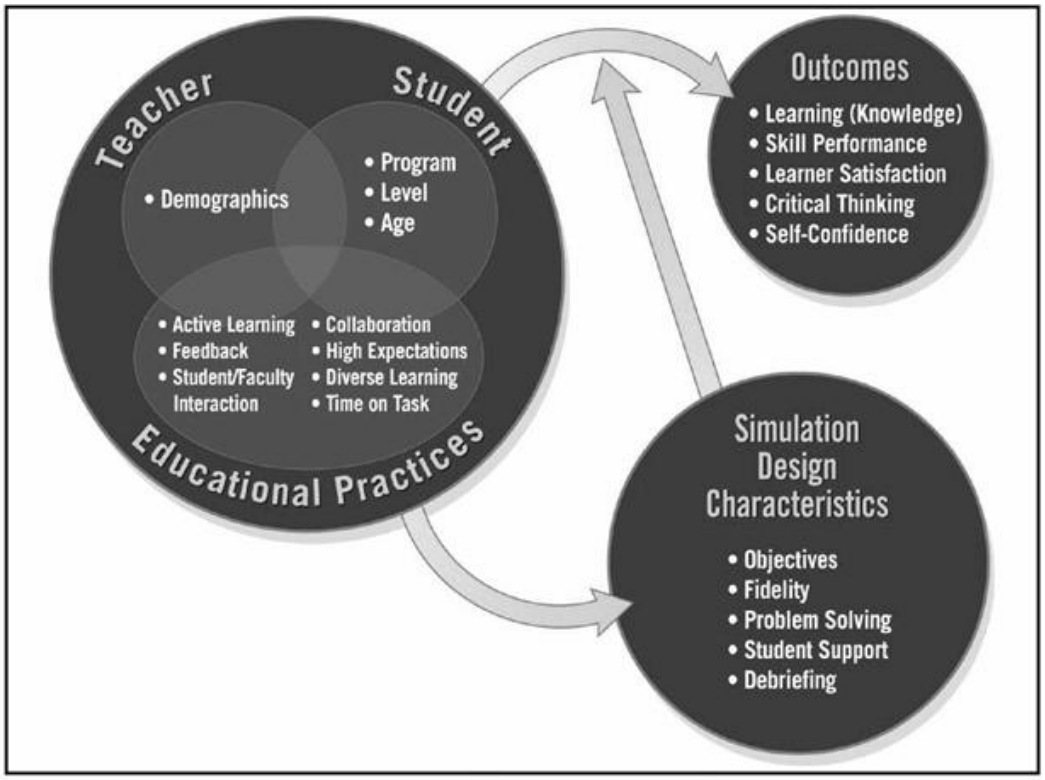

Figure. The Nursing Education Simulation Framework. Reprinted with permission from the National League for Nursing.

Primary components of the framework are faculty and students working together in the clinical simulation lab using best educational practices. Best educational practices are guided by Chickering and Gamson's (1987) seven principles for good practice in undergraduate education along with continued research on clinical simulation in nursing education. Within the NESF, the teacher, student, and educational practice components overlap one another yet work together to impact not only the outcomes of the simulation experience but also the simulation design characteristics. The simulation design characteristics influence the action of faculty, student, and educational practices on the

outcomes. The outcomes component is the end product of the knowledge learned, psychomotor skills performed, critical thinking skills practiced, confidence gained, and/or student satisfaction (Jeffries, 2007).

The NESF is based on constructivism which is congruent with adult learning theories and current changes in nursing education. Constructivism is the belief that "learning is a process of constructing meaning; it is how people make sense of their experience" (Merriam & Caffarella, 1999, p. 261). The student is transformed during a learning experience and new knowledge is built upon prior knowledge. An assumption of this framework and the constructivism perspective is that the student has the internal motivation to learn and is self-directed in the learning process. The faculty's role in constructivism is to facilitate learning through experiences; often the same role played by faculty in clinical simulation labs. Experiential learning which occurs in the clinical simulation lab is one of the primary manifestations in adult learning for the constructivist. The NESF provided a solid framework to create experiential learning for students, which is what nursing educators are striving for with the changes in nursing education. This framework is discussed further in Chapter Two.

Significance of the Research

The NLN called for a major overhaul in nursing education stating "dramatic reform and innovation in nursing education (is expected) to create and shape the future of nursing practice" based on nursing education research (NLN

Board of Governors, 2003, p. 1). Over the past decade, the NLN produced an excellence in nursing education model along with excellence initiatives encompassing the full scope of the discipline of nursing. The National Council of State Boards of Nursing listed "innovations in nursing education and clinical" such as clinical simulation as a research priority for 2009-2012 (National Council of State Boards of Nursing, 2009, p. 4). Innovation and advances in technology have allowed nursing educators to integrate simulation into nursing education yet educators may be challenged by the speed at which technology is advancing and changing education. High-fidelity clinical simulation assists the teachers with creating a significant learning experience for the student that is focused on the students' learning process and stimulates critical thinking in the student.

The study was in response to the call for action from the NLN and National Council of State Boards of Nursing to use state-of-the-art technology in research to further develop the science of nursing education. This study was significant because it was the first known research study to explore the effects of nursing faculty presence on nursing students during a clinical simulation experience. This study provided evidence about how nursing faculty presence or lack of presence influences nursing students' level of anxiety, self-confidence, and clinical performance during a summative evaluation of a medical/surgical clinical simulation experience. By identifying the effect of nursing faculty presence, nursing faculty would know whether to remain present in the simulation

room during a summative evaluation of a medical/surgical clinical simulation experience or observe and evaluate the students through the one-way mirror in the control room.

Definition of Terms

The following terms are defined for the context of this study:

1. Anxiety: "A mood, a feeling, an emotional response, a symptom, a syndrome, or an illness with course, prognosis" (Spielberger & Sarason, 1975, p. 6).
2. Clinical performance: the students' ability to provide safe competent care to a high-fidelity patient simulator during a clinical simulation experience.
3. Clinical simulation: "to replicate some or nearly all of the essential aspects of a clinical simulation so that the situation may be more readily understood and managed when it occurs for real in clinical practice" (Morton, 1995, p. 76).
4. Debriefing: a set period of time immediately following a clinical simulation experience in which nursing students and faculty engage in a discussion and reflection on the prior scenario to develop critical thinking skills and enhance the transfer of knowledge from the academic setting to the bedside (Jeffries, 2005; Wickers, 2010).
5. Faculty presence: the teacher is physically present in the room with the student.

6. Formative evaluation: an assessment by nursing faculty that occurs during a learning activity to improve overall student performance (Bourke & Ihrke, 2009).
7. High-fidelity patient simulator: "a computerized full-body mannequin that is able to provide real-time physiological and pharmacological parameters of persons of both genders, varying ages, and with different health conditions" (Nehring, Ellis, & Lashley, 2001, p. 195).
8. Self-confidence: "a sense of one's power and ability to carry out a desired task or function" (Brown & Chronister, 2009, p. 47-48).
9. State Anxiety: "subjective, consciously perceived feelings of tension, apprehension, and nervousness accompanied by or associated with activation of the autonomic nervous system" (Spielberger & Sarason, 1975, p. 137).
10. Summative evaluation: a written assessment by nursing faculty of a student's clinical performance based on learning objectives (Bourke & Ihrke, 2009).
11. Trait Anxiety: the "relatively stable individual differences in anxiety proneness, i.e., the differences among people in the disposition or tendency to perceive a wide range of situations as threatening and to respond to these situations with differential elevations in state anxiety" (Spielberger & Sarason, 1975, p. 137).

Assumptions

The following were assumptions related to the research:

1. Each participant was honest when answering questions on the self-evaluation questionnaires.
2. Each participant desired to perform his/her best during a clinical simulation experience.
3. Each participant was prepared for the clinical simulation experience by completing preparation activities and readings as assigned by nursing faculty.
4. Each participant had the ability to read, speak, and understand the English language at the college level.
5. The nursing faculty followed research study protocol and did not offer any verbal or nonverbal cues to the students while in their presence during the clinical simulation experience.
6. The high-fidelity mannequins performed as designed for each clinical simulation experience.

Summary

The problem of a gap in the literature on faculty presence during summative evaluations of a clinical simulation experience was identified along with the significance of the problem. There was no empirical evidence on where nursing faculty should position themselves during a summative evaluation of a

clinical simulation experience. The purpose of this research study and the conceptual framework were addressed within this chapter. The effect of nursing faculty presence on students' anxiety level, self-confidence, and clinical performance during a clinical simulation experience was not known. Five research questions were presented to assist with closing the gap in the literature on nursing faculty presence. Definitions of research terms and assumptions pertinent to the study were also presented. A review of the literature relevant to this study, as well as the study framework description, will be provided in Chapter Two.

Chapter Two: Review of the Literature

Introduction

This chapter contains a review of the literature pertaining to research in clinical simulation, faculty presence in simulation, and the three dependent variables of this study anxiety level, self-confidence, and clinical performance. How simulation has evolved over the course of the past century will be presented as well as why this knowledge is important. Clinical simulation research studies will be presented in this chapter that explored student anxiety level, self-confidence, knowledge and clinical performance. The link between the conceptual framework and the study variables is described. The chapter concludes with identification of gaps in the literature about nursing faculty presence in the clinical simulation lab which supports the need for this study.

History of Simulation

The history of simulation should be explored and understood for multiple reasons. History reveals lessons from the past that one should learn from so that time and resources are not wasted in the present and future. Exploring the history of what has been done in simulation will assist with growing one's own knowledge base while also identifying gaps in the overall knowledge base of the field. Once gaps in the knowledge base are identified, future research can be designed to fill the gaps therefore advancing nursing science. The discipline of

nursing can study the simulation history of the military and/or medicine to learn how other disciplines enhanced patient safety and/or clinical education.

Military aviation has led the way in simulation since the creation of the "Antoinette Apprenticeship Barrel" to teach military personnel how to fly before World War I. By the mid 1930's, electronic flight simulators were developed to assist in the training of military pilots. Creativity, innovation, and technology continued to inspire inventors as they strived to make the simulated experience as close to the real experience as possible. By the late 1950's, the "Comet IV" simulator was created and it was the first flight simulator built off the ground with a pitch motion system to allow the simulator to move as it would in a real aircraft. While there continues to be advances in technology today, historians believe the modern form of flight simulators was created by the late 1960's (Rolfe & Staples, 1997).

The disciplines of nursing and medicine observed how aviation and the military were gaining empirical evidence on the benefits of simulation to increase one's cognitive and psychomotor skills along with confidence to master a complex situation (Scherer, Bruce, Graves, & Erdley, 2003). In the healthcare setting, clinical simulation "replicate(s) some or nearly all of the essential aspects of a clinical situation so that the situation may be more readily understood and managed when it occurs for real in clinical practice" (Morton, 1995, p. 76). By the late 1950's, nursing programs were using a low-fidelity mannequin by the

name of "Mrs. Chase" to allow students to practice psychomotor skills (Nehring, Lashley, & Ellis, 2001). "Harvey" was the first full-sized mannequin with heart and lung sounds and was created by Dr. Michael Gordon and introduced into medical schools in the late 1960's (Issenberg & Scalese, 2008). The first computerized simulation mannequin "Sim 1" was created to be used in schools of anesthesiology (Gaba & DeAnda, 1988).

Technology in simulation has continued to advance at rapid speeds with high-fidelity simulators introduced into nursing education in the 1990's. There is no national database that documents the number of nursing programs across the United States, or within a specific state, that have high-fidelity clinical simulation labs, how their labs are designed, and/or used. The Simulation Innovation Resource Center developed by the NLN has set up a website where institutions with simulation can voluntarily provide information about their simulation lab and be added to a map of simulation centers around the globe. Due to the voluntary nature of this list, it is far from complete listing only two clinical simulation centers within the state of Illinois (Simulation Innovation Resource Center, 2011).

Two private companies, Medical Education Technologies (METI) and Laerdal Medical, manufacture high-fidelity simulators for use around the globe. METI sold their first high-fidelity simulator in 1998 and has since placed high-fidelity simulators in over 430 colleges and universities across the United States (S. Hahn, personal communication, June 16, 2010). Laerdal Medical has placed

464 high fidelity simulators in over 265 educational institutions in the state of Illinois alone since its first high-fidelity simulator was introduced in 2000 (J. Elliott-Yates, personal communication, June 17, 2010). High-fidelity simulators are available and accessible to nursing education but the question still remains how nursing education has integrated the high-fidelity simulators into nursing curricula.

Research in Clinical Simulation

The largest and most comprehensive research study involving clinical simulation was conducted by the NLN and Laerdal Medical. The project titled "Designing and Implementing Models for the Innovative Use of Simulation to Teach Nursing Care of Ill Adults and Children: A National, Multi-Site, Multi-Method Study" was conducted from June 2003 to May 2006. Nursing students in eight nursing programs across the United States were involved in this project that began with a pilot study (N = 395). Based on the pilot study findings, the researchers developed a second study to compare nursing students' (N = 403) learning outcomes based on which type of simulated learning experience they were given (low-fidelity, high-fidelity, or case study). Findings from the second study provided the basis for a third study to compare the use of high-fidelity and case study simulation as a teaching method with nursing students (N = 110). The results demonstrated that clinical simulation provided a safe environment in which to maximize a student's learning experience. The NLN/Laerdal Medical

study yielded a conceptual framework and three measurement tools with support for reliability and validity (Jeffries, 2007).

Research in the area of clinical simulation has greatly increased since the NLN/Laerdal Medical study. Robertson (2006) discovered a boost in student satisfaction following high-fidelity clinical simulation. Bambini, Washburn, and Perkins (2009, p. 81) studied the effects of low, medium, and high-fidelity clinical simulation as teaching methods on nursing students' self-efficacy ($N = 112$) and found a significant increase in overall self-efficacy ($p < .01$) when clinical simulation was used. Kameg, Clochesy, Mitchell, and Suresky (2010) studied the impact of high-fidelity human simulation on self-efficacy of communication skills ($N = 38$) and found the high-fidelity simulation experience did statistically improve the participants' self-efficacy of communication skills.

Sears, Goldsworthy, and Goodman's (2010) descriptive study ($N = 54$) provided support for the use of clinical simulation in undergraduate nursing education to decrease the number of medication errors made by nursing students. Lasater (2007a) studied the effects of high-fidelity clinical simulation on nursing students' clinical judgment ($N = 39$). Results of Lasater's qualitative study supported that simulation assists in the transformation of knowledge from the classroom to the bedside. Lasater's (2007b) continued research eventually lead to the development of a clinical judgment rubric.

Anxiety

Spielberger has studied human anxiety since the 1950's. He defined the concept of anxiety, which had not previously been done; identified and defined the sub-concepts of state and trait anxiety; and developed Spielberger's State-Trait Anxiety Framework. Spielberger defined anxiety as "a mood, a feeling, an emotional response, a symptom, a syndrome, or an illness with course, prognosis" (Spielberger & Sarason, 1975, p. 6). Spielberger defined state anxiety as the "subjective, consciously perceived feelings of tension, apprehension, and nervousness accompanied by or associated with activation of the autonomic nervous system" and trait anxiety as the "relatively stable individual differences in anxiety proneness, i.e., the differences among people in the disposition or tendency to perceive a wide range of situations as threatening and to respond to these situations with differential elevations in state anxiety" (Spielberger & Sarason, 1975, p. 137).

Spielberger collaborated with colleagues on multiple research studies focusing on how anxiety affected the process of learning, students' academic achievement, and the physical and psychological reactions students experience with anxiety (Spielberger, 1966; Spielberger & Sarason, 1975). Together with his colleagues, the State-Trait Anxiety Inventory (STAI) was developed as an empirical measure of one's level of state and trait anxiety (Spielberger & Sarason, 1975).

Torrop (1939) conducted a qualitative descriptive study to investigate how often nursing students sought out guidance, whom they sought guidance from, and the areas in which they requested guidance. Nursing students (N = 278) from 10 nursing programs kept a journal for one month and documented feelings such as, "worry over examinations", "not sufficient time for study", "fear of asking questions", "uncertainty", "dread of state board examinations", "fear of speaking before a group", and "fatigue is constant" (p. 181). Although the term anxiety was not used, the statements made by the nursing students in their journals exemplify state anxiety as defined by Spielberger several years later.

Researchers continue to study anxiety and believe the high stress academic environment may lead students to experience high levels of anxiety that can then impact the student's academic performance (Childre & Martin, 1999; Godbey & Courage, 1994; Stephens, 1992). Beddoe and Murphy (2004), Brown and Schiraldi (2004), Heaman (1995), and Russler (1991) conducted research studies on how to decrease anxiety in the academic setting, yet few published research studies could be found that specifically studied anxiety related to clinical simulation experiences and/or the clinical simulation lab (Bremner, Abuddell, Bennett, & VanGeest, 2006; Conejo, 2009).

Bremner, Aduddell, Bennett, and VanGeest (2006) conducted a mixed method research study exploring the use of human patient simulators with beginning baccalaureate nursing students (N = 56). They explored student

perceptions of how the simulation experience affected student learning, comfort, confidence, stress, and anxiety. Two qualitative questions focused on the concepts of stress and anxiety by asking if the clinical simulation experience helped relieve stress or decrease anxiety levels on the first day of taking care of real patients at a hospital. The authors offered no explanation as to how they separated the two concepts of stress and anxiety.

Bremner, et al. (2006) found that over 60% of the nursing students felt more self-confidence after they participated in the research study and almost half of the participants reported the clinical simulation experience decreased their feelings of stress about the first day of clinicals. The qualitative findings supported the quantitative findings with students reporting increased confidence related to their abilities and decreased anxiety about the upcoming clinical rotation. The authors recommended best practices in using human patient simulators that are congruent with the Nursing Education Simulation Framework.

Conejo (2009) conducted a mixed method study on nursing faculty (N = 12) and associate degree nursing students' (N = 140) perceptions in high fidelity simulation clinical simulation experiences. One theme that emerged during the qualitative analysis was surveillance. Students reported increased anxiety and pressure when they were watched by nursing faculty from the one-way mirror in the control room during a clinical simulation experience. This finding of the

students' "dislike" of being observed has not been explored in more recent research and supports the need for further investigation in this proposed study.

Self-Confidence

Self-Confidence is defined as "a sense of one's power and ability to carry out a desired task or function" (Brown & Chronister, 2009, p. 47-48). Related to the concept of self-confidence and clinical simulation, nursing faculty have noted anecdotal evidence that clinical simulation enhanced students' self-confidence (Bambini, Washburn, & Perkins, 2009; Spunt, Foster, & Adams, 2004). Multiple research studies have found that students reported an increase in self-confidence after participating in a high-fidelity clinical simulation experience (Henneman & Cunningham, 2005; Hravnak, Beach, & Tuite, 2007; Scherer, Bruce, Graves, & Erdley, 2003). Registered nurses as well as nursing students have been studied in relation to self-confidence after training with human patient simulations. Wolf and Gantt (2008) found that both new and seasoned nurses reported an increase in their self-confidence after the experience.

Smith and Roehrs (2009) conducted a descriptive, correlational study exploring the effects of a high-fidelity clinical simulation experience with junior level baccalaureate nursing students enrolled in a medical/surgical course (N = 68). The students were divided into groups of four to participate in a clinical simulation experience that involved physical assessment, medication administration, and the deterioration of patient condition requiring the students to

call for additional professional assistance. The students completed the NLN's Student Satisfaction and Self-Confidence in Learning tool after the clinical simulation experience and the researchers reported high overall mean scores (4.5 with a SD of .5 for satisfaction and 4.2 with a SD of .4 for self-confidence) that suggested the nursing students were satisfied and self-confident following their participation in the clinical simulation experience. Although, the researchers conducted separate data analyses to determine if the mean satisfaction and self-confidence scores were dependent on the amount of prior nursing-related experience reported by the student, there were no statistically significant differences noted for satisfaction or self-confidence based on experience. The researchers also found that specific simulation design characteristics (objectives and problem solving) significantly correlated with the students' overall satisfaction and self-confidence (Smith & Roehrs).

Bambini, Washburn, and Perkins (2009) conducted a pretest-posttest mixed method research study with 112 undergraduate nursing students to explore the effectiveness of clinical simulation as a teaching method. The students were placed in groups of four then asked to participate in eight simulation stations involving postpartum and newborn assessment over a three hour time period. Quantitative results showed significant increases in students' self-confidence levels as measured by a researcher developed instrument that had support for content validity ($p < .01$). Three themes emerged from the qualitative component

of the study: communication, confidence, and clinical judgment. Students reported the simulation experience enhanced their skills in all three areas, providing support for the quantitative findings of the study (Bambini et al.).

Schoening, Sittner, and Todd (2006) conducted a mixed method research study to explore students' perceptions of a preterm labor clinical simulation experience as a method of instruction with 60 junior level baccalaureate nursing students. The students went through four phases: orientation, participant training, simulation operations, and participant debriefing. The authors reported that a clinical instructor would be present in the clinical simulation room during the clinical simulation experience conducting formative evaluations. The students completed posttest quantitative questionnaires developed by the authors as well as reflective clinical journals.

The qualitative data analysis revealed students were "gaining confidence" and becoming "more comfortable" along with their reports of increased critical thinking, knowledge, satisfaction, communication, and a sense of preparedness (Schoening et al., 2006, p. 256). The quantitative questionnaire contained ten items using a rating scale of 1 (strongly disagree) to 4 (strongly agree) to determine how well the objectives were met as well as the levels of self-confidence and satisfaction. Weaknesses were noted within this study. The researchers reported only having established construct validity for the quantitative instrument. They also reported missing data from students either not completing

the form or not completing every question on the instrument but didn't reveal the extent of missing data. At the conclusion of the study, the researchers determined the quantitative results reported students' perceptions of the simulation experience increased their overall confidence and satisfaction levels. The qualitative findings supported the quantitative evidence.

Jarzemsky and McGrath (2008) conducted a quasi-experimental study with junior level baccalaureate nursing students to explore the effects of low fidelity clinical simulation on the students' self-confidence, stress levels, ability, and critical thinking ($N = 85$). The 20-item instrument used in this study was developed by the researchers. Content validity was supported by a panel of experts and reliability supported with a Cronbach's alpha of .91. The most significant statistical change from pretest to posttest was in the area of increased self-confidence after participation in a clinical simulation ($p < .01$). Jarzemsky and McGrath used a formative evaluation with the nursing faculty present at each low-fidelity simulation station the students went. The variables and sample population used by Jarzemsky and McGrath are very similar to the proposed study.

Clinical Performance

Hicks, Coke, and Li (2009) conducted a quantitative pilot study ($N = 58$) to explore the effect of high-fidelity simulation on undergraduate nursing students' knowledge, clinical performance, and self-confidence. Three groups

were used for the study with the first group going through 30 hours of a critical care clinical experience with a preceptor and no simulation; the second group going through 30 hours of simulation with no clinical experience; and the third group receiving a combination of simulation (15 hours) and clinical (15 hours) experience. Researchers found the students who received simulation experience whether in the second or third group reported a statistically significant increase in self-confidence levels as measured by a 12-item instrument developed by the researchers. Reliability for this instrument was supported with Cronbach's alpha on the pretest of .93 and .96 for the posttest. In this study researchers found there was no statistical difference between the three groups for knowledge and clinical performance.

Radhakrishnan, Roche, and Cunningham (2007) implemented a quasi-experimental pilot study with senior level baccalaureate nursing students to determine the effects of using human patient simulation on students' clinical performance ($N = 12$). Over the course of a semester, the students in the intervention group participated in two one-hour clinical simulation experiences using a high-fidelity human patient simulator in addition to their regular clinical requirements (320 hours) while the students in the control group only participated in their regular clinical requirements (320 hours). At the end of the semester, the nursing students' clinical performance within the categories of "safety, basic assessment, prioritization, problem-focused assessment, ensuing interventions,

delegation, and communication" (p. 2-3) was evaluated in the clinical simulation lab. Clinical performance scores of nursing students who had participated in clinical simulation were significantly higher in the two categories of safety (p = .001) and basic assessment (p = 0.009), whereas the difference in the other categories was not statistically significant. Radhakrishnan et al. recommended repeating their study with a larger group of nursing students.

Harder (2010) conducted a systematic review of the literature on the use of clinical simulation as a teaching and learning tool. When evaluating research studies that had studied the effect of clinical simulation on students' clinical performance, only a few studies with conflicting results have been published. The author speculated that the conflicting results were due to the variety of instruments being used to measure the students' clinical performance. Harder stated a standard evaluation tool to measure students' clinical performance during a clinical simulation experience is needed but "these are yet to be developed and efforts are still in the germinal stages" (p. 26). This lack of a formal evaluation tool to measure students' clinical performance is noted to be an area of future research in clinical simulation.

Faculty Presence

The study of faculty presence in nursing has been limited, but considered in other disciplines. Flight instructors for early aviators remained at the side of their student pilots but their positioning changed in the late 1950's with the

development of the “Comet IV” flight simulator. The “Comet IV” was built to mimic a real cockpit and was built off the ground with a pitch motion system to allow the simulator to move as a real aircraft. Flight instructors of the “Comet IV” simulator remained outside of the simulator on the ground while running pilots through the simulation experience. This was the first notation of instructors creating, monitoring, and/or evaluating a pilot’s performance during a simulation experience while being separated from their students (Rolfe & Staples, 1997).

Gaba and DeAnda (1988) described how the anesthesia simulation environment mimics a real operating room with an opaque drape separating the control room and simulation lab. Faculty remained in the simulation room at all times to play the role of a surgeon and/or circulating nurse and communicate with the operator in the control room by private headset. To increase the realism and complexity of the situation, faculty interacted with the anesthesiology residents. While the interaction may be somewhat distracting for the anesthesiology resident, they must learn to effectively multi-task in a complex environment.

Nursing faculty presence is documented in the literature during formative education and/or evaluation. Schoening et al. (2006) described the nursing faculty’s role during formative evaluation in the clinical simulation lab as “coaching and refereeing” and a time to “facilitate by transitioning the scenario, asking students critical thinking questions, and cueing them if they were unsure of how to proceed” (p. 255). Burns, O’Donnell, and Artman (2010) conducted a

quasi-experimental study to explore the effects of high-fidelity simulation in teaching junior level baccalaureate nursing students how to use the nursing process to problem solve ($N = 84$). Graduate nursing students were positioned in the clinical simulation lab during the study to guide and assist the nursing students per instruction by headset connections from faculty in the control room. The students' knowledge and attitudes of the use of the nursing process were assessed in a one group pretest-posttest design. The researchers found the use of high-fidelity simulation in combination with traditional didactic learning was statistically significant ($p < .001$) for knowledge attainment of problem solving skills and improved scores for critical thinking skills, overall nursing knowledge, psychomotor skills, confidence, and communication with patients and the healthcare team.

Scherer, Bruce, Graves, and Erdley (2003) described how clinical simulation has been integrated into the curriculum of acute care nurse practitioners. While the authors didn't differentiate between formative and summative evaluations within the clinical simulation lab, they described how nursing faculty often assume supportive roles within the clinical simulation experience playing the role of another staff nurse, family member, and/or physician to guide the scenario as it plays. Scherer, Bruce, and Runkawatt (2007) conducted a quasi-experimental study with a pretest-posttest design that compared the effects of clinical simulation versus case study presentation teaching methods

on nurse practitioner students' knowledge and confidence (N = 23). Two nursing faculty members were positioned inside the clinical simulation room and participated as nurses who only took directions from each student during the clinical simulation experience. The authors found that the knowledge scores increased from pretest to posttest but the change was not statistically significant. The case study presentation group scored significantly higher than the simulation group on self-confidence scores. This finding did not support the hypothesis that the self-confidence scores of nursing students who participated in the clinical simulation experience would be higher than those who participated in the case study presentation group. The authors reported that the participants in the case study presentation group may have had an advantage over the simulation group due to how the study was designed. The students in the case study group participated in a discussion as a group and did not have to perform any psychomotor skills whereas the students who participated in the simulation group worked through the simulation experience on their own and had to demonstrate psychomotor skills appropriate for the scenario (Scherer et al., 2007).

Seropian (2003) discussed how institutions should begin the design and implementation of a clinical simulation lab and the basic knowledge needed to run a successful high-fidelity clinical simulation experience. The control room which is separated from the clinical simulation room by a one-way mirror is recommended "for the operator to have a direct visual line into the room" (p.

1701). The operator is the individual who is at the controls of the high-fidelity human patient simulator, running the audio/visual equipment, and playing the voice of the human patient simulator. Seropian (2003) discussed how the course objectives and simulation outline will determine the faculty's role during the clinical simulation experience but there was no mention of where faculty should position themselves during a summative evaluation.

As to faculty "positioning" in simulation, Jeffries (2008) stated "ideally, instructors would observe a simulation remotely, either behind a one-way mirror or with closed-circuit television so that students cannot hear comments or see facial expressions and nonverbal gestures" (p. 72). Jeffries went on to describe that when nursing faculty are visible or interrupt students that it negatively affects the students' critical thinking and problem solving skills. While no empirical evidence for this statement was provided, it is consistent with Conejo's (2009) qualitative findings that nursing students dislike being observed by nursing faculty through the one-way mirror in the control room during clinical simulation. Questions exist as to appropriate recommendations to nursing faculty who do not have the ability to observe a simulation remotely. There was a clear gap in the literature regarding where faculty should position themselves during a summative evaluation and what the impact of faculty presence had on student outcomes.

The Nursing Education Simulation Framework

A description of the Nursing Education Simulation Framework was provided in Chapter One. The study was guided by this conceptual framework that focuses on the combination of nursing education and clinical simulation. The primary components of the framework are teacher (nursing faculty) and students working together in the clinical simulation lab using best educational practices. The teacher component remained constant throughout the study. One nursing faculty member completed all of the summative evaluations on the students' clinical performance. For the purpose of this study, the teacher did not change but the teacher's presence moved from observing and evaluating the students from inside the clinical simulation room to observing and evaluating the students through the one-way mirror in the control room.

The student component of the NESF was a cohort of junior baccalaureate nursing students enrolled in a medical/surgical didactic nursing course and corresponding clinical rotation at a major university. The best educational practices listed for the NESF are active learning, feedback, student/faculty interaction, collaboration, high expectations, diverse learning, and time on task (Jeffries, 2007). The study involved placing students in the active and diverse learning environment of the simulation lab, collaborating with fellow nursing students within assigned groups, high expectations from their nursing faculty, and a limited amount of time to complete the clinical simulation experience. The

remaining best educational practices of feedback and student/faculty interaction were provided during the simulation debriefing session and in subsequent clinical post-conference meetings but were conducted outside the framework and timeframe of this study, and therefore will not be discussed further.

While faculty presence would be needed for feedback and student/faculty interaction during formative teaching and evaluation within the clinical simulation lab, there was no mention within the NESF or review of the literature on what was the best educational practice for faculty presence during a summative evaluation. For the purpose of this study, faculty presence conceptually fit into the primary component of the NESF. Initially one may believe that the primary component was complete with the interaction of the teacher, student, and educational practices. One must recognize that it was possible to have the teacher physically present without experiencing the true presence of the teacher. Faculty presence was intertwined in the primary components of the framework (teacher, student, and educational practices) that overlap one another and impact the simulation design characteristics and ultimately the outcomes.

For this study, the simulation design characteristics remained consistent, using a standardized clinical simulation experience throughout the course of the study. The objectives for the experience, high-fidelity human patient simulator and equipment, and student support remained unchanged throughout the course of the study. By keeping the simulation design characteristics constant throughout

the course of the study, control over extraneous variables and plausible rival hypotheses were increased (i.e. internal validity is enhanced).

The outcomes component was the end product of the NESF and the focus of the study. The framework listed outcomes as learning, skill performance, learner satisfaction, critical thinking, and self-confidence (Jeffries, 2007). This study measured the students' level of anxiety, satisfaction, self-confidence, and clinical performance. There was a gap in knowledge as to the effect of faculty presence during a summative evaluation for a clinical simulation experience on the outcomes. The research questions in this study assisted the researcher in filling in the gaps of knowledge therefore building on the science of nursing simulation education.

Summary

This chapter discussed multiple clinical simulation research studies exploring the concepts of self-confidence, student outcomes and evaluations, student satisfaction, self-efficacy, knowledge and clinical performance, communication, medical errors, and clinical judgment. A brief history of simulation in military aviation, medicine, anesthesiology, and nursing provided context for the minimal information available on "presence" in simulation. A review of the literature on the concepts of anxiety, self-confidence, and clinical performance was presented as well as faculty presence relating to the clinical simulation experience.

The study built upon the Bremner et al. (2006) and Conejo's (2009) qualitative findings and focused on the concept of anxiety by using Spielberger's State-Trait Anxiety Inventory Form Y-1 and Y-2 that has established reliability and validity. While the concept of self-confidence has been researched in the area of clinical simulation, no published studies were found that studied the three variables anxiety level, self-confidence, and clinical performance together. There was also a lack of research studies that pertain to summative evaluation or that mentioned faculty presence. The intent of the study was to explore the concepts of anxiety, self-confidence, and clinical performance together during a summative evaluation with the nursing faculty present and not present to determine the effects of presence.

The chapter concluded with a discussion of how the Nursing Education Simulation Framework was used to support this proposed study and how the research questions related to the framework. In recent past, clinical simulation research was noted to be in an infancy stage although much has been accomplished in a rather short time (Jeffries, 2007). While information about simulation could be found in the disciplines of aviation, medicine, and anesthesia, the researcher found no empirical evidence in the literature about nursing faculty presence during a summative evaluation in the clinical simulation lab therefore provided support for the need of this study. The study's methodology will be presented in the following chapter.

Chapter Three: Methodology

Introduction

A review of the proposed study's purpose and research questions will be presented before presenting the study's methodology. The research design, population of interest, and sample will be described as well as the sample selection method and setting. The data collection procedures will be presented with a detailed description of each instrument to be used in the study. Data management and analysis will be presented and the chapter will conclude with the ethical considerations for the research.

Purpose and Research Questions

The purpose of this quantitative study was to determine the effects of nursing faculty presence on students' level of state anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. The research questions for the study were:

1. After controlling for trait anxiety, what is the difference in the level of state anxiety, self-confidence, and clinical performance of nursing students who were evaluated by a nursing faculty member present in the simulation room and those who were evaluated by a nursing faculty member outside of the simulation room through a one-way mirror during a summative evaluation?

2. After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is present in the simulation room completing the summative evaluation during the clinical simulation experience?
3. After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is not present in the simulation room during the clinical simulation experience but is observing and completing the summative evaluation through the one-way mirror?
4. Is there a difference between students in the experimental group (Group A) and students in the control group (Group B) in the amount of change that occurs from pretest to posttest in state and trait anxiety scores?
5. What is the effect of nursing faculty presence on the students' satisfaction level during a summative evaluation of a clinical simulation experience?

Research Approach and Design

This study used a quasi-experimental, two group pretest-posttest design. "Quasi-experimental designs were developed to provide alternative means of examining causality in situations not conducive to experimental controls" (Burns & Grove, 2001, p. 259). The pretest consisted of Spielberger's State-Trait Anxiety Inventory (STAI) to measure students' state anxiety (Form Y-1) and trait

anxiety (Form Y-2) and was given to both the experimental group (Group A) and the control group (Group B) (Appendices A & B). Each clinical group participated in a scheduled standardized clinical simulation experience (Appendix C). After the conclusion of the clinical simulation experience, a posttest comprised of the STAI measurement tool Form Y-1, Form Y-2, and the Student Satisfaction and Self-Confidence in Learning Instrument were given to both groups (Appendices A, B, & D). The researcher controlled for trait anxiety statistically (i.e. as a covariate) and then explored the effects of nursing faculty presence on students' level of state anxiety, self-confidence, and clinical performance during clinical simulation. Additional data analysis details are described in the data analysis section.

Setting

The study was conducted in the clinical simulation lab of a baccalaureate nursing school in a large university in the north central region of the United States. The clinical simulation lab had one simulation room with one high-fidelity patient simulator, a control room adjacent to the simulation room with a one-way mirror (43 inches x 54 inches) for full view of the adjacent simulation room, and an area for debriefing in close proximity to the simulation room. All settings had appropriate lighting, acoustics, and temperature control in the clinical simulation lab when the questionnaires were administered.

Population and Sample

The target population was junior baccalaureate nursing students. The sample was a cohort of junior level baccalaureate nursing students at a major university located in the north central region of the United States. The School of Nursing admitted 97 junior level students into the nursing program for the 2011-2012 academic year, therefore providing an ample number of potential participants for the sample pool. Based on the planned data analysis techniques, a priori power analyses were conducted: 1) with the level of significance at .05 and a power of .8 indicated a total sample size of 111 would be appropriate for an ANCOVA procedures with a large effect size (d = .4); and 2) a total sample size of 52 would be appropriate for a two tailed *t-test* with a large effect size (d = .8) (http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/download-and-register). To be included in the study, the students had to be junior baccalaureate nursing students. The exclusion criteria included students who: (1) were currently taking any prescription medication for an anxiety related disorder and/or (2) were currently receiving therapy related to any anxiety disorder.

Sample Selection

Every student within the cohort of junior level baccalaureate nursing students was offered the opportunity to participate in the study reflecting convenience sampling. Prior to the start of the academic year, half of the junior level nursing students were assigned randomly to their medical/surgical didactic

course and corresponding clinical rotation during the Fall semester and the remaining half of the junior level nursing students were assigned to their medical/surgical didactic course and corresponding clinical rotation during the Spring semester of the academic year. At the beginning of each semester, the nursing students who were enrolled in the medical/surgical didactic course and corresponding clinical rotation were assigned randomly to clinical groups of 5-9 students by nursing faculty at the university. The researcher randomly subdivided each clinical group into groups of three to four students except for the one clinical group of five students who were kept together and not subdivided for the study. Each subgroup of nursing students randomly was assigned to either the experimental group (Group A) or the control group (Group B).

Procedures and Data Collection

As noted, junior level nursing students were assigned randomly to a medical/surgical clinical group of five to nine students by administration at the school. The researcher was not involved in the assignment of students to a clinical group, therefore, it was an assumption of this study that the random assignment was carried out in a correct manner. Clinical groups were assigned a specific date and time for their scheduled simulation experience in the clinical simulation lab by the director of the clinical simulation lab. It was at this point that the researcher became involved in the process and randomly subdivided each clinical group into groups of three to four students with the exception of the one

clinical group of five students which were kept together so that the size of the subgroup did not go below three participants. Each subgroup of nursing students was assigned randomly by the researcher to either the experimental group (Group A) or the control group (Group B). Half of the participants were in the experimental group and went through the summative evaluation during a clinical simulation experience with the nursing faculty member present in the room (Group A) and the remaining half of the participants were in the control group and went through the summative evaluation during a clinical simulation experience with the nursing faculty member evaluating the students from behind the one-way mirror in the control room (Group B).

The researcher sought permission from the course director to attend the didactic class prior to students' scheduled clinical simulation experience to distribute study flyers. The researcher provided a brief explanation of the upcoming research study and distributed flyers to each nursing student for advertisement (Appendix F). The researcher also contacted the School of Nursing Dean and Director of the simulation lab for permission to post a flyer in the entrance of the clinical simulation lab.

Students arrived at the clinical simulation lab at their scheduled time period and were taken to a private room with a large table and chairs. The research study was described to the students by the researcher and time was provided for the researcher to answer any questions the students had about the

research study. After all questions were answered, a partition with a minimum height of 20 inches was placed on the table in front of each student to block the student's view of other students sitting at the table. Every student was handed an unmarked envelope that contained the consent form, demographic questionnaire, pretest and posttest material. The researcher asked the students to participate voluntarily in the research study.

The students who agreed to participate were asked to read and sign the consent form as well as complete the demographic questionnaire, STAI Form Y-1, and STAI Form Y-2 then return all forms back into their unmarked envelope (Appendices A, B, E, & G). The students were allowed a total of 15 minutes to complete the pretest material. Students who did not wish to participate in the study participated in the simulation experience as they normally would for any required learning experience.

All of the nursing students were required to participate in the assigned clinical simulation experience per course requirements but no academic grade was assigned for their participation. A standardized scenario designed by the course director was used in all of the clinical simulation experiences with a high-fidelity human patient simulator (Appendix C). The simulation technician operated the high-fidelity simulator in each clinical simulation experience, the director of the simulation lab or the researcher answered phone calls placed by the students which were built into the scenario, and all of the summative evaluations were

completed by the same nursing faculty member who was the students' course director (Appendix H). The clinical simulation lab environment was not adjusted in any way between the experimental groups (Groups A) and the control groups (Groups B) other than by the nursing faculty presence. The same nursing faculty member was positioned inside the clinical simulation lab five feet from the foot of the high-fidelity human patient simulator to conduct the summative evaluation of the students' clinical performance for the experimental groups (Group A). When the nursing faculty was positioned inside the clinical simulation lab, the nursing faculty member wore the same uniform and lab coat and did not have any verbal or nonverbal interactions with the students during the entire simulation experience.

The clinical simulation experience lasted approximately 25-30 minutes and was stopped by the researcher if the recording time in the simulation lab exceeded 35 minutes. Once the clinical simulation experience was completed, the students were asked by the researcher to return to their seat at the table and complete STAI Form Y-1, Form Y-2, and the Student Satisfaction and Self-Confidence in Learning instruments that were located in their envelope (Appendices A, B, & D). It took the students approximately 5 minutes to complete the posttest material then return the forms to their envelope. The researcher then asked all students to seal their envelope before it was collected and secured by the researcher. The students went on to participate in a debriefing

session. Observations and student discussion from the debriefing session were not used in this study.

The simulation lab was scheduled with clinical groups from 0700 until 2000 two days per week beginning the third week of each semester. Students were provided all material required for a successful simulation experience in the theory portion of the previous nursing course work and the first two weeks of class in the current semester. No make-up clinical simulation experiences were allowed. Approximately half of the junior level baccalaureate nursing students (*n* = 39) participated in their scheduled simulation experience within a two week time frame near the beginning of the Fall semester and the remaining half (*n* = 52) participated in their scheduled simulation experience within a two week time frame near the beginning of the Spring semester. Data collection was completed within six weeks of beginning the Spring 2012 semester.

Instrumentation

The State-Trait Anxiety Inventory (STAI) Forms Y-1 and Y-2

STAI Forms Y-1 and Y-2 were used to measure the students' state and trait levels of anxiety (Appendices A & B) and were administered before and after the clinical simulation experience. The STAI is a popular tool used in psychological research investigating anxiety and is considered reliable and valid. The original tool, STAI Forms X-1 and X-2, were developed in 1964 by Spielberger, Gorsuch, and Lushene. In 1983 after extensive research, researchers,

Spielberger, Gorsuch, Lushene, Vagg, and Jacobs, made revisions and published the STAI Forms Y-1 and Y-2 that remain in use today. State anxiety is defined as "subjective, consciously perceived feelings of tension, apprehension, and nervousness accompanied by or associated with activation of the autonomic nervous system" and is measured by the STAI Form Y-1 (Spielberger & Sarason, 1975, p. 137). Trait anxiety is defined as the "relatively stable individual differences in anxiety proneness, i.e., the differences among people in the disposition or tendency to perceive a wide range of situations as threatening and to respond to these situations with differential elevations in state anxiety" and is measured by the STAI Form Y-2 (Spielberger & Sarason, p. 137).

Reliability and validity for these tools were established decades ago. A research study at the University of South Florida (N = 855) in 1983 provided evidence of reliability for the STAI Forms with a Cronbach's alpha for both state and trait anxiety >.90. The study was repeated with a different sample population (N = 656) and the Cronbach's alpha remained high at >.92. Research focused on six methods to determine validity for the STAI Forms: contrasted groups, correlation between the state anxiety and trait anxiety scales, correlation of the trait anxiety scale with other scales that measure trait anxiety, correlation of the STAI with other tools that measure personality, correlation of the STAI with Academic Aptitude and Achievement, and the effects of stress on state anxiety (Spielberger et al., 1983).

The STAI Forms Y-1 & Y-2 are self-report questionnaires that take approximately 10 minutes for college students to initially complete and then less than five minutes to complete if repeated. The questionnaires are comprised of 20 Likert-type items rated on a four point scale. There is a balance between positive and negative worded items on the scale. Each question and response is written on a fourth to fifth grade reading level. The possible composite score of each questionnaire ranges from 20 to 80. A high score on STAI Form Y-1 correlates with a high state anxiety and a high score on STAI Form Y-2 correlates with a high trait anxiety. The STAI Form Y-1 measuring the state anxiety was designed to be administered prior to the STAI Form Y-2 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

Student Satisfaction and Self-Confidence in Learning Instrument

The Student Satisfaction and Self-Confidence in Learning Instrument was used in this study to measure the students' satisfaction and self-confidence during the clinical simulation experience (Appendix D). It was administered after the clinical simulation experience. This quantitative instrument was developed by nursing faculty experts who were involved with the NLN/Laerdal Medical Study (Jeffries & Rogers, 2007). It is a 13-item instrument using a five-point rating scale with five items measuring student satisfaction and eight items measuring students' self-confidence in learning after the completion of a clinical simulation experience. The range of possible composite scores is from 13 to 65. A high

score represents higher satisfaction and self-confidence levels whereas a low score represents lower satisfaction and self-confidence after the completion of a clinical simulation experience. Content validity was established by an expert panel consisting of nine clinical nursing experts (Jeffries, 2007). Initial testing by the NLN revealed evidence of reliability with Cronbach's alpha for the satisfaction subscale = .94 and Cronbach's alpha for the self-confidence subscale = .87 (Jeffries). Fountain and Alfred (2009) used the instrument to measure baccalaureate nursing student satisfaction with high-fidelity clinical simulation and how their satisfaction correlated with learning styles (*N* = 78). The researchers reported a Cronbach's alpha of .91 for the satisfaction subscale and .84 for the self-confidence subscale.

Clinical Performance Evaluation Tool

The Clinical Performance Evaluation Tool was developed by an associate professor at the school of nursing where the study was conducted (Appendix H). The professor was the only nursing faculty member who completed the summative evaluations on all the students' clinical performance during the simulation experience for this study. When developing the Clinical Performance Evaluation Tool, the professor focused on expected student outcomes for the course and simulation experience as well as the cognitive, affective, and psychomotor skill level of the students. The tool is comprised of four sections: safety and communication, assessment, interventions, and teaching. There are

multiple expected student behaviors and actions listed under each section. The nursing faculty member observed the students' clinical performance and marked which behaviors and actions were completed by the students within each simulation group.

Students received one point for correctly completing each expected behavior or action on the Clinical Performance Evaluation Tool. If the expected behavior or action was not correctly completed by any of the students within the group, as determined by the nursing faculty, no points were awarded to the student group. However, the first two items on the tool were scored differently due to their safety and importance. If all of the group members correctly completed the skill then the team was given one point. If even one group member did not correctly complete the skill then the team was not given any points for that skill. The possible score for each group ranged from 0 to 65 points. A high score represents a high level of clinical performance during the clinical simulation experience whereas a low score represents a low level of clinical performance. The scores on the Clinical Performance Evaluation Tool were not added to the students' course grade but provided valuable information to the students and nursing faculty on how well the students have mastered cognitive knowledge, affective behavior, and psychomotor skills taught in previous courses within the nursing program as well as the first two weeks of the current semester.

For the purpose of this study, the Clinical Performance Evaluation Tool was used as a summative evaluation. It was classified as a summative evaluation because the nursing faculty evaluating the students did not provide any type of remediation or teaching during the clinical simulation experience. The faculty only completed the measurement tool that evaluated where the students were in their learning at the beginning of their clinical rotation. The faculty then took the information learned from the Clinical Performance Evaluation Tool about the students' areas of weaknesses to remediate the students in their clinical groups during a post-conference on a subsequent clinical day. One may consider the use of the Clinical Performance Evaluation Tool as a formative evaluation because remediation and teaching were conducted based on the findings from the tool even though it was a delayed response and the faculty did not count this evaluation for an academic grade in the course.

Demographic Questionnaire

The demographic questionnaire was developed by the researcher and was distributed to the participants with the pretest instruments (Appendix E). The demographic questionnaire consisted of six questions that enabled the researcher to describe the sample population and documented subject eligibility based on the inclusion and exclusion criteria of the study.

Data Management

The STAI Forms Y-1 and Y-2, the Student Satisfaction and Self-Confidence in Learning Instrument, and the demographic questionnaire were administered to the participants in the form of paper documents. The Clinical Performance Evaluation Tool was given to the nursing faculty in the form of a paper document. The researcher assigned each participant an identification number that was written on all four documents. No records were kept to link the participant's name to the identification number. The researcher reviewed the demographic questionnaires to determine if a student was ineligible based on the exclusion criteria (Appendix E). If a student was ineligible to participate in the study, the student's data were not included in the data analysis and were destroyed.

Data from the paper documents of eligible participants were transferred by the researcher into the Statistical Package for the Social Sciences (SPSS) Version 19.0 for Windows for quantitative data analysis. The computer was password protected and stored along with the original paper documents in a locked location. Individual data in the form of paper documents will be retained by the researcher in a secure location for six years after the completion of the study then destroyed per record retention policy of the Kansas University Medical Center Research Institute.

Before proceeding with the statistical analysis, reliability of each instrument used within this study was assessed. A Cronbach's coefficient alpha was computed for the STAI Forms Y-1 and Y-2 as well as the Student Satisfaction and Self-Confidence in Learning Instrument. The Cronbach's coefficient alpha is widely used to assess the internal consistency reliability of an instrument (Ferketich, 1990; Leech, Barrett, & Morgan, 2008). The researcher expected all of the computed Cronbach's coefficient alphas to be at least .80, which is adequate for an established instrument and this type of behavior study (Ferketich, 1990).

Reliability of each instrument was tested using Cronbach's alpha internal consistency reliability assessment and found to be within an acceptable range. The Cronbach's alpha for the pretest STAI Form Y-1 was .932 and the posttest STAI Form Y-1 was .953. The Cronbach's alpha for the pretest STAI Form Y-2 was .935 and the posttest STAI Form Y-2 was .943. The Cronbach's alpha for the Student Satisfaction and Self-Confidence in Learning tool as a whole was .900; the subscales were analyzed separately and demonstrated the Student Satisfaction with Learning subscale Cronbach's alpha of .919 and the Self-Confidence in Learning subscale Cronbach's alpha of .776.

For the Clinical Performance Evaluation Tool, intrarater reliability was the preferred reliability assessment. However, due to the design of this study, intrarater reliability could only be explored through the use of scatter plots in

which evaluation scores were plotted against time of day. The scatter plots provided the ability to search for visual patterns of consistency from the one faculty member conducting all of the student clinical performance evaluations over the course of the four week data collection period.

Data Analysis

An exploratory data analysis specifically looking for outliers, missing values, and distribution of data was conducted initially to gain knowledge about the data. The exploratory data analysis also assisted in checking for errors and statistical assumptions (Leech, Barrett, & Morgan, 2008). Visual graphs were created to assist with identifying patterns within the data.

The researcher next verified that the assumptions for the chosen statistical analyses had not been violated. The assumptions checked were independence of the observations, linearity, multivariate normality, and homogeneity of variance. These were checked by analyzing bivariate scatterplots, histograms, and Levene's Test. If the assumptions were violated, the researcher considered statistical transformations to meet the statistical assumptions. Once the exploratory data analysis was completed and the statistical assumptions were verified, the researcher began the statistical data analysis. Results of the exploratory data analysis are reported in Chapter Four.

Research Question 1: After controlling for trait anxiety, what is the difference in the level of state anxiety, self-confidence, and clinical performance

of nursing students who were evaluated by a nursing faculty member present in the simulation room and those who were evaluated by a nursing faculty member outside of the simulation room through a one-way mirror during a summative evaluation? With three dependent scale variables (level of posttest state anxiety, self-confidence, and clinical performance) treated simultaneously and one independent variable (nursing faculty presence), the appropriate statistical analysis was a single-factor Multivariate Analysis of Variance (MANOVA). Including trait anxiety as a covariate necessitated use of a Multivariate Analysis of Covariance (MANCOVA) (Leech, Barrett, & Morgan, 2008). Prior to performing the MANCOVA, the researcher first used a Pearson's correlation to analyze the strength of the relationships among the three dependent variables with a low to moderate correlation expected due to the nature of the concepts. However, due to a minimal level of correlation between the dependent variables, it was not relevant to analyze the three variables together and separate Analysis of Covariance (ANCOVA) procedures were conducted on the three dependent variables.

Once the assumptions were verified and the issues of multicollinearity ruled out, the researcher conducted separate ANCOVA procedures with each of the three dependent variables (level of posttest state anxiety, self-confidence, and clinical performance) while controlling for trait anxiety. The researcher focused on the tests of between-subjects effects table and its associated significance level

for each ANCOVA to determine if there was a statistically significant difference between the groups on each dependent variable (level of posttest state anxiety, self-confidence, and clinical performance).

Research Question 2 and 3: After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is present in the simulation room completing a summative evaluation during the clinical simulation experience? After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is not present in the simulation room during the clinical simulation experience but is observing and completing a summative evaluation through the one-way mirror? The second and third research questions explored the relationship between the three dependent variables while controlling for trait anxiety; therefore, associational inferential statistics were used to analyze the data. The researcher used a partial correlation coefficient to measure the linear association between the three dependent variables (level of state anxiety, self-confidence, and clinical performance) while controlling for trait anxiety for both the second and third research questions. When exploring the relationships, both the direction and strength of the relationship were assessed.

Research Question 4: Is there a difference between students in the experimental group (Group A) and students in the control group (Group B) in the amount of change that occurs from pretest to posttest in state and trait anxiety scores? The students' trait anxiety measured by the STAI Form Y-2 in the pretest material provided the researcher with an assessment of the homogeneity of the sample population. An individual's trait anxiety is relatively stable therefore it was not expected to change within the 30 minute timeframe from pretest to posttest of this study (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The researcher predicted retesting the trait anxiety in the posttest material would only reconfirm the pretest findings. The researcher conducted a paired *t-test* on the trait anxiety scores to determine if there was a statistically significant ($p < .05$) change from pretest to posttest. Since there was no statistically significant change in the trait anxiety scores from pretest to posttest, a repeated measures ANCOVA controlling for trait anxiety was planned. However, the analysis revealed a significant time by group interaction and a significant covariate effect as well. These results were complex to interpret and an alternate analysis was conducted. First, to provide a more stable trait variable, a centered trait anxiety variable was created by subtracting the total sample mean trait score from individual trait scores. This variable was used as the covariate in the analysis. Next, a state anxiety difference score was created for each case by subtracting the pretest state score from the posttest state score. The analysis of covariance was

then conducted using the new covariate of centered trait anxiety and the new change state anxiety variable by group.

Research Question 5: What is the effect of nursing faculty presence on the students' satisfaction level during a summative evaluation of a clinical simulation experience? The last research question in this study was analyzed by an independent samples *t-test* to compare the mean satisfaction scores between the two groups (experimental group versus control group) because there was one categorical independent variable (faculty presence) and one continuous dependent variable (student satisfaction). The *t-test* was the basic difference inferential statistical test. A *t-test* was computed and then the researcher noted the *p* value to determine if the results were statistically significant ($p < .05$), but also reviewed the confidence intervals. For example, the researcher was able to determine if there was a statistical difference in the students' satisfaction level between the two groups (experimental versus control group) that would provide evidence to answer this last research question.

Ethical Considerations

The researcher completed the University of Kansas Medical Center Tutorial for Human Subjects Protection and the University of Kansas Medical Center Tutorial for Health Insurance Portability and Accountability Act (HIPPA). The researcher also completed required modules for Human Subjects Protection through Collaborative Institutional Training Initiative (CITI) that provided

research training for the institution where data was collected for this study. This study was approved by the dissertation committee as well as the Institutional Review Boards at the University of Kansas Medical Center and the Loyola University Chicago. Permission to access the students and clinical simulation lab was obtained from the Marcella Niehoff School of Nursing Dean, Associate Dean for the undergraduate programs, Program Director for Simulation, and Associate Professor for the MSN 277 course (Appendices I, J, K, and L). The Associate Dean for the undergraduate programs at Loyola University Chicago Marcella Niehoff School of Nursing provided a letter of support for the study (Appendix M).

Every prospective student was given a description of the research study by the researcher prior to beginning the study. Consent forms were distributed (Appendix G). Students were informed there was no financial compensation for their participation. Students were informed that while there may be no direct benefit for participating in the study, their participation may lead to the generation of new knowledge for nursing faculty in clinical simulation. Students were also informed that there were no known risks to participating in the study, but the time to complete the research instruments may be an inconvenience. Students' participation was strictly on a voluntary basis with no reflection on their academic grades. Students were asked if they have any questions regarding the study and ample time was provided to answer any questions. Once all questions were

answered, the students were asked to sign the consent form if they wanted to volunteer to participate in the research study. Each participant received a copy of the consent form which included information about the research study and the researcher's contact information.

Electronic data was stored on a password protected computer in a locked location along with original paper documents. To ensure anonymity, the researcher assigned each participant an identification number and kept no records to link the participant's name to the identification number. Individual data was held confidential with plans to report only group data. At the completion of the study, all individual data in the form of paper documents will be kept and secured by the researcher for a period of six years after the completion of the study then destroyed per policy of the institution.

Summary

In Chapter Three, the methodology of the study was provided. The study was a two group pretest-posttest quasi-experimental research design. The population of interest was traditional junior baccalaureate nursing students and the sample population was a cohort of junior level baccalaureate nursing students at a major university located in the north central region of the United States. Detailed descriptions of the sample selection and data collection were identified. All quantitative instruments (The State-Trait Anxiety Inventory Forms Y-1 and Y-2, The Student Satisfaction and Self-Confidence in Learning Instrument, and the

Clinical Performance Evaluation Tool) used within the study were presented. Information related to the management of the data and how data was analyzed to answer the five research questions was thoroughly explained.

Chapter Four: Findings

Introduction

The purpose of this quasi-experimental study was to determine the effects of nursing faculty presence on students' levels of state anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. The research questions were analyzed with various statistical procedures using SPSS Version 19. The findings for each of the research questions will be presented in this chapter along with a description of the sample and procedures for the exploratory data analysis.

Sample

A cohort of 97 junior level baccalaureate nursing students at a major university located in the north central region of the United States were the target population for this study. Of the 97 students, one student did not consent to participate in the study and five students were excluded from the study based on the exclusion criteria. The study sample consisted of a total of 91 students enrolled in a junior level medical/surgical didactic course and corresponding clinical rotation during the Fall 2011 and Spring 2012 semesters. A large majority of the sample were female (n = 84, 94.5%). The age within the sample ranged from 19 years to 33 years (M = 20.79, SD = 2.123) with only one participant not willing to reveal his/her age. The sample was primarily Caucasian (n = 68, 74.7%), followed by Asian/Pacific Islander (n = 11, 12.1%), Hispanic (n

= 4, 4.4%), African American (*n* = 2, 2.2%), Bi-racial (*n* = 3, 3.3%), and three (3.3%) participants listed their race/ethnicity as "other".

The majority of the participants in the sample had no previous experience in healthcare besides being a nursing student (*n* = 75, 82.4%). Nine participants reported experience working as a nursing assistant or patient care technician. Of the nine, five participants (5.5%) listed less than six months of experience, two participants (2.2%) listed between 6-12 months of experience, and two participants (2.2%) listed over one year experience prior to this study. Three participants (3.3%) revealed multiple experiences within healthcare prior to the study and four participants (4.4%) listed "other" experiences such as hospice volunteer, dietary aide, pharmacy technician, surgical assistant, radiology assistant, and hospital transporter.

The experimental group (Group A) consisted of 20 participants from the Fall 2011 semester and 29 participants from the Spring 2012 semester to bring the group total to 49 participants (53.8% of the total sample). The control group (Group B) consisted of 19 participants from the Fall 2011 semester and 23 participants from the Spring 2012 semester to bring the group total to 42 participants (46.2% of the total sample). Participants from the Spring 2012 semester were one semester further along in the nursing program during their participation in the study. A fairly even distribution of the Spring 2012

participants into the two groups eliminated the bias of the one semester advantage therefore results were not expected to be impacted.

Descriptive data about the sample and dependent variables are presented in Table 1 for baseline comparison of the groups. The main focus of the study was on comparing the data by groups (experimental group versus control group). Additional comparison by semester (Fall versus Spring semester) was also completed. Participants who completed the study in the Fall 2011 semester revealed the following mean scores: pretest state anxiety score of 48.410 (SD = 9.891), posttest state anxiety score of 45.205 (SD = 11.660), self-confidence of 31.564 (SD = 4.610), clinical performance of 30.846 (SD = 3.558), and satisfaction of 20.949 (SD = 3.713). Participants who completed the study in the Spring 2012 semester revealed the following mean scores: pretest state anxiety score of 50.539 (SD = 12.137), posttest state anxiety score of 51.962 (SD = 14.947), self-confidence of 31.039 (SD = 3.896), clinical performance of 32.135 (SD = 6.142), and satisfaction of 18.462 (SD = 3.786). The mean state anxiety scores and clinical performance score were lower in the Fall of 2011 compared to the Spring of 2012 where as the mean satisfaction score were higher in Fall semester when compared to Spring semester, and the mean self-confidence scores were very similar between the two semesters. Ideally, it is desired for the level of state anxiety to be low for a nursing student while the levels of self-confidence, satisfaction, and clinical performance to be high.

The possible composite score of each STAI Inventory Form Y-1 and Y-2 ranges from 20 to 80 with a high score on the STAI Form Y-1 representing a high level of state anxiety and a high score on the STAI Form Y-2 representing a high level of trait anxiety. Spielberger et al. (1983) studied the level of state and trait anxiety for college students (N = 855) and determined males had a mean state anxiety score of 36.47 (SD = 10.02) with a Cronbach's alpha of .91 whereas females had a mean state anxiety score of 38.76 (SD = 11.95) with a Cronbach's alpha of .93. The mean pretest state anxiety levels for the college students in this study were found to be much higher than the mean state anxiety levels for college students noted by Spielberger et al. Spielberger et al. determined the mean trait anxiety score for male college students was 38.30 (SD = 9.18) with a Cronbach's alpha of .90 and for female college students the mean trait anxiety score is 40.40 (SD = 10.15) with a Cronbach's alpha of .91. The pretest trait anxiety scores from this study were fairly congruent with the mean and standard deviations for trait anxiety scores noted by Spielberger et al.

An independent samples *t-test* was conducted to compare the pretest state anxiety scores for the experimental group (Group A) and the control group (Group B). There was no significant difference in the pretest state anxiety scores for the two groups (t (89) = -1.388, p = .057). An independent samples *t-test* was conducted to compare the pretest trait anxiety scores for the experimental group (Group A) and the control group (Group B). There was no significant difference

in the pretest trait anxiety scores for the two groups (t (89) = .057, p = .781). Baseline comparison of the experimental group and the control group revealed there were no statistically significant differences in pretest state and trait anxiety. This finding as well as the descriptive demographic information collected on the sample revealed a homogenous sample for the study.

Table 1

Descriptive Data

		Experimental Group (Group A)	Control Group (Group B)	Total
Number of Participants		49	42	91
Female/Male		47/2	39/3	86/5
Age (Mean)		20.73	20.86	20.79
State Anxiety, (Pretest)	Mean	48.122	51.381	49.626
	SD	12.771	8.920	11.221
Trait Anxiety, (Pretest)	Mean	37.694	37.571	37.637
	SD	10.496	9.793	10.122

Exploratory Data Analysis

After the data were entered into SPSS and checked for data entry accuracy by a second person, the researcher conducted a thorough exploratory data analysis. All 91 participants had completed both the pretest and posttest instruments with only a minimal amount of missing data noted (7.53%). Seven participants did not answer seven different questions on four of the six

instruments. The researcher used case mean substitution to impute missing data on the seven questions. Two participants selected two answers instead of one on a total of three questions. The researcher used case mean substitution as an imputation technique for these three questions as well. The strategy of case mean substitution relied on mean estimates for the particular scale from each individual case instead of a sample or group mean substitution. This method is an acceptable imputation technique when the amount of missing data is less than 10% and there is no pattern to the missing data (Fox-Wasylyshyn & El-Masri, 2005). Two extreme outliers were noted in total scores for the Student Satisfaction and Self-Confidence in Learning Instrument and two extreme outliers were noted from the Clinical Performance Evaluation Tool. These extreme outliers may have lead to the violation of the normality assumption for some of the statistical analyses.

Statistical assumptions such as independence of the observations, normality, linearity, and homogeneity of the variance were checked prior to running any inferential statistics. Results of the assumption testing for each analysis precede the testing results. Although a few of the statistical assumptions were violated, data transformation was not conducted because the parametric and nonparametric tests used in the data analysis for this study were robust to assumption violations (Leech, Barrett, & Morgan, 2008).

Intrarater reliability for the Clinical Performance Evaluation Tool was assessed through the use of scatter plots. To do this, two additional variables

were added to the data set: “time of day” and “day of data collection”. There were a total of eight days of data collection with the first four days occurring in Fall 2011 and the last four days occurring in Spring 2012. There were between one and six simulation experiences per day of data collection. Evaluation scores were plotted against time for each day of data collection. The researcher searched for visual patterns from the one faculty member conducting all of the summative evaluations on the students’ clinical performance on a daily basis and then assessed for patterns in the scatter plots as a whole. No consistent patterns were found therefore intrarater reliability was supported for the Clinical Performance Evaluation Tool.

Research Question 1

After controlling for trait anxiety, what is the difference in the level of state anxiety, self-confidence, and clinical performance of nursing students who were evaluated by a nursing faculty member present in the simulation room and those who were evaluated by a nursing faculty member outside of the simulation room through a one-way mirror during a summative evaluation?

The statistical assumptions of normality, linearity, and equal variances were checked. Normal distributions of the data were found with state and trait anxiety but normality was violated for self-confidence and clinical performance data. The assumption of linearity was not violated for the state anxiety scores yet assumptions were violated for both self-confidence and clinical performance data.

Two extreme negative outliers were found in the self-confidence and clinical performance data. Equal variances were violated for state anxiety as evidenced by the Levene's test, $p = .027$ yet not violated for self-confidence ($p = .645$) or clinical performance ($p = .355$). The two groups were not equal in size (Group A, $n = 49$; Group B, $n = 42$) and may have contributed to unequal variances. In order to preserve the integrity of the data as a whole and considering the ANCOVA was robust to these violations, the researcher chose to move forward with data analysis without data transformations.

A Pearson's correlation was used to explore the strength of the relationships among the three dependent variables (level of state anxiety, self-confidence, and clinical performance) to determine whether a MANCOVA or separate ANCOVAs were appropriate for the analysis. Conceptually the three dependent variables were related so it was essential to determine the strength of the relationships in order to ascertain if any issues of multicollinearity were present or if one variable could potentially be used to predict the outcome of another variable. As shown in Table 2, there was an extremely low, negative bivariate correlation between state anxiety and self-confidence, $r = -.135$, $p = .203$; self-confidence and clinical performance, $r = -.040$, $p = .709$; and state anxiety and clinical performance, $r = -.122$, $p = .251$. Given the low correlations among the dependent variables it was appropriate to conduct separate ANCOVAs for each dependent variable.

Table 2

Partial Correlation Coefficient (N = 91)

Correlation Significance (2- tailed)	State Anxiety	Self-Confidence	Clinical Performance	Trait Anxiety
(No control variables)				
State Anxiety	1.000	-.135	-.122	.395
		.203	.251	.000
Self-Confidence		1.000	-.040	-.157
			.709	.136
Clinical Performance			1.000	-.002
				.983
Trait Anxiety				1.000

An analysis of covariance was used to assess what effect faculty presence had on the nursing students' level of anxiety after controlling for trait anxiety. State anxiety scores for the experimental group (Group A) were found to be higher (n = 49, M = 50.918, SD = 15.610) than the state anxiety scores for the control group (Group B) (n = 42, M = 46.905, SD = 11.600). After controlling for trait anxiety, there was no statistically significant difference between the groups on state anxiety scores (Table 3).

Table 3

Analysis of Covariance for State Anxiety as a Function of Group, Using Trait Anxiety as a Covariate (N = 91)

Source	*df*	*MS*	*F*	*p*	eta
Trait Anxiety	1	2737.450	16.641	.000	.159
Group	1	352.288	2.142	.147	.024
Error	88	164.498			

A second analysis of covariance was used to assess what effect faculty presence had on the nursing students' self-confidence after controlling for trait anxiety. The mean self-confidence scores for the control group (Group B) were slightly higher (n = 42, M = 32.095, SD = 3.648) than the mean self-confidence scores for the experimental group (Group A) (n = 49, M = 30.551, SD = 4.537). After controlling for trait anxiety, there was no statistical significant difference between the two groups on self-confidence scores. The ANCOVA for self-confidence is shown in Table 4.

Table 4

Analysis of Covariance for Self-Confidence as a Function of Group, Using Trait Anxiety as a Covariate (N = 91)

Source	*df*	*MS*	*F*	*p*	eta
Trait Anxiety	1	45.011	2.644	.108	.029
Group	1	30.049	1.765	.187	.020
Error	87	17.023			

A third analysis of covariance was used to assess what effect faculty presence had on the nursing students' clinical performance after controlling for trait anxiety. The clinical performance scores for the experimental group (Group A) were very similar (M = 31.612, SD = 5.689) to the control group (Group B) (M = 31.548, SD = 4.655). After controlling for trait anxiety, there was no statistically significant difference between the two groups on clinical performance scores. The ANCOVA for clinical performance is shown in Table 5. In summary for research question one, no statistically significant differences were detected in the scores for the three dependent variables of state anxiety, self-confidence, and clinical performance. A post hoc power analysis revealed research question one achieved 69% power for each of the three separate ANCOVAs.

Table 5

Analysis of Covariance for Clinical Performance as a Function of Group, Using Trait Anxiety as a Covariate (N = 91)

Source	*df*	*MS*	*F*	*p*	eta
Trait Anxiety	1	.027	.001	.975	.000
Group	1	.066	.002	.962	.000
Error	87	28.068			

Research Question 2

After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when

the nursing faculty member is present in the simulation room completing a summative evaluation during the clinical simulation experience?

Preliminary analyses assessed the assumptions of normality and linearity for the partial correlational procedure with the three dependent variables (state anxiety, self-confidence, and clinical performance) in the experimental group. Normality was not violated for state anxiety as evidenced by a non-significant Kolmogorov-Smirnov result (p = .180) yet the assumption of normality was violated for self-confidence (p = .003) and clinical performance (p = .001). Q-Q plots verify the assumption of linearity was not violated for state anxiety yet the assumption of linearity was violated for the variables of self-confidence and clinical performance. The extreme negative outliers found in both the self-confidence and clinical performance data were believed to be the cause of the violations of the assumption of normality and linearity.

As shown in Table 6, a partial correlation was used to explore the direction and strength of the relationship between the level of state anxiety, self-confidence, and clinical performance of the nursing students in the experimental group (Group A) while controlling for pretest trait anxiety. There were low, negative partial correlations among the three variables. The researcher also found minimal change in the correlation of the three variables when trait anxiety was controlled. There was a low, negative partial correlation between state anxiety and self-confidence, while controlling for trait anxiety. There was a low, negative

partial correlation between state anxiety and clinical performance while controlling for trait anxiety. The researcher found a low, negative partial correlation between self-confidence and clinical performance while controlling for trait anxiety.

Table 6

Partial Correlation Coefficient for the Experimental Group (Group A) (N = 49)

Correlation Significance (2-tailed)	State Anxiety	Self-Confidence	Clinical Performance	Trait Anxiety
(No control variables)				
State Anxiety	1.000	-.084	-.190	.361
		.564	.191	.011
Self-Confidence		1.000	-.128	-.073
			.381	.621
Clinical Performance			1.000	.004
				.981
Trait Anxiety				1.000
(Controlling for Trait Anxiety)				
State Anxiety	1.000	-.063	-.205	
		.673	.162	
Self-Confidence		1.000	-.128	
			.386	
Clinical Performance			1.000	

If the extreme negative outliers were removed from the data, the findings would be slightly altered. A partial correlation to explore the direction and strength of the relationship between the level of state anxiety, self-confidence, and clinical performance of the nursing students in the experimental group (Group A) while controlling for pretest trait anxiety without the extreme negative outliers (Table 7). There continued to be low partial correlations among the three variables. The researcher found minimal change in the correlation of the three variables when trait anxiety was controlled. There was an extremely low partial correlation between state anxiety and self-confidence, while controlling for trait anxiety. There was a low partial correlation between state anxiety and clinical performance while controlling for trait anxiety. The researcher found a low, negative partial correlation between self-confidence and clinical performance while controlling for trait anxiety.

A Spearman rank order correlation (*Spearman Rho*) was conducted to further support the findings. The Spearman Rho is a nonparametric test that is commonly used when the statistical assumptions have been violated (Leech, Barrett, & Morgan, 2008). There continued to be low bivariate correlations among the three variables. The researcher found a low, negative bivariate correlation between state anxiety and self-confidence. There was an extremely low, negative bivariate correlation between state anxiety and clinical

performance. The researcher found an extremely low, negative bivariate correlation between self-confidence and clinical performance.

Table 7

Partial Correlation Coefficient for the Experimental Group without Outliers (Group A) (N = 45)

Correlation Significance (2-tailed)	State Anxiety	Self-Confidence	Clinical Performance	Trait Anxiety
(No control variables)				
State Anxiety	1.000	-.118	.077	.393
		.441	.613	.008
Self-Confidence		1.000	-.222	-.316
			.142	.034
Clinical Performance			1.000	.022
				.886
Trait Anxiety				1.000
(Controlling for Trait Anxiety)				
State Anxiety	1.000	.007	.075	
		.962	.629	
Self-Confidence		1.000	-.227	
			.138	
Clinical Performance			1.000	

Table 8

Spearman Rho for the Experimental Group (Group A) (N = 49)

Correlation Significance (2-tailed)	State Anxiety	Self-Confidence	Clinical Performance
State Anxiety	1.000	-.171	-.048
		.241	.746
Self-Confidence		1.000	-.093
			.524
Clinical Performance			1.000

Research Question 3

After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is not present in the simulation room during the clinical simulation experience but is observing and completing a summative evaluation through the one-way mirror?

Preliminary analyses assessed the assumptions of normality and linearity for the partial correlational procedure with the three dependent variables (state anxiety, self-confidence, and clinical performance) in the control group. Normality was not violated for state anxiety or self-confidence as evidenced by a

non-significant Kolmogorov-Smirnov result (p = .200 and p = .156) yet the assumption of normality was violated for clinical performance (p = .029). Q-Q plots verify the assumption of linearity was not violated for state anxiety, self-confidence, or clinical performance. Despite minor violations to the statistical assumptions, the researcher chose to proceed to data analysis without any data transformation due to the robust nature of the statistical procedures for this study.

As shown in Table 9, a partial correlation was used by to explore the direction and strength of the relationship between the level of state anxiety, self-confidence, and clinical performance of the nursing students in the control group (Group B) while controlling for pretest trait anxiety. There were low partial correlations among the three variables. The researcher also found minimal change in the correlation of the three variables when trait anxiety was controlled. There was a low, negative partial correlation between state anxiety and self-confidence, while controlling for trait anxiety. There was an extremely low partial correlation between state anxiety and clinical performance while controlling for trait anxiety. The researcher found an extremely low partial correlation between self-confidence and clinical performance while controlling for trait anxiety.

Table 9

Partial Correlation Coefficient for the Control Group (Group B) (N = 42)

	State Anxiety	Self-Confidence	Clinical Performance	Trait Anxiety
Correlation Significance (2-tailed)				
(No control variables)				
State Anxiety	1.000	-.064	.004	.469
		.299	.981	.002
Self-Confidence		1.000	.119	-.295
			.453	.058
Clinical Performance			1.000	-.011
				.943
Trait Anxiety				1.000
(Controlling for Trait Anxiety)				
State Anxiety	1.000	-.030	.010	
		.851	.950	
Self-Confidence		1.000	.121	
			.451	
Clinical Performance			1.000	

Research Question 4

Is there a difference between students in the experimental group (Group A) and students in the control group (Group B) in the amount of change that occurs from pretest to posttest in state and trait anxiety scores?

The statistical assumptions of normality, linearity, and equal variances were checked for state and trait anxiety and were not violated therefore the researcher proceeded directly to the statistical analysis. It was expected that there would not be significant change in the trait anxiety scores from pretest to posttest since trait anxiety is known to be stable over time. A paired *t-test* was conducted to compare pretest and posttest trait anxiety scores for the total sample. There was not a significant difference in the trait anxiety scores from pretest (n = 91, M = 37.637, SD = 10.122) to posttest (n = 91, M = 37.956, SD = 10.989). The mean difference in the trait anxiety scores was -.319 with 95% confidence intervals of -1.112 to .475.

Initially, the researcher analyzed group differences in change in state anxiety scores from pretest to posttest while controlling for trait anxiety by using a repeated measures ANCOVA. As shown in Figure 2, an interaction effect of group by time was very apparent. For simpler analysis and interpretation, the researcher created a centered trait anxiety variable by subtracting the total sample mean trait score from individual trait scores. This provided a more stable trait variable that was used as the covariate in the analysis. Next, a state anxiety

difference score was created for each case by subtracting the pretest state score from the posttest state score.

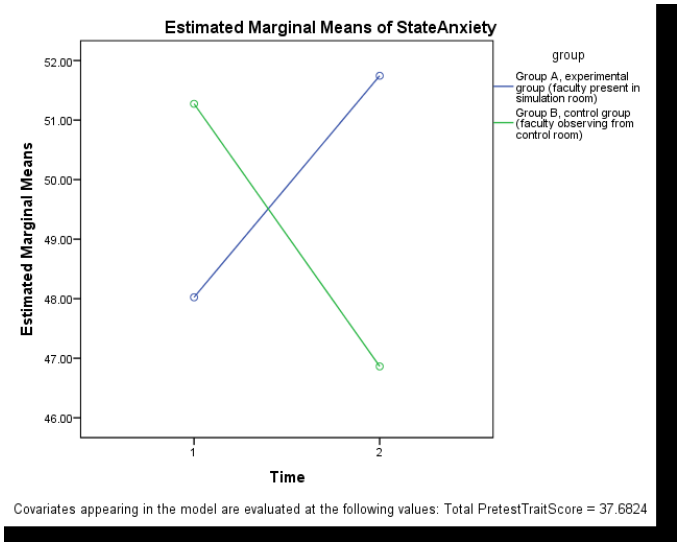

Figure 2. Interaction Effect of Group by Time for State Anxiety

The analysis of covariance was then conducted by using the new covariate of centered trait anxiety and the new change state anxiety variable by group (Table 10). The state anxiety scores from pretest to posttest for the experimental group (Group A) increased over time (n = 49, M = 2.796, SD = 12.870) while control group (Group B) state anxiety decreased over time (n = 42, M = -4.476, SD = 10.151). There was a statistically significant difference in change in state anxiety scores from pretest to posttest across groups after controlling for trait anxiety scores (F (1, 88) = 8.649, p = .004). A post hoc power analysis revealed this research question achieved 69% power. See Figure 2 for an illustration of the

pretest to posttest state anxiety mean scores by group with the opposite directions of the change in each.

Table 10

Analysis of Covariance for Change in State Anxiety from Pretest to Posttest as a Function of Group, Using Trait Anxiety as a Covariate (N = 91)

Source	*df*	*MS*	*F*	*p*	eta
Trait Anxiety	1	30.048	.218	.642	.002
Group	1	1193.640	8.649	.004	.089
Error	88	138.004			

Research Question 5

What is the effect of nursing faculty presence on the students' satisfaction level during a summative evaluation of a clinical simulation experience?

The statistical assumptions of normality and homogeneity of the variance were checked for the independent *t-test*. The assumption of normality was violated as evidenced by Kolmogorov-Smirnov significance value ($p = .003$). The assumption of equal variances was not violated as evidenced by the Levene's test ($p = .561$). Two extreme negative outliers were found in the satisfaction data that were believed to be the cause of the violations of the assumption of normality. Because of this violation both the independent *t-test* and the nonparametric version of the *t-test*, the Mann-Whitney U, were performed.

An independent samples *t-test* was conducted to compare students' satisfaction level in the experimental group (Group A) where the nursing faculty member was present in the simulation room during the summative evaluation with students in the control group (Group B) where the nursing faculty member remained in the control room during the summative evaluation (Table 11). There was a statistically significant difference in the satisfaction scores between the experimental group (n = 49, M = 18.776, SD = 4.254) and the control group (n = 42, M = 20.405, SD = 3.365; t (89) = -2.002, p = .048, two-tailed). The mean difference in the satisfaction scores was -1.629 with 95% confidence intervals at -3.246 to -.012. A post hoc power analysis revealed this research question achieved 96% power.

Table 11

Independent Samples Test of Students' Satisfaction (N = 91)

Levene's Test for Equality of Variances	*F*		.341
	Significance		.561
t-test for Equality of Means	*t*		-2.002
	df		89
	Sig. (2-tailed)		.048
	Mean Difference		-1.629
	Std. Error Difference		.814
	95% Confidence Interval of the Difference	Lower	-3.25
		Upper	-.012

The Mann-Whitney U was used because of the violations to the statistical assumptions of normality. The Mann-Whitney U compared the students' satisfaction level in the experimental group (Group A) where the nursing faculty member was present in the simulation room during the summative evaluation with students in the control group (Group B) where the nursing faculty member remained in the control room during the summative evaluation. There was no significant difference in the satisfaction scores between the experimental group (n = 49, Md = 41.26) and the control group (n = 42, Md = 51.54), U = 796.500, z = -1.861, p = .063, two-tailed). A post hoc power analysis revealed research question five achieved 95.6% power with the Mann-Whitney U.

Summary

Chapter Four presented the findings from this quasi-experimental study that determined the effects of nursing faculty presence on students' level of state anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. The sample consisted of a total of 91 junior level baccalaureate nursing students from a major university located in the north central region of the United States. Data collection occurred between the third and fifth week of classes during the academic calendar for the Fall 2011 and Spring 2012 semesters. A thorough description of the exploratory data analysis was presented along with how case mean substitutions were used as an imputation

technique for missing data. Findings from all five research questions were presented.

To answer research question one, the researcher first explored the strength of the relationships among the three dependent variables (level of state anxiety, self-confidence, and clinical performance). The three dependent variables were found to have low correlations therefore separate analysis of covariances (ANCOVA) were conducted on the three dependent variables. After controlling for trait anxiety, there was no statistical significant difference between the two groups for any of the three dependent variables (level of state anxiety, self-confidence, and clinical performance).

Research question two was answered by conducting a partial correlation to explore the direction and strength of the relationship between the level of state anxiety, self-confidence, and clinical performance of the nursing students in the experimental group (Group A) while controlling for trait anxiety. The partial correlation revealed low correlations among the three variables and controlling for trait anxiety had little to no effect on the strength or direction of the relationships. These findings were then verified by conducting a Spearman Rho since the statistical assumptions had been violated. Research question three was similar yet focused on the control group (Group B). The researcher found almost identical results in that the partial correlation revealed low correlations among the three

variables and controlling for trait anxiety had little effect on the strength or direction of the relationships.

For research question four, results from a paired *t-test* comparing pretest and posttest trait scores revealed there was no statistical significant difference in the trait anxiety scores from pretest to posttest. Once it was determined that there was no change in trait anxiety scores from pretest to posttest, the researcher conducted an analysis of covariance to assess the difference in change in state anxiety scores from pretest to posttest between the two groups. There was a statistically significant difference in state anxiety change scores from pretest to posttest for participants between the groups after controlling for trait anxiety with the control group exhibiting a larger change in scores and in the opposite direction of the experimental group.

A parametric test (independent samples *t-test*) and nonparametric test (Mann-Whitney U) were used to answer research question five. The findings of the *t-test* showed there was a statistically significant difference in the mean scores of the student satisfaction scores between the two groups. Students in the experimental group (Group A) had a lower mean satisfaction score when compared with the students in the control group (Group B). Two extreme negative outliers may have impacted the results therefore the researcher conducted a Mann-Whitney U test which was an appropriate statistical analysis because the assumption of normality had been violated (Leech, Barrett, Morgan,

2008). Subsequently, the results of the Mann-Whitney U showed there was not a statistically significant difference in the mean scores of the student satisfaction scores between the two groups. Findings from all five research questions are reviewed and discussed in Chapter Five.

Chapter Five: Discussion, Conclusions and Recommendations

Introduction

The purpose of this quasi-experimental study was to determine the effects of nursing faculty presence on students' level of state anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. Five research questions were analyzed using various statistical analyses within SPSS Version 19 and the findings were presented in the previous chapter. This chapter includes a summary of findings for each of the five research questions along with a thorough discussion of the results and how the results of this study relate to prior research. Implications for nursing educators and clinical simulation labs will be presented as well as recommendations for future research in this area. Final conclusions and thoughts from the researcher end the chapter.

Summary of Findings

Research Question 1

After controlling for trait anxiety, what is the difference in the level of state anxiety, self-confidence, and clinical performance of nursing students who were evaluated by a nursing faculty member present in the simulation room and those who were evaluated by a nursing faculty member outside of the simulation room through a one-way mirror during a summative evaluation?

Due to lack of meaningful relationships among the dependent variables, separate analysis of covariance procedures were conducted for each dependent

variable. The results demonstrated that after controlling for trait anxiety there was not a significant difference in the state anxiety scores, the self-confidence scores, or the clinical performance scores between the experimental group (Group A) and the control group (Group B). When measured at one point in time, faculty presence did not have a significant effect on any of the three dependent variables (state anxiety, self-confidence, and clinical performance).

Research Question 2

After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is present in the simulation room completing a summative evaluation during the clinical simulation experience?

This question was explored to determine if there were relationships among the three dependent variables within the two groups while controlling for pretest trait anxiety. Controlling for trait anxiety had little to no effect on the strength or direction of the relationship between any of the three dependent variables (state anxiety, self-confidence, and clinical performance) for the experimental group (Group A). Partial correlation analyses revealed a low, negative correlation between the three variables therefore one could not use one variable to predict an outcome on another variable for the experimental group (Group A). The findings were reconfirmed by a Spearman Rho test because the assumption of normality was violated.

Research Question 3

After controlling for trait anxiety, is there a relationship between the nursing students' level of state anxiety, self-confidence, and clinical performance when the nursing faculty member is not present in the simulation room during the clinical simulation experience but is observing and completing a summative evaluation through the one-way mirror?

Controlling for trait anxiety had little effect on the strength or direction of the relationship between the three dependent variables (state anxiety, self-confidence, and clinical performance) for the control group (Group B). There was a low correlation between the three variables therefore one could not use one variable to predict an outcome on another variable. A negative correlation was found between state anxiety and self-confidence whereas a positive correlation was found between state anxiety and clinical performance and between self-confidence and clinical performance.

Research Question 4

Is there a difference between students in the experimental group (Group A) and students in the control group (Group B) in the amount of change that occurs from pretest to posttest in state and trait anxiety scores?

There was not a statistically significant difference in the trait anxiety scores from pretest to posttest which was expected because one's level of trait anxiety remains relatively stable over time and within this study there was only 35

minutes between the pretest and posttest trait anxiety measurements. Centering the trait anxiety covariate provided stability for the ANCOVA. The ANCOVA revealed there was a statistically significant difference in change in the state anxiety scores from pretest to posttest by group after controlling for trait anxiety scores. Mean state anxiety change scores were greater in the control group (Group B). Interestingly and notable, participants in the experimental group (Group A) anxiety scores actually increased from pretest to posttest where as the mean state anxiety scores for participants in the control group (Group B) decreased from pretest to posttest. The nursing faculty's presence in the simulation lab during a summative evaluation in a clinical simulation experience resulted in a significant rise in the state anxiety level of the nursing students.

Research Question 5

What is the effect of nursing faculty presence on the students' satisfaction level during a summative evaluation of a clinical simulation experience?

The assumption of normality was violated yet the assumption of equal variances was not. An exploratory data analysis revealed two extreme outliers which are believed to be skewing the distribution of the data. The Student Satisfaction in Learning subscale asked for the participants' opinion on their level of satisfaction with the simulation experience. One's opinion about simulation as a teaching and/or evaluation method may be so negative that no matter what was

done in the simulation lab the activity would be perceived as a negative experience.

When an independent samples t-test (parametric test) was conducted there was a statistically significant difference in the mean satisfaction scores between the experimental group and control group. The mean satisfaction scores for the control group (Group B) with the faculty evaluating from the control room were statistically higher than the mean satisfaction scores for the experimental group (Group A) with the faculty member evaluating from within the simulation room. Higher scores indicate higher levels of student satisfaction whereas lower scores indicate lower levels of student satisfaction. Based on the results of the *t-test*, nursing faculty presence in the simulation room during a summative evaluation of a clinical simulation experience negatively impacted the students' satisfaction levels.

Since the statistical assumption of normality was violated and a nonparametric test is preferred when assumptions have been violated, the researcher conducted a Mann-Whitney U test. The results showed a non-significant difference in the mean satisfaction scores between the two groups. Both of the two extreme negative outliers came from the experimental group (Group A). One may question if the intervention of having the nursing faculty in the simulation room influenced their extreme negative response or if it was a negative attitude about clinical simulation in general. If a qualitative component

had been added to this study, the researcher may have been able to capture the participants' rationale for the extreme negative responses when asked about their satisfaction with the clinical simulation experience.

After reviewing all of the findings for research question five, it is concluded that the two extreme negative outliers created the significant difference in the satisfaction scores in the two groups. Given the small sample size and unequal sizes in the two groups, the researcher leaned on the side of caution and concluded the results of the Mann-Whitney U test were accurate in answering research question five. There was no statistically significant difference in the satisfaction scores between the two groups.

In summary, the researcher concluded that although the concepts of anxiety, self-confidence, and clinical performance are often conceptually related, this study found little correlation between the three variables. The researcher found no statistically significant differences in the level of state anxiety, self-confidence, and clinical performance of nursing students who were in the experimental group (Group A) and those in the control group (Group B). The participants were randomly assigned to the group and the groups were noted to be homogeneous. There was a statistically significant difference in the level of state anxiety from pretest to posttest in the two groups. At the pretest, participants in the experimental group didn't know the nursing faculty would actually be conducting the summative evaluation from inside the simulation room during the

simulation experience. They didn't know until their simulation experience started and they walked into the simulation room. So although there was not a significant group difference in the level of state anxiety, there was a group difference in the amount of change in state anxiety from pretest to posttest and in opposite directions. The results of this study provide evidence that the nursing faculty's presence in the simulation lab caused an increase in the level of state anxiety for the participants in the experimental group. Based on this finding, the researcher recommends nursing faculty position themselves in the control room or at a remote viewing location for a summative evaluation to avoid increasing students' state anxiety.

The students' level of satisfaction was not statistically significant different between the experimental group and the control group when the nonparametric test (Mann-Whitney U) was conducted therefore the students' level of satisfaction was not affected by the presence of the nursing faculty. The findings from research question one and research question five were not significant where as the findings from research question four were significant therefore it is recommended that the nursing faculty observe through the one-way mirror or from a remote location when a summative evaluation of a student's clinical performance during a simulation experience is being done to not elevate the students' level of state anxiety.

Study Findings in the Context of Extant Knowledge

Several findings from this research study were consistent with previous research. Robertson's (2006) two group quasi-experimental study involving senior students studying obstetrics discovered a boost in student satisfaction following a high-fidelity obstetric clinical simulation being added to their curricula ($N = 20$). One group completed case studies where as the second group completed a high-fidelity simulation. The current study was more specific to faculty presence yet provided evidence that there was no significant difference in satisfaction levels among nursing students after a high-fidelity clinical simulation experience when the nursing faculty were observing and evaluating them through a one-way mirror in the control room adjacent to the simulation room as opposed to being present in the simulation room during the experience. The two studies explored student satisfaction levels with a different focus yet contributed to the growing body of knowledge related to clinical simulation.

Torrop (1939) conducted the first known research study exploring anxiety among nursing students yet over 70 years later researchers continue to be intrigued and explore the concept of anxiety. The level of trait anxiety was found to be stable for individuals between pretest to posttest in this study which reconfirms Spielberger's earlier findings about the stability of trait anxiety (Spielberger & Sarason, 1975). Bremner, Aduddell, Bennett, and VanGeest's (2006) mixed method study explored one group of nursing students' various

perceptions when using human patient simulators in a posttest format. Two of the perceptions they studied were anxiety and self-confidence and it was determined using the human patient simulators positively impacted the students' level of anxiety and self-confidence. The current study explored both concepts of anxiety and self-confidence and found that the intervention of nursing faculty presence did not significantly alter the nursing students' level of anxiety or self-confidence when the group means were compared. Further exploration of state anxiety in the current study found a significant difference in the change of state anxiety from pretest to posttest as well as the opposite direction of the change for the groups.

Nursing faculty have noted anecdotal evidence that clinical simulation enhanced students' self-confidence (Bambini, Washburn, & Perkins, 2009; Spunt, Foster, & Adams, 2004). Several other research studies have found that students reported an increase in self-confidence after participating in a high-fidelity clinical simulation experience (Henneman & Cunningham, 2005; Hravnak, Beach, & Tuite, 2007; Scherer, Bruce, Graves, & Erdley, 2003). None of these studies focused on or mentioned nursing faculty presence. This study did not find a significant difference in nursing students' self-confidence levels between the two groups. Even though the findings were not significant, they continue to contribute to the body of knowledge because nursing students' self-confidence related to nursing faculty presence had never been studied before. The findings provide evidence that the nursing faculty presence in the simulation lab did not

have an impact positively or negatively on the students' self-confidence. One's self-confidence may be impacted more by internal factors such as the belief in oneself as opposed to an external factor such as the nursing faculty's presence.

Research studies on faculty presence have been limited in nursing. Conejo's (2009) mixed method study found nursing students reported increased anxiety and pressure when they were watched by nursing faculty from the one-way mirror in the control room during a clinical simulation experience. There was no mention of faculty who were present in the simulation lab for Conejo's study. The findings from this study support and expand upon Conejo's findings. Conejo found that nursing faculty's presence increased anxiety among the students and this study took it one step further to find out that the nursing students' level of state anxiety increased more when the nursing faculty was present in the simulation room when compared to nursing faculty being in the control room. In both situations nursing faculty were "watching" the students during the simulation experience but it was the actual presence of the nursing faculty that increased the level of state anxiety for the experimental group.

The findings from this study provide empirical evidence to support Seropian's (2003) recommendation that clinical simulation labs have a control room with a one-way mirror separate from the clinical simulation room. The findings also provide empirical evidence to support Jeffries (2008) statements about faculty "positioning" in simulation. Jeffries (2008) stated "ideally,

instructors would observe a simulation remotely, either behind a one-way mirror or with closed-circuit television so that students cannot hear comments or see facial expressions and nonverbal gestures" (p. 72). Jeffries went on to describe that when nursing faculty are visible or interrupt students that it negatively affects the students' critical thinking and problem solving skills. This study provides evidence that the nursing students' level of state anxiety change from pretest to posttest was significantly impacted by the nursing faculty's presence in the simulation lab during a summative evaluation yet there was no effect on the students' self-confidence or clinical performance.

No published studies were found that studied the three variables, anxiety level, self-confidence, and clinical performance, together. There was also a lack of research studies that pertain to summative evaluation or that mentioned nursing faculty presence. The intent of the study was to explore the concepts of anxiety, self-confidence, and clinical performance together during a summative evaluation with the nursing faculty present and not present to determine the effects of presence and the findings suggest that the three variables have no meaningful relationship, therefore contributing to the body of knowledge on this topic.

Discussion and Implications for Nursing Educators

Prior to this study, there had been no published research on nursing faculty presence during a simulation experience. Nursing faculty made the decision of where to position themselves during a summative evaluation based on whether a

control room was available to them, convenience, preference, and/or tradition but not from research because it simply had not been done. The results of this study demonstrated that the nursing faculty's presence in the simulation lab during a summative evaluation does negatively affect nursing students' change in level of state anxiety from pretest to posttest yet had no effect their level of state anxiety and self-confidence on the posttest and their clinical performance.

If a control room with a one-way mirror is available within the clinical simulation lab, it is recommended that nursing faculty observe and evaluate students' performance from behind a one-way mirror in the control room during a summative evaluation of a clinical simulation experience in order to decrease the students' level of state anxiety. If the school is in the process of building a new simulation lab or reconstructing existing space, the research provides evidence to support the need for a control room with a one-way mirror as the optimal place to observe and conduct summative evaluations as opposed to being present in the clinical simulation lab during the simulation experience.

There are some simulation labs that do not have a control room and may not have the ability or funds to reconstruct the available space for a control room. For this type of situation, it is recommended that nursing faculty observe and evaluate students at a remote location through the use of audio and visual equipment strategically placed in the clinical simulation room. This type of set-up allows the nursing faculty to fully observe and evaluate the students during a

clinical simulation experience without being physically present in the simulation room. While this substitution for a control room may not be ideal, it removes the faculty presence in the simulation lab for far less cost of reconstruction.

Simulation faculty need to work closely with the nursing faculty who teach didactic to ensure standards of best practice for simulation are upheld during a clinical simulation experience. Nursing faculty should be respected and regarded as content experts and simulation faculty should be respected and regarded as simulation experts with the goal to provide the optimal learning environment for the students during a simulation experience. Based on this study, it is recommended that nursing faculty not be present in the simulation room for a summative evaluation of a students' clinical performance during a clinical simulation experience. It will be up to the simulation faculty to ensure this recommendation is implemented in the future to uphold the standards of best practice for simulation.

Strengths and Limitations of the Study

No prior research has been conducted on the effects of nursing faculty presence on nursing students during a summative evaluation in a clinical simulation experience. The results of this study have provided a solid foundation for future research. The researcher maintained consistency throughout the data collection procedures by maintaining a standardized simulation environment and adhering to a scripted scenario. The researcher also used one nursing faculty

member for this study. That decision may be viewed as a strength because it is one more variable that was controlled therefore reducing variability but at the same time it may be viewed as a limitation because it may decrease the generalizability of the research findings to all nursing faculty.

The first limitation was that a convenience sample of junior level baccalaureate nursing students at one university in the United States was used. The nursing students in this junior level baccalaureate class were assigned randomly to the medical/surgical didactic course and corresponding clinical rotation during the Fall or Spring semester of the academic year. The nursing students were assigned randomly to clinical groups and then the clinical groups were assigned randomly to either the experimental group or control group for this study. The randomization would offset the first limitation.

Secondly, the findings of this study may not be generalizable to students outside of the nursing discipline, in different academic levels of a baccalaureate nursing program, in different academic nursing programs, in different types of simulation scenarios, or different geographic areas because the study was limited to one school of nursing.

Finally, the third limitation was the use of self-report questionnaires. However, all measures had evidence of reliability and validity to offset this limitation.

Recommendations for Further Research

The purpose of this study was to determine the effects of nursing faculty presence on students' level of anxiety, self-confidence, and clinical performance during a summative evaluation of a clinical simulation experience. It is recommended that the study be expanded to include nursing students at various levels (associate degree, senior level and/or accelerated baccalaureate students) as well as students in other healthcare disciplines. It is also suggested the study be repeated using more than one academic setting and more than one faculty member. This would provide evidence for generalization of the study results. The researcher achieved 69% statistical power on each of the three separate ANCOVAs for state anxiety, self-confidence, and clinical performance in research question one. The less than desired statistical power may have contributed to not finding significance. A larger number of participants would be needed to reach the desired 80% power.

Future research could expand to determine what it was specifically about the faculty's presence in the simulation room that caused a significant change in state anxiety scores from pretest to posttest. The students knew their course director would be there and would be conducting a summative evaluation therefore they knew they were being observed. They knew the experience was for self-reflection and to assist faculty with identifying areas of weaknesses to target during upcoming clinical experiences. They knew the summative evaluation was

not for an academic grade. By expanding the study and possibly adding in a qualitative piece to the research, the researcher may be able to hone in more specifically about the nursing faculty's presence that caused a significant change in state anxiety from before to after the simulation. Qualitative research could also explore the reasons behind extreme negative responses in students' satisfaction after a clinical simulation experience to determine if it was the faculty's presence that brought about the extreme negative response, overall feelings about clinical simulation, or another reason unknown to the researcher.

Conclusions and Final Thoughts

Nursing faculty strive to create an optimal learning environment within the clinical simulation lab. This study has provided evidence to support where faculty should position themselves during a summative evaluation of a clinical simulation experience. The nursing faculty's presence in the simulation lab caused an increase in the level of state anxiety for the participants in the experimental group when the change was measured from pretest to posttest. Despite the significant difference, the nursing faculty's presence had no significant effect on the students' level of state anxiety, self-confidence, clinical performance, and satisfaction scores between the two groups when measured at posttest. Researchers must continue to fill in the gaps in the literature related to clinical simulation. This will ensure nursing faculty will have the evidence-based knowledge they need to design, create, implement, and evaluate clinical

simulation experiences that will produce the desired outcomes for nursing students.

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Appendix A

mind garden

SELF-EVALUATION QUESTIONNAIRE **STAI Form Y-1**

Please provide the following information:

Name_____Date_____S_____

Age_____ Gender (*Circle*) **M** **F** T_____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4

Appendix B

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-2

Name_____ Date_____

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	1	2	3	4
22. I feel nervous and restless	1	2	3	4
23. I feel satisfied with myself	1	2	3	4
24. I wish I could be as happy as others seem to be	1	2	3	4
25. I feel like a failure	1	2	3	4

Appendix C

MSN 277 Clinical Simulation Experience:
Postoperative Care of a Patient with Colectomy

Student Outcomes:

1. Demonstrate patient safety practices
2. Demonstrate head-to-toe assessment
3. Identify abnormal findings and situations in the room and intervene appropriately
4. Demonstrate critical thinking in priority assessments and interventions
5. Demonstrate appropriate communications with patient, physician, spouse, pharmacist, and/or chaplain
6. Document patient care

Overlay: Standard Female
Location: Medical-Surgical Unit
Name: Fannie Bowel
MR#: 0123456789
DOB: 12/17/1952
Allergy: NKDA

Synopsis: This clinical simulation experience focuses on the post-operative nursing management of an abdominal surgical patient. The patient presents to your medical-surgical unit post-op day number two following a colectomy for colon cancer. The patient presents with hypoactive bowel sounds, complaining of mild incisional pain otherwise without complications but has not gotten up out of bed yet. Students will attempt to document the initial assessment and vital signs.

History/Information:
A 56 year old female presents to your unit post-op day number two following a colectomy for colon cancer. She is 5'8" tall and weighs 170 lbs. She denies any allergies. She complains of mild incisional pain and requests pain medication. Her nasogastric tube and foley were removed that morning (pod #2) due to the presence of bowel sounds. This patient has been started on a clear liquid diet. The patient has IV fluids infusing into a right antecubital site as well as a large abdominal incision approximated with staples and open to air. Her husband of 20 years plans to arrive later that morning.

Healthcare Provider Orders:

- Clear Liquid Diet, advance as tolerated

- IV fluids – one liter 0.45 NS with 20 meq of KCL @83 ml/hr, saline lock when tolerating po
- Vital signs every four hours
- Incision open to air
- d/c Oxygen
- Cefazolin 1g IVPB every 6 hours
- Hydromorphone hydrochloride 2mg IVP every 2 hours prn severe pain
- Vicodin 2 tabs po every 4 hours prn pain when tolerates po well
- Notify healthcare provider for: SBP < 100, HR > 120, Temp. > 100.5, urine output < 30 ml/hour, SpO2 < 94%

In preparation for the clinical simulation experience:

- Dress high-fidelity human patient simulator with female wig and genitalia in a hospital gown.
- Program high-fidelity human patient simulation with the following information: HR = 108, BP = 130/84, Resp = 18, Temp 37.8, SpO2 = 95%, Lung sounds with crackles throughout, PERRL, hypoactive bowel sounds x 4 quadrants
- Apply an ID band with accurate information on patient
- Apply abdominal wound with staples
- Apply SCD to right lower leg yet leave SCD for left lower leg not on under the sheet and blanket
- Lower both bottom and one upper side rail on patient's bed
- Raise patient's head of bed up 30 degrees
- Place an extra pillow on the bed for deep breathing and coughing
- Hang one liter bag of 0.45 NS with 20 meq of KCL IV infusing into a right antecubital saline lock at a rate of 83 ml/hr and let IV tubing dangle to floor
- Hang an empty Cefazolin IVPB with "today's day" and "started @ 0200" written on bag
- Primary IV tubing and secondary tubing should be labeled "2 days ago at 1330"
- Wrap nasogatric tube in a hospital towel and leave on patient's chest
- Place disconnected nasal cannula around ears but then pushed back onto patient's forehead
- Hang the discontinued foley bag with 300 ml of clear yellow urine on the side of the bedside trash can
- Place on bedside table a bible, rosary, and family picture

- Place on bedside tray an incentive spirometer, piston syringe set, half eaten clear liquid tray, an ABD pad and 4x4 dressing with moderate bloody drainage
- Place updated patient's chart, calculator, alcohol pads, thermometer, and pulse oximeter on medication cart
- Fill patient's medication draw with two Vicodin tablets, two hydromorphone hydrochloride 2 mg/2 ml carpuject, one Cefazolin IVBP, two saline flushes, two insulin syringes, and two 3 ml syringes
- Verify exam gloves and blood pressure cuff are available

Verbal Responses from either Patient, Husband, Chaplain, Pharmacy, or Healthcare Provider	Minimal Behaviors Expected	Teaching Points/Potential Questions for Debriefing
(upon student's entrance into the room): *Patient: Ohh you are finally here. I am really hurting in my belly. I need some pain medicine now.* (if student asks for a description of pain): *Patient: a sharp pain in the middle of my belly* (only if asked to rate pain level by scale*): Patient: it hurts a medium amount* (if student asks a second time to rate pain level by scale and explain scale) *Patient: ohh probably a 4* (if po pain med is given pain scale will remain a 4; if IVP med is given rapidly then BP will lower to 110/64, HR to 84, resp to 12 and patient will complain of dizziness and feeling sleepy then goes to sleep with loud breathing and no response to questions for a few minutes; if IVP med is given over appropriate timeframe and pain level is asked again after at least 5 mins then answer should be 1 with BP of 120/88 HR 88 resp 16) *Patient: Will you fluff my pillow? It just doesn't feel right. I had a terrible night last*	• Washes hands • Introduces self to patient • Checks name, ID bracelet • Raises upper side rail on bed • Raises bed using good body mechanics Complete initial assessment: • Mental status • Vital signs • Pain level and determines need for pain	Safety • Handwashing • Patient identification • Body mechanics • Siderail • SCDs • IV infusing • NG tube • Wound dressing Diet Staging • Nausea? Flatus? Bowel movement since surgery? Food tolerance • Anticipate staging process Pain Management • Decision

night and didn't sleep at all. (If student asks why you didn't sleep well) *Patient: well I heard noises out in the hall all night and I was a little cold and I keep worrying about my test results. I'm still not sure what I'm going to tell my daughter. She doesn't even know I'm here and she'll be so mad when she finds out.* (After student fluffs pillow once) *Patient: Well that doesn't feel right either, just fluff it, you know turn it over and fluff it up.* (After student has fluffed pillow twice) *Patient: no that doesn't feel right, do it again….I guess that will have to do* (If student asks about clear liquid breakfast tray) *Patient: It was okay*. (If student asks what you mean by "okay") *Patient: well I don't like jello and the broth tasted good but it was a little cold when I got it.* (If student ask about flatus) *Patient*: no, why does it smell like I have? (If student asks about bowel movement since surgery) *Patient: No* (If student asks about nausea) *Patient: No* (If student asks about hunger) *Patient: No* (If student asks about urination) *Patient: No I haven't gone since they took that catheter out but I don't feel like I need to now*	medication • Lungs (5 lobes, anterior and posterior) and recognizes abnormal lung sounds • Heart (4 valve areas) • Abdomen (4 quadrants and incision area) • Peripheral circulation (pulses, capillary refill) • Neuro check Assesses need to urinate Assesses for nausea, food tolerance – probe what does "OK" mean Assess psycho-social-spiritual well-being Teaching • Deep breathing • Use of incentive spirometer	making in terms of level of pain, physical assessment, medication options, and method of administration Urination • Ability to urinate, anticipated output given intake, stress response Spiritual Distress • Anticipation of spiritual needs secondary to diagnosis • Recognition that "needy" behavior could be a sign of spiritual distress • Recognition of environment cues for spiritual and religious needs Communication • Patient

Patient: I have an itch on the top of my right foot would you itch it please (repeat this request two more times) *Patient: Has my path report come in? I've been waiting for the results and the doctor said the results would be back this morning* *Patient: Do you know anything yet about my pathology report? Will the doctor come back later today?* *Patient: Is my husband here, yet? He is usually here by now. I hope he didn't have any car trouble.* *Patient: Boy this has just not been a good morning. I just don't know why this is happening to me.* (If student offers to pray or read from patient bible) *Patient: thank you for offering, it would help if you would hand me my rosary* (If student calls husband) *Husband: Yeah this is Mr. Bowel, is everything okay? Did the doctor come by? How is my wife doing? I'll be there as soon as I can. Please let her know I am on my way.* (If student offers a chaplain visit) *Patient: Yes, I would like to see a chaplain* (If student calls the chaplain, chaplain takes down patient information) *Chaplain: How soon do I need to come by to see her? I will be there as soon as I can.* (If student calls the pharmacy) *Pharmacist: Well what was ordered by the provider? That's not my decision. Why don't you call the provider?*	• How to splint abdomen w/pillow when coughing or moving Drug Administration • Pain medication • Antibiotic IVPB Spiritual Needs • Recognize distress • Provide care through various methods Communication • Timely • Professional • SBAR	• Spouse • Healthcare provider • Chaplain

(If student calls the healthcare provider asking which pain med to give, provider is irritated and short) *Provider: Well, can the patient tolerate po yet? Give the meds like I wrote in the order.* (If student calls MD regarding IVPB orders) *MD: carry out the orders like I wrote them, you need to check with pharmacy* (If student calls the oncologist) *Oncologist: I'm not the primary doctor, you need to call Dr. Luc*		

Clinical Simulation Experience developed by Lisa Burkhart, PhD, RN Associate Professor and Linda Bensfield, MSN, RN Program Director for Simulation at Loyola University Chicago Marcella Niehoff School of Nursing

Appendix D

Student Satisfaction and Self-Confidence in Learning

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED – you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Satisfaction with Current Learning	**SD**	**D**	**UN**	**A**	**SA**
1. The teaching methods used in this simulation were helpful and effective.	O 1	O 2	O 3	O 4	O 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning and medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
3. I enjoyed how my instructor taught the simulation.	O 1	O 2	O 3	O 4	O 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	O 1	O 2	O 3	O 4	O 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	O 1	O 2	O 3	O 4	O 5

Self-Confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	O 1	O 2	O 3	O 4	O 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	O 1	O 2	O 3	O 4	O 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting.	O 1	O 2	O 3	O 4	O 5
9. My instructor(s) used helpful resources to teach the simulation.	O 1	O 2	O 3	O 4	O 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	O 1	O 2	O 3	O 4	O 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	O 1	O 2	O 3	O 4	O 5
12. I know how to use simulation activities to learn critical aspects of these skills.	O 1	O 2	O 3	O 4	O 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.	O 1	O 2	O 3	O 4	O 5

 Revised December 22, 2004

Appendix E

Demographic Questionnaire

ID # _____

Please answer the following questions.

1. Gender_____
2. Age _____
3. Race/Ethnicity (please check one):

   _____African American

   _____Hispanic

   _____Native American

   _____Asian/Pacific Islander

   _____Caucasian

   _____Alaska Native

   _____Other (please indicate): _____
4. Previous experience in health care (please check all that apply)

   _____None

   _____Nursing assistant/Patient care technician < 6 months

   _____Nursing assistant/Patient care technician 6-12 months

   _____Nursing assistant/Patient care technician > 1 year

   _____Licensed Practical Nurse

   _____Emergency Medical Technician

Other _____

5. Do you currently take any prescription medication for an anxiety related disorder? YES NO

6. Are you currently receiving therapy relating to any anxiety disorder? YES NO

Appendix F

Do different simulation lab set-ups affect student performance?

We are doing a research study to learn how the clinical simulation experience affects you.

You are invited to participate in the study if:

- You are currently enrolled in the MSN 277 course at Loyola University Chicago Marcella Niehoff School of Nursing

You will be asked to:

- complete two self-evaluation questionnaires about how you would describe yourself and a 6-item demographic questionnaire prior to your clinical simulation experience
- repeat the self-evaluation questionnaires and a 13-item questionnaire about your feelings after the clinical simulation experience

A bottle of water and small snack will be offered at the conclusion of your time in the clinical simulation lab.

To learn more about the study, please contact us at (630) 687-0384.

Simulation Lab Set-up Study
University of Kansas School of Nursing
3901 Rainbow Blvd Kansas City, KS 66160
(630) 687-0384 or thorsley@kumc.edu

Appendix G

RESEARCH CONSENT FORM
TITLE: THE EFFECTS OF SIMULATION LAB SET-UPS ON STUDENT PERFORMANCE
Protocol #

You are being asked to join a research study. You are being asked to take part in this study because you are a junior level baccalaureate nursing student. You do not have to participate in this research study. The main purpose of research is to create new knowledge for the benefit of future nursing students, the clinical simulation lab, and nursing education in general. Research studies may or may not benefit the people who participate.

Research is voluntary, and you may change your mind at any time. There will be no penalty to you if you decide not to participate, or if you start the study and decide to stop early.

This consent form explains what you have to do if you are in the study. It also describes the possible risks and benefits. Please read the form carefully and ask as many questions as you need to, before deciding about this research.

You can ask questions now or anytime during the study. The researchers will tell you if they receive any new information that might cause you to change your mind about participating.

This research study is a graduation requirement for the University of Kansas School of Nursing PhD program. Dr. Karen Wambach is the faculty advisor and dissertation chair to Trisha Leann Horsley who is conducting this study. All junior level baccalaureate nursing students enrolled in a specific medical/surgical course at Loyola University Chicago will be asked to voluntarily participate in this study.

BACKGROUND
Nursing schools design and build their clinical simulation labs based upon the faculty's perception of the optimal environment to meet the students' learning needs, other nursing programs' success with integrating high-tech clinical simulation and the funds available for the project. However, there is no evidence from published research on the optimal environment for the nursing students during a summative evaluation.

PURPOSE
By doing this study, researchers will learn about the students' feelings and clinical performance during a clinical simulation experience. This new knowledge will assist nursing faculty when they are designing clinical simulation labs as well during summative evaluations of nursing student in the clinical simulation lab.

HSC #: 12757
Approval Date: 7/26/11 to 7/25/12
Assurance #: FWA00003411

PROCEDURES
If you are eligible and decide to participate in this study, your participation will last approximately 50 minutes. This can be broken down into 15 minutes to complete the questionnaires prior to your clinical simulation experience, 30 minutes for your clinical simulation experience, and then 5 minutes to complete the questionnaires after your clinical simulation experience. Your participation will involve:

- You will be asked to complete two self-evaluation questionnaires about how you would describe yourself prior to your clinical simulation experience and a demographic information form that will ask for your gender, age, race/ethnicity, as well as questions based on the exclusion criteria. These questionnaires should take approximately 15 minutes to complete.
- Your clinical simulation experience is a mandatory activity designed and scheduled by the professor of your course.
- After your clinical simulation experience, you will be asked to repeat the above mentioned self-evaluation questionnaires and complete a 13-item questionnaire about your feelings during your clinical simulation experience. These questionnaires should take approximately 5 minutes to complete.
- All paper documents will be maintained by the researcher in a secure location for six years after the completion of the study as required by the KUMC Research Institute. After the required time period, the researcher will destroy all paper documents.

RISKS
There are no risks to you if you decide to participate in the study.

NEW FINDINGS STATEMENT
You will be told about anything new that might change your decision to be in this study. You may be asked to sign a new consent form if this occurs.

BENEFITS
You will not directly benefit from this research study. The information from this research study may be useful in the future to nursing faculty during summative evaluation of nursing students in a clinical simulation lab and/or when designing clinical simulation labs.

ALTERNATIVES
Participation in this study is voluntary.

COSTS
There is no cost for being in the study.

PAYMENT TO SUBJECTS
There is no payment for this study but as a thank you for your time and participation you will be offered a 16 ounce bottle of water and an individual packaged snack at the

HSC #: 12757
Approval Date: 7/26/11 to 7/25/12
Assurance #: FWA00003411

end of your time in the clinical simulation lab.

INSTITUTIONAL DISCLAIMER STATEMENT

If you think you have been harmed as a result of participating in research at the University of Kansas Medical Center (KUMC), you should contact the Director, Human Research Protection Program, Mail Stop #1032, University of Kansas Medical Center, 3901 Rainbow Blvd., Kansas City, KS 66160. Under certain conditions, Kansas state law or the Kansas Tort Claims Act may allow for payment to persons who are injured in research at KUMC.

CONFIDENTIALITY AND PRIVACY AUTHORIZATION

The researchers will protect your information, as required by law. Absolute confidentiality cannot be guaranteed because persons outside the study team may need to look at your study records. The researchers may publish the results of the study. If they do, they will only discuss group results. Your name will not be used in any publication or presentation about the study.

Your health information is protected by a federal privacy law called HIPAA. By signing this consent form, you are giving permission for KUMC to use and share your health information. If you decide not to sign the form, you cannot be in the study.

The researchers will only use and share information that is needed for the study. To do the study, they will collect health information from the study activities. You may be identified by an identification number and your health information will be used by members of the research team, the KUMC Human Subjects Committee and other committees and offices that review and monitor research studies. Study records might be reviewed by government officials who oversee research, if a regulatory review takes place.

All study information that is sent outside KU Medical Center will have your identification number and other identifying characteristics removed, so that your identity will not be known. Because identifiers will be removed, your health information will not be re-disclosed by outside persons or groups and will not lose its federal privacy protection.

Your permission to use and share your health information remains in effect until the study is complete and the results are analyzed. After that time, researchers will remove personal information from study records.

QUESTIONS

Before you sign this form, Trisha Leann Horsley or other members of the study team should answer all your questions. You can talk to the researchers, including Dr. Karen Wambach (913-588-1639) the dissertation adviser, if you have any more questions, suggestions, concerns or complaints after signing this form. If you have any questions about your rights as a research subject, or if you want to talk with someone who is not

HSC #: 12757
Approval Date: 7/20/11 to 7/25/12
Assurance #: FWA00003411

involved in the study, you may call the Human Subjects Committee at (913) 588-1240. You may also write the Human Subjects Committee at Mail Stop #1032, University of Kansas Medical Center, 3901 Rainbow Blvd., Kansas City, KS 66160.

SUBJECT RIGHTS AND WITHDRAWAL FROM THE STUDY

You may stop being in the study at any time. Your decision to stop will not prevent you from getting treatment or services from your healthcare provider. The entire study may be discontinued for any reason without your consent by the investigator conducting the study.

You have the right to cancel your permission for researchers to use your health information. If you want to cancel your permission, please write to Dr. Karen Wambach. The mailing address is Dr. Karen Wambach, University of Kansas Medical Center, 3901 Rainbow Boulevard, Kansas City, KS 66160. If you cancel permission to use your health information, you will be withdrawn from the study. The research team will stop collecting any additional information about you. The research team may use and share information that was gathered before they received your cancellation.

CONSENT

Trisha Leann Horsley or the research team has given you information about this research study. They have explained what will be done and how long it will take. They explained any inconvenience, discomfort or risks that may be experienced during this study.

By signing this form, you say that you freely and voluntarily consent to participate in this research study. You have read the information and had your questions answered. ***You will be given a signed copy of the consent form to keep for your records.***

_____
Print Participant's Name

_____ _____ _____
Signature of Participant Time Date

_____
Print Name of Person Obtaining Consent

_____ _____
Signature of Person Obtaining Consent Date

HSC #: 12757
Approval Date: 7/26/11 to 7/25/12
Assurance #: FWA00003411

Appendix H

Clinical Performance Evaluation Tool

Student ID			#	#	#	#
Score:		**Safety & Communication**				
0	1	Washes hands*				
0	1	Identifies self to patient*				
0	1	ID patient (name and bracelet)				
0	1	ID patient (date of birth)				
0	1	Raises upper side rail on bed				
0	1	Raises bed for good body mechanics				
0	1	Communication is professional				
0	1	Uses SBAR for communication with MD				
		Assessment				
0	1	**VS**: Temperature				
0	1	Pulse				
0	1	Respirations				
0	1	Blood Pressure				
0	1	Pulse oximeter check				
0	1	**Pain**: scale of 0-10				
0	1	Pain duration				
0	1	Pain quality				
0	1	Pain location				
0	1	Patient's acceptable level of pain				
0	1	Reassesses pain				
0	1	**Neuro**: LOC				
0	1	Strength in all extremities				
0	1	Sensory in all extremities				
0	1	PERRLA				
0	1	Swallow				
0	1	Shoulder shrug				
0	1	Heart – 4 valve areas				
0	1	Lung – 5 lobes, anterior				
0	1	Lung – posterior assessment				
0	1	Abdomen – inspection				
0	1	Abdomen – auscultate 4 quads				
0	1	Abdomen – palpate 4 quads				
0	1	Assesses for rebound tenderness				

0	1	Incision check - inspection				
0	1	Incision check – palpate around site				
0	1	Pedal pulses				
0	1	Assesses for peripheral edema				
0	1	Assesses for calf tenderness				
0	1	Capillary refill				
0	1	IV site check				
0	1	Checks IV fluids				
0	1	Assesses need to urinate				
0	1	Assesses for nausea/food tolerance				
0	1	Assesses for flatus				
0	1	Inquires about last bowel movement				
0	1	Probes when patient states “okay”				
0	1	Recognizes/assesses spiritual need				
		Interventions				
0	1	Uses gloves when appropriate				
0	1	d/c oxygen				
0	1	Removes NG tube from bed				
0	1	Repositions IV fluid tubing off floor				
0	1	Verifies IV tubing is labeled w/current date				
0	1	Places foley in trash bag				
0	1	Applies SCDs				
0	1	Disposes of wound dressing				
0	1	Selects pain medication				
0	1	Pain medication administration				
0	1	Antibiotic administration				
0	1	Offers spiritual intervention-Type:				
		Teaching				
0	1	Use of incentive spirometer				
0	1	Deep breathing and coughing				
0	1	How to splint abdomen w/pillow				
0	1	About the need to move/ambulate				
0	1	Pain management techniques				
0	1	Explains self monitoring need to urinate				
0	1	Explains need to monitor how well patient tolerates food				

0 = not completed or incorrectly completed; 1 = correctly completed

* = binary coding: all group members must correctly complete in order to earn 1 point

Notes:

Clinical Performance Evaluation Tool developed by Lisa Burkhart, PhD, RN Associate Professor at Loyola University Chicago Marcella Niehoff School of Nursing and adapted for use by Trisha Leann Horsley, MS, RN

Appendix I

Access Letter

May 2, 2011

Vicki A. Keough, PhD, RN-BC, ACNP
Dean and Professor
Loyola University Chicago Marcella Niehoff School of Nursing
1032 West Sheridan Road, Granada Center, 3rd floor, Room 360
Chicago, IL 60660

Dr. Keough,

I am a doctoral nursing student at the University of Kansas School of Nursing. I am currently working on my dissertation to complete the PhD requirements. My dissertation is a quasi-experimental research study titled "The Effect of Nursing Faculty Presence on Students' Level of Anxiety, Self-Confidence, and Clinical Performance during a Clinical Simulation Experience". Approvals from the University of Kansas and Loyola University Chicago Institutional Review Boards are currently pending. Every student will be given an explanation of the study before an informed consent is obtained. The study poses no risks or additional cost to the students.

I am requesting your permission to implement my research study at the Lake Shore campus simulation lab with junior nursing students as potential subjects. The study was designed around a required clinical simulation experience at the beginning of the Fall 2011 semester. If a student agrees to participate, the student will be asked to complete two self-evaluation questionnaires and one demographic questionnaire prior to the simulation experience then complete three self-evaluation questionnaires after the simulation experience (total estimated time 20 minutes).

If you have any questions in regards to this study, please feel free to contact me at thorsley@kumc.edu or (630) 687-0384. The chair of my dissertation committee, Dr. Karen Wambach, can be reached at kwambach@kumc.edu or (913) 588-1639. Dr. Peg Kraft is also a member of dissertation committee and can be reached at mkraft@luc.edu or (708) 216-3577. Thank you for your time and consideration.

Sincerely,

Trisha Leann Horsley, MS, RN
2612 Saltmeadow Drive
Naperville, IL 60564

Appendix J

Access Letter

May 2, 2011

Linda C. Cassata, PhD, MSN, RN
Associate Dean for Undergraduate Programs
Loyola University Chicago Marcella Niehoff School of Nursing
1032 West Sheridan Road, Granada Center, 3rd floor, Room 364
Chicago, IL 60660

Dr. Cassata,

I am a doctoral nursing student at the University of Kansas School of Nursing. I am currently working on my dissertation to complete the PhD requirements. My dissertation is a quasi-experimental research study titled "The Effect of Nursing Faculty Presence on Students' Level of Anxiety, Self-Confidence, and Clinical Performance during a Clinical Simulation Experience". Approvals from the University of Kansas and Loyola University Chicago Institutional Review Boards are currently pending. Each student will be given an explanation of the study before an informed consent is obtained. The study poses no risks or additional cost to the students.

I am requesting your permission, as well as Dr. Keough's permission, to implement my research study at the Lake Shore campus simulation lab with junior nursing students as potential subjects. The study was designed around a required clinical simulation experience at the beginning of the Fall 2011 semester. If a student agrees to participate, the student will be asked to complete two self-evaluation questionnaires and one demographic questionnaire prior to the simulation experience then complete three self-evaluation questionnaires after the simulation experience (total estimated time 20 minutes).

If you have any questions in regards to this study, please feel free to contact me at thorsley@kumc.edu or (630) 687-0384. The chair of my dissertation committee, Dr. Karen Wambach, can be reached at kwambach@kumc.edu or (913) 588-1639. Dr. Peg Kraft is also a member of dissertation committee and can be reached at mkraft@luc.edu or (708) 216-3577. Thank you for your time and consideration.

Sincerely,

Trisha Leann Horsley, MS, RN
2612 Saltmeadow Drive
Naperville, IL 60564

Appendix K

Access Letter

May 2, 2011

Linda A. Bensfield, MSN, RN
Program Director for Simulation
Loyola University Chicago Marcella Niehoff School of Nursing
1032 West Sheridan Road, Granada Center, 3rd floor, Room 360
Chicago, IL 60660

Ms. Bensfield,

I am a doctoral nursing student at the University of Kansas School of Nursing. I am currently working on my dissertation to complete the PhD requirements. My dissertation is a quasi-experimental research study titled "The Effect of Nursing Faculty Presence on Students' Level of Anxiety, Self-Confidence, and Clinical Performance during a Clinical Simulation Experience". Approvals from the University of Kansas and Loyola University Chicago Institutional Review Boards are currently pending. Every student will be given an explanation of the study before an informed consent is obtained. The study poses no risks or additional cost to the students.

I am requesting your permission, as well as Dr. Keough and Dr. Cassata's permission, to implement my research study at the Lake Shore campus simulation lab with junior nursing students as potential subjects. I am also requesting your permission to use the simulation scenario titled "Postoperative Care of a Patient with Colectomy" that you wrote with Lisa Burkhart, PhD, RN. The study was designed around a required clinical simulation experience at the beginning of the Fall 2011 semester. If a student agrees to participate, the student will be asked to complete two self-evaluation questionnaires and one demographic questionnaire prior to the simulation experience then complete three self-evaluation questionnaires after the simulation experience (total estimated time 20 minutes).

If you have any questions in regards to this study, please feel free to contact me at thorsley@kumc.edu or (630) 687-0384. The chair of my dissertation committee, Dr. Karen Wambach, can be reached at kwambach@kumc.edu or (913) 588-1639.

Dr. Peg Kraft is also a member of dissertation committee and can be reached at mkraft@luc.edu or (708) 216-3577. Thank you for your time and consideration.

Sincerely,

Trisha Leann Horsley, MS, RN
2612 Saltmeadow Drive
Naperville, IL 60564

Appendix L

Access Letter

May 2, 2011

Lisa Burkhart, PhD, RN, MPH
Associate Professor
Loyola University Chicago Marcella Niehoff School of Nursing
1032 West Sheridan Road, Granada Center, 3rd floor, Room 366
Chicago, IL 60660

Dr. Burkhart,

I am a doctoral nursing student at the University of Kansas School of Nursing. I am currently working on my dissertation to complete the PhD requirements. My dissertation is a quasi-experimental research study titled "The Effect of Nursing Faculty Presence on Students' Level of Anxiety, Self-Confidence, and Clinical Performance during a Clinical Simulation Experience". Approvals from the University of Kansas and Loyola University Chicago Institutional Review Boards are currently pending. Every student will be given an explanation of the study before an informed consent is obtained. The study poses no risks or additional cost to the students.

I am requesting permission from Dr. Keough, Dr. Cassata, and Linda Bensfield to implement my research study at the Lake Shore campus simulation lab with junior nursing students as potential subjects. I am requesting your permission to use the simulation scenario titled "Postoperative Care of a Patient with Colectomy" that you wrote with Linda Bensfield, MS, RN and the Clinical Performance Evaluation Tool in the adapted form. I also would like to ask your permission to hand out flyers about my research study at the beginning of a class period during the second week of the semester. My study was designed around a required clinical simulation experience and with your permission I would like to target the students enrolled in your MSN 277 course therefore the clinical simulation experience you designed would be embedded within my research study. There will be no changes to your plans. If a student agrees to participate, the student will be asked to complete two self-evaluation questionnaires and one demographic questionnaire prior to the simulation experience then complete three

self-evaluation questionnaires after the simulation experience (total estimated time 20 minutes).

If you have any questions in regards to this study, please feel free to contact me at thorsley@kumc.edu or (630) 687-0384. The chair of my dissertation committee, Dr. Karen Wambach, can be reached at kwambach@kumc.edu or (913) 588-1639. Dr. Peg Kraft is also a member of dissertation committee and can be reached at mkraft@luc.edu or (708) 216-3577. Thank you for your time and consideration.

Sincerely,

Trisha Leann Horsley, MS, RN
2612 Saltmeadow Drive
Naperville, IL 60564

Appendix M

Letter of Support

LOYOLA UNIVERSITY CHICAGO 1870 AD MAJOREM DEI GLORIAM

Marcella Niehoff School of Nursing
Maywood Campus
2160 S. First Avenue, 105-2840 | Maywood, Illinois 60153
Phone 708.216.9101 | Fax 708.216.9555

April 8, 2011

Dr. Karen Wambach
Kansas University Medical Center

Dr. Wambach,

It was a pleasure to discuss the proposal of Ms. Trisha Horsely as she prepares for her dissertation focusing on the impact of instructor presence during simulation. The study has relevance for nursing education and her proposal has the elements necessary to move forward.

Pending approval of the Institutional Review Boards of K.U. and Loyola University Chicago (LUHS) we at the Marcella Neihoff School of Nursing are prepared to facilitate her recruitment and data collection efforts to conduct the study. We look forward to supporting this effort and having Ms. Horsely present her findings.

Please feel free to contact me if there are any questions or concerns.

Sincerely,

Linda Cassata

Linda Cassata, PhD, RN
Associate Dean of Undergraduate Programs
(773) 508-3258

cc. Dean V. Keough
Dr. Margaret Kraft