AN ABSTRACT FOR THE DISSERTATION

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE

SCHOOL OF LIBRARY AND INFORMATION MANAGEMENT

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presented on

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Title: Examining Nurse Educators' Stages of Concern about the Teaching

Innovation of Simulation as Clinical Experience

Abstract approved:

____ **(Chair)**

There exists a critical need to boost the overall number of baccalaureate-prepared registered nurses to accomplish goals for providing high-quality healthcare for all United States citizens (Institute of Medicine, 2011). Given the limited number of sites needed to facilitate clinical learning experiences for pre-licensure baccalaureate nursing students, using simulation as a technologically modern innovation in nursing instruction is an approach to help overcome the lack of traditional clinical opportunities. The purpose of this study was to examine the nurse educators' concerns about using simulation by determining 1) the intensity of nurse educators' stages of concern about using simulation as clinical instruction; 2) if there are differences in nurse educators' stages of concern by their demographics; 3) if nurse educators' demographics predict their intensity of concern in each stage of concern dimension. The stages of concern model based on the Concerns-Based Adoption Model (George et al., 2006) and diffusion of innovation (Rogers, 2003) provided the theoretical framework. The 35-item Stage of Concern Questionnaire (George et al., 2006) was the data collection tool. Data were collected in March-April 2020 from 231 nurse educators teaching in pre-licensure baccalaureate nursing programs located in the west north-central region of the United States and accredited by the Commission of Collegiate Nursing Education (CCNE). Descriptive statistical analysis was used to determine the intensity of nurse educators' stages of concern. Results indicated four independent categorical variables support a significant difference in nurse educators' stage of concern: education level; years the nurse educator has used simulation; years of BSN teaching experience; and the number of students the nurse educator has in a simulated clinical experience. Regression analysis demonstrated that two independent variables were the strongest predictors of six of the seven stages of concern dimensions: number of years that the nurse educator has used simulation; and the amount of BSN teaching experience. Using simulation technology as clinical experience is a change in teaching pedagogy, and change creates concern. Supporting nurse educators experiencing change is critical for simulation to take hold in the nursing education environment to accommodate the increased demand for BSN prepared RNs in the workforce.

Keywords: concerns-based adoption model, stages of concern, simulation, nursing education, baccalaureate nursing education, BSN education, nurse educators

Examining Nurse Educators' Stages of Concern about the Teaching Innovation of Simulation as Clinical Experience

by

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Doctoral Approval Sheet

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Abbreviations

AACN	American Association of Colleges of Nursing
ACEN	Accreditation Commission for Education in Nursing
AIR	American Institutes for Research
BSN	Baccalaureate educated nurse
CCNE	Commission on Collegiate Nursing Education
DOI	Diffusion of Innovation
CBAM	Concerns-Based Adoption Model
FTE	Full-time Equivalent
IC	Innovation Configurations
LIS	Library and Information Science
LoU	Levels of Use
NCSBN	National Council of State Boards of Nursing
NLN CNEA	National League of Nursing Commission for Nursing Education Accreditation
RN	Registered Nurse
SEDL	Southwest Educational Development Laboratory
SoC	Stages of Concern
SoCQ	Stages of Concern Questionnaire

Chapter 1

This quantitative study's overall purpose was to investigate clinical nurse educators' stages of concern about using full-scale simulation as a clinical instructional methodology rather than only utilizing clinical instructional methods that do not incorporate simulation in instruction. For this study, a full-scale simulation was synonymous with simulation, which means using a computerized full-body mannequin that can be programmed to provide realistic physiologic responses to a practitioner's actions. Specifically, this study questioned nurse educators who teach full-time in baccalaureate-level nursing programs accredited by the Commission on Collegiate Nursing Education (CCNE) about their concerns about using simulation technology as an innovation to fulfill clinical experiences.

Healthcare is experiencing much change. Impacting the change is an increased aging population, greater complexity in morbidity, and burgeoning technology. These three factors alone require an innovative change in teaching the future nursing workforce. Current workforce issues include a shortage of nurses, research data supporting improved patient outcomes with baccalaureate-educated (BSN) registered nurses (RNs) in the workforce, obstacles to increasing BSN enrollment, and a need for educational reform at all levels of nursing preparation with more emphasis on critical thinking and clinical judgment. Simulation as an electronic technological tool is an innovative instructional approach that the nursing profession has been implementing to overcome the obstacles associated with BSN education limitations.

Simulation as clinical experience uses a computerized full-body mannequin, a medium to high fidelity full-body simulator, that can be programmed to provide natural physiologic responses to a practitioner's actions. These simulation activities allow pre-license nursing students to engage with computer technologies actively. Computer simulation technology allows students to gain knowledge and skills necessary across health care settings, including pediatrics, women's health, and adult health, which also incorporates intensive care settings, community settings, and end-of-life care settings. In addition, the innovative use of full-scale simulation as an instructional methodology that "mimics the reality of a clinical environment" (Jefferies, 2005, p. 97) is consistent with the recently articulated intentions of the International Nursing Standards Committee (2016b), which is to provide "replication of conditions that resemble real-life" (p. 14). Further, simulation as new technological innovation has not yet been studied in Library and Information Science research as is explored in this study.

Full-scale simulation is being adopted as a teaching strategy in baccalaureate-level nursing programs to help bridge the gap between needed clinical experiences and the reality of limited patient availability and the potential to increase student capacity in nursing programs (Curl et al., 2016). The National Council of State Boards of Nursing (NCSBN) supports simulation as a clinical component (Hayden et al., 2014). The NCSBN conducted a national randomized control study to determine the impact on "student knowledge, clinical competency, critical thinking, and readiness for practice" (Hayden et al., 2014, p. S36) when substituting simulated clinical experience in place of traditional clinical experience in undergraduate nursing programs. The study provided substantial evidence that substituting quality simulation experiences for traditional clinical hours "produce comparable end-of-program educational outcomes and new graduates that are ready for clinical practice" (Hayden et al., 2014, p. S3). Moreover, Hayden et al. (2014) concluded that substituting up to fifty percent of the traditional clinical experience with simulated experience is acceptable.

Using simulation represents a technological innovation (Institute of Medicine, 2011). This innovation requires nurse educators to shift their teaching pedagogy from live patient experiences to learning this new technology and teaching using simulation (Al-Ghareeb & Cooper, 2016; Breymier et al., 2015; Jeffries, 2005; Nehring et al., 2001; Nehring & Lashley, 2004; Robinson & Dearmon, 2013). Although the NCSBN has evidence to support the use of simulation as clinical experience, what was not known is nurse educators' concerns about using simulation in clinical experience instruction.

This study questioned baccalaureate-level nurse educators about their concerns during the current semester when using or deciding to use simulation as clinical experience. When developing a nursing curriculum, nursing education leaders need to use evidence-based findings such as this study about nurse educators' concerns. Also, knowing the concerns of nurse educators about simulation as an electronic tool will help address the need pointed out by the Institution of Medicine (IOM) (2011) to accommodate more students in baccalaureate-level nurses education programs.

In this first chapter, the background briefly explains law and policy leading to innovation in the education of the future nursing workforce, the mandate for an increase in BSN prepared RNs, obstacles to increasing BSN enrollment, use of simulation in clinical nurse education, and implications for nurse educators. Then presented are the problem statement, the context and conceptual framework, the study's purpose, the research question and hypotheses statements, the study's significance, the definition of terms, and the assumptions, delimitations, and limitations for this proposed study.

Background

Simulation as computer technology has surfaced as an innovation in response to the mandates in the 2010 Affordable Care Act and the basic premises asserted by the IOM. This section provides background details about the law and policy guiding simulation as a new technology, the IOM mandate for increasing BSN prepared RNs, obstacles to increasing BSN enrollment, simulation use in clinical nurse education, and implications for nurse educators.

Law and Policy

Following the acceptance of the 2010 Affordable Care Act that mandated health insurance and access to health care for all people, especially those who were previously not receiving care, the IOM (2011) released the momentous report titled *The Future of Nursing.* Within this report, many directives addressed the demand to meet the increasing healthcare needs of the aging population, the multiple co-morbidities exhibited by patients, the growth of technology in healthcare, and the challenges of replacing the aging nursing workforce (Institute of Medicine, 2000). These factors demanded innovation in the education of the future nursing workforce.

The Mandate for Increase in BSN Prepared RNs

Another factor in understanding the background for computerized simulation development is the need to boost the overall number of BSN prepared RNs. Several sources of authority explain this factor. For example, one of the IOM (2011) report's directives is the critical need to boost the overall number of baccalaureate-prepared registered nurses to 80% of the workforce by 2020. Another source, the American Association of Colleges of Nursing (AACN), also endorses the need for baccalaureate-prepared registered nurses. The AACN states, “registered nurses (RNs) should be, at a minimum, prepared with the Bachelor of Science in Nursing (BSN) or equivalent baccalaureate nursing degree” (American Association of Colleges of Nursing, 2019b, p. 1). Baccalaureate nursing education prepares students with a solid knowledge base and skill set to improve healthcare outcomes and the population's overall health (American Association of Colleges of Nursing, 2019a). These background factors remain relevant to meeting the needs of an adequate number of BSN prepared RNs, as indicated in the IOM (2011) (American Association of Colleges of Nursing, 2017).

Obstacles to Increasing BSN Enrollment

One of the chief obstacles to increasing the supply of BSN-prepared RNs is securing clinical sites that provide students the opportunity to learn and demonstrate the knowledge, skills, and attitudes that a state board of nursing (SBON) requires to graduate from an approved nursing program. High patient acuity, the decreased length of patient hospital stays, and patient safety policies limiting nursing student participation in patient care are a few of the challenges that have created a gap between needed clinical opportunities and availability of traditional clinical opportunities (Hayden et al., 2014).

According to the *Biennial Survey of Schools of Nursing 2018*, lack of traditional clinical placements is the predominant obstacle, followed by a lack of faculty, to admitting additional students (National League for Nursing, 2018). Although nursing programs may have classroom space, the associated challenges prohibit increasing students' numbers because of the lack of live-patient clinical experience opportunities. Further, enough faculty to manage the amount of clinical time must be secured. Faculty and available clinical experiences are necessary to ensure that students have the requisite nursing skills to meet the healthcare needs of the population (American Association of Colleges of Nursing, 2019a; Hayden et al., 2014; Jeffries, 2008; Robinson & Dearmon, 2013; Smiley, 2019).

The American Association of Colleges of Nursing (AACN) reported that in 2017, one of the primary reasons for not admitting more qualified nursing student applicants is the lack of faculty in 55% of all nursing programs (American Association of Colleges of Nursing, 2019a). Further, the AACN addressed the aging nursing faculty's phenomenon guiding undergraduate level nursing students at differing generations (American Association of Colleges of Nursing, 2019a). The average ages of doctoral-prepared nurse faculty holding one of three ranks within educational programs: professor, associate professor, and assistant professor were 62.4 years, 57.2 years, and 51.2 years respectfully. Additionally, reported for the same categories of masters-prepared faculty were 55.5, 56.4, and 50.6 years of age. Projections indicate that one-third of these faculty will retire by 2025 (American Association of Colleges of Nursing, 2019c). To help resolve these issues, the IOM (2011) calls for reform of BSN-level nurse education. Simulation, the innovative computer technology that focuses on this report, is a strategy endorsed by the IOM to accommodate more BSN program students.

Use of Simulations in Clinical Nurse Education

In nursing education, clinical refers to a setting in which students care for patients across the lifespan. The student clinical experience focuses on developing and refining the knowledge and skills necessary to manage the patient as part of an interprofessional team (American Association of Colleges of Nursing, 2008). For this study, the term clinical describes a BSN program curriculum course where students learn to provide and practice patient care. Patient care includes assessment, intervention, and evaluation of patients. Clinical also includes a demonstration of the essential knowledge, skills, and attitudes required of a professional nurse in a real-life or simulated real-life medical setting (Institute of Medicine, 2000), also known as site-based learning (American Association of Colleges of Nursing, 1999). Simulation is an “activity that mimics the reality of a clinical environment and [is] designed to demonstrate procedures, decision-making, and critical thinking” (Jeffries, 2005, p. 97). Simulation is a replication of conditions that resemble real-life (International Nursing Standards Committee, 2016). It is “an objective, state-of-the-art technology by which current, comprehensive, and interactive instruction and evaluation can be given" (Nehring et al., 2001, p. 194). In general, nurse educators understand simulation in terms of fidelity: low-fidelity (task trainers) and medium to high fidelity (computerized full-body mannequin).

Background Implications for Nurse Educators

While using simulation to replace traditional clinical experiences helps to close the gap between student needed clinical experiences and availability of traditional clinical opportunities, faculty time and workload associated with the use of simulation has raised concern (Jansen et al., 2009; Nehring et al., 2001; Nehring & Lashley, 2004). Faculty are often not prepared to teach using high-tech patient simulators (Jeffries, 2008). If faculty are to become prepared, they must change their teaching pedagogy as they themselves learn to use full-scale simulators and then learn to teach using them. Such a shift requires a change in nurse educators' thinking and approach to the teaching-learning clinical environment.

The use of simulation as a clinical experience instruction rather than live patients for clinical experience instruction represents a paradigm shift for nurse educators (Hayden et al., 2014). They view simulation as an excellent technological innovation that they are encouraged to adopt and use. If nurse educators accept this view, they will need to shift from teaching in live patient clinical situations to teaching using simulated patient clinical situations. Importantly, they have to learn the new computer technology used in simulated clinical experiences (Al-Ghareeb & Cooper, 2016; Breymier et al., 2015; Nehring et al., 2001; Nehring & Lashley, 2004; Robinson & Dearmon, 2013). Additional faculty time and resources will be necessary to facilitate clinical teaching using simulation as recommended by Akhtar-Danesh, Baxter, Valaitis, Stanyon, and Sproul, 2009; Al-Ghareeb and Cooper, 2016; Breymier et al., 2015; Jeffries, 2008; Nehring et al., 2001; Robinson and Dearmon, 2013; Sundler, Pettersson, & Berglund, 2015.

Preparation for simulation as a teaching tool requires nurse educators to recreate clinical experiences (Gore & Thomson, 2016), learn how to conduct simulations, and ensure that the simulation objectives correlate closely with clinical learning outcomes (Jeffries, 2008). Using simulation requires planning, setting up, running, and putting away the equipment and meeting student needs. Planning and implementing roles and activities that allow several students to participate in the same simulation experience simultaneously is necessary to accommodate a traditional clinical group (Jansen et al., 2009). Additionally, faculty must negotiate the use of simulation space and equipment with other faculty who are also vying to use full-scale simulation in place of traditional clinical time (Jansen et al., 2009).

Time is also an essential need of both the student and the educator in clinical simulation experiences. Students need time to be pre-briefed on the simulation scenario and ground rules and then allowed ample time to learn and practice nursing skills. The students also need time to provide feedback to each other about the experience following a simulated experience. Additionally, educators need time to conduct constructive feedback sessions for students building on students' existing knowledge and interpreting learning gained in the simulation scenario (Jeffries, 2005).

Furthermore, the recommended faculty-to-student ratio when teaching traditional clinical experiences differs from the recommended faculty-to-student ratio when teaching simulated clinical experiences. A national study reveals that the variability of faculty-to-student ratio for both traditional and simulated clinical experience ranges from 1:1 ratio to 1:>10. The researchers reported a ratio of 1:8-9 as the most popular faculty-to-student ratio for traditional clinical experiences. A ratio of 1:4-5 is the most popular faculty-to-student ratio for simulated clinical experiences (Breymier et al., 2015). Thus, although utilizing simulation is necessary to provide needed clinical opportunities, utilizing simulated clinical experiences, in essence, doubles the nurse educators’ clinical workload or need for additional faculty (Jansen et al., 2009).

Problem Statement

The current supply of BSN-prepared RNs is not enough to meet the U.S. population's current and future healthcare needs (Blegen et al., 2013; Institute of Medicine, 2011). The IOM (2003, 2011) described the lack of BSN prepared RNs as a nurse education crisis and called for reform of baccalaureate-level nurse education to accommodate more students in baccalaureate-level nurse education programs. While the need for BSN-prepared RNs continues to increase, nurse education programs encounter obstacles, including patient safety initiatives that restrict students' numbers in a clinical area and nursing programs competing for limited clinical sites (Institute of Medicine, 2000, 2003, 2011). Nursing education programs are adopting simulation as computer technology to facilitate clinical experiences that meet BSN education requirements. What is not known is nurse educators’ concerns about using simulation as clinical experience.

Context and Conceptual Framework

This study's context is baccalaureate-level pre-licensure clinical nursing programs accredited by the Commission on Collegiate Nursing Education (CCNE) located in the region identified by the U.S. Department of Commerce as the west north-central region of the United States. This researcher selected this region, including Missouri, Minnesota, Kansas, Iowa, Nebraska, North Dakota, and South Dakota, due to its geographic proximity. The number of CCNE accredited baccalaureate nursing programs potentially eligible for the study (104) in this geographic region generated an estimated 1,450 nurse faculty as potential participants. This region represents a large geographic location with a significant number of programs, making it possible to investigate nurse educators’ concerns about using simulation devices that involve replicating real-life conditions as clinical course instruction. Based on prior nurse educator research (Rommelfaenger, 2015) designed similarly, using the SoCQ, having made logical choices, and providing explanations in communications to potential respondents, the researcher estimated a 30% response rate.

The rationale for conducting this study is to use a research-based approach to measure nurse educators’ concerns about adopting and using simulation as an instructional innovation for clinical experience. The selected research-based approach to investigating nursing instruction in this study was influenced by Hord (2016), who asserts that improving teaching practices comes from changing the elements that do not produce such results deemed valuable. As such, change is feasible in the application of learning through teaching methods. This study was of interest to this researcher because they are both a nurse educator interested in simulation as a clinical teaching method and a library and information science scholar. This researcher approached this study through the lens of the diffusion of innovation (DOI) and the concerns-based adoption model (CBAM).

The conceptual framework for this study centers on the philosophical view embodied in educational constructivism. This framework builds on the work of John Dewey (1933, 1944), George Kelly (1963), Lev Vygotsky (1978), and others who explained the way people create meaning in the world through a series of individual constructs determined by their social-cultural environment. This philosophy of education is consistent with the researcher’s view that learning entails constructing knowledge out of the experience and with the theories used in this study that address diffusion of innovation, CBAM, and stages of concern.

Diffusion of Innovation

Everett Rogers' (2003) diffusion of innovation theory (DOI) can be used to explain one aspect of the information transfer cycle, as described by Greer, Grover, and Fowler (2013), which includes creation, dissemination, diffusion, utilization, and preservation of information. This study focuses on diffusion as it relates to the acceptance of new computer technology. Rogers' DOI is used in this study to conceptualize the adoption of innovative computer technology (simulation) and the process whereby nurse educators are exposed to simulation as a new strategy for instruction during clinical experiences. Rogers (2003) points out that the process of accepting something new occurs in stages rather than all at once. Also, innovation is likely to be accepted based on the elements of the innovation. Rogers' stages of innovation influenced the creators of the CBAM and the Stages of Concern Questionnaire (SoCQ) (George et al., 2006; George et al., 2008).

Concerns Based Adoption Model

The creators of the CBAM were influenced by Rogers' theory of diffusion of innovation as they addressed people's adoption of innovation over time (George et al., 2006; Hall, 1974). The developers of the CBAM acknowledged that acceptance of a new strategy is different for every person. The CBAM focuses on individuals' attributes, including how individuals' needs impact the successful implementation of change (Hall et al., 1979) and individuals' ability to resolve concerns about adopting an innovation (George et al., 2006). Concerns are shaped by perceptions about the things with which humans are personally involved, and the intensity of concern changes based on the person's feelings, thoughts, and point of view at the time (George et al., 2006). The stages of concern (SoC) (Appendix A) dimension of the CBAM evolved with the intent that as an innovative user becomes more comfortable using the innovation, the individual's concerns about the innovation will change.

Purpose of the Study

The purpose of this study was to,

1. Understand the intensity of nurse educators’ stages of concern about using simulation as clinical instruction.
2. Determine if there are differences in nurse educators’ stages of concern by their demographics.
3. Examine how nurse educators’ demographic factors predict their intensity of concern in each stage of concern dimension.

The evidence can guide baccalaureate nurse educators and program administrators to better plan and implement simulation as a computer technology in a clinical experience.

Research Questions

This research answered the following research questions:

1. At what intensity are the nurse educators’ stages of concern about using simulation as clinical experience in the west north-central region of the U.S.?
2. What are the significant differences in the baccalaureate nurse educators’ stages of concern by their demographics in the west north-central region of the U.S.?
3. Do the demographics of nurse educators in the west north-central region of the U.S. predict their stages of concern?

Significance of the Study

This study's results and conclusions are drawn from the analysis of results. The results may be of particular significance to the body of LIS literature about the adoption of computer technology innovations, LIS researchers interested in simulation and its various forms, and other pre-licensure BSN program stakeholders. Viewing simulation as a clinical teaching modality through the SoC dimension of CBAM will help baccalaureate nurse educators and program administrators to know what modifications to make and what concerns to foresee and address. This study contributes to achieving the IOM's recommendations to increase the number of BSN prepared RNs in the workforce.

Definition of Terms

Sources of Authority

The following is a collection of terms used in chapter one and throughout the manuscript.

Adoption

The act of either including innovation in practice or rejecting it (Rogers, 2003). For this study, adoption is operationalized by the same definition.

Baccalaureate nurse education (BSN)

A pre-licensure baccalaureate nursing program offers a Bachelor of Science (BS), a Bachelor of Nursing (BN), or a Bachelor of Science in Nursing (BSN). It is a four-year baccalaureate degree program offered at universities and colleges. It includes liberal arts and science courses and academic theory content and clinical experiences to meet nursing program outcomes. It “prepares nurses to practice in all healthcare settings” (Weiss, 2010, p. 8). For this study, the term baccalaureate is synonymous with the term BSN. Additionally, the operational definition is the same.

Clinical

A setting in which students care for various patients across the lifespan and the continuum of care and focus on developing and refining the knowledge and skills necessary to manage the patient as part of an interprofessional team (American Association of Colleges of Nursing, 2008). For this study, clinical is a course in which students provide patient care, including assessment, intervention, and evaluation, and demonstrate the essential knowledge, skills, and attitudes.

Concern

Fuller (1969) references the term concern as a perceived problem; Hall et al. (1979) define concern as "an aroused state of personal feelings and thoughts about demand as it is perceived" (Hall et al., 1979, p. 5). For this study, concern is defined as the perceived state of personal feelings and thoughts.

Demographics

Demographics are the size, characteristics, or composition of a population (Oxford University Press, 2020). For this study, the demographics are: (a) the age of the nurse educator, (b) the highest degree attained, (c) faculty rank, (d) the number of years the BSN program has engaged in simulation activities, (e) the number of years using simulation as a teaching modality, (f) the number of years of experience of teaching BSN education, (f) the percent of clinical time per semester that the clinical course includes using simulation, (g) the average amount of time that the educator spends teaching one clinical simulation experience, (h) the average number of students the educator has in one simulation experience per semester, and (i) the total number of students in the nurse educator's nursing program.

Fidelity

"The precision of reproduction of real-life" (Tuoriniemi & Schott-Baer, 2008, p. 106); the degree of realism or believability portrayed in the environment: as realism increases, fidelity increases (International Nursing Standards Committee, 2016). For this study, fidelity is the degree to which a simulation experience resembles a realistic clinical experience.

Full-scale simulation

Full-scale simulation encompasses medium to high fidelity simulators. Full-scale simulation is "Simulation that incorporates a computerized full-body mannequin that can be programmed to provide realistic physiologic responses to a practitioner's actions. . . [it] requires a realistic environment and the use of actual medical equipment and supplies" (Decker et al., 2008, p. 75). Full-scale simulators range from neonate to adult and have anatomically correct features like lung, heart, bowel sounds, specific pupil responses, a voice, spurting blood (Decker et al., 2008), excretion of body fluids such as urine, and may even birth a baby. Full-scale simulators respond to the student's interventions in a physiologically correct manner (Decker et al., 2008; Tuoriniemi & Schott-Baer, 2008). Examples of interventions include medications, urinary catheterization, uterine massage following a baby's birth, clearing mucous from the newborn's nose and throat, maintaining a chest tube or ventilator, receipt of blood products, and advanced life support. These simulators can provide the opportunity to integrate and evaluate competencies, critical thinking, and clinical judgment related to the synthesis of knowledge, technical and communication skills, and participation as a member of an interdisciplinary team in the management of patients ranging from minimal to complex problems (Decker et al., 2008). Full-scale simulation is defined as using medium- to high-fidelity simulators in this study and is synonymous with simulation and simulated clinical.

Innovation

An object or situation that an individual perceives as new to their environment (Rogers, 2003); an object or a set of circumstances that creates a focus of concern for an individual (George et al., 2006). For this study, innovation is an object or situation that is the focus of concern.

Nurse Educator

A nurse educator is a licensed registered professional nurse who holds a graduate degree in nursing (Kansas State Board of Nursing, 2018) and facilitates student learning and the achievement of desired cognitive, affective, and psychomotor outcomes (World Health Organization (WHO), 2016). A nurse educator possesses “in-depth, discipline-specific and pedagogical knowledge to effectively meet the anticipated complexities of professional nursing practice” (Bullin, 2018, p. 10). For this study, a nurse educator facilitates student learning and achievement of desired cognitive, affective, and psychomotor outcomes to perform as a licensed registered nurse.

Partial task trainer

A partial task trainer is also known as a low-fidelity simulator. A partial task trainer is a simple replication of body parts with limited user interactivity, also known as task or skill trainers (Akhtar-Danesh et al., 2009; Tuoriniemi & Schott-Baer, 2008; Wilson et al., 2005). Models or mannequins are used to learn, practice, gain competency, and evaluate competency in a specific skill (Decker et al., 2008). Partial task trainers are used for specific skills, including giving injections, performing venipuncture, inserting and maintaining catheters or feeding tubes, providing wound care, and performing cardiopulmonary resuscitation. This study uses the same definition for partial task trainer/low-fidelity simulator.

RN to BSN program

An RN to BSN program is the same as an RN-BSN program. RN-BSN completion programs are for RNs currently licensed but do not have a baccalaureate degree (Raines & Taglaireni, 2008). RN-BSN completion programs are often non-traditional in that there is little need for clinical experience, and there is a focus on didactic courses, including research and leadership. Upon successful completion of the courses, the RN receives a bachelor's degree. This study uses the same definition for RN-BSN.

Simulation

"Activity that mimics the reality of a clinical environment and [is] designed to demonstrate procedures, decision-making, and critical thinking" (Jeffries, 2005, p. 97); a replication of conditions to resemble real-life (International Nursing Standards Committee, 2016). "An objective, state-of-the-art technology by which current, comprehensive, and interactive instruction and evaluation can be given" (Nehring et al., 2001, p. 194). For this study, simulation is synonymous with full-scale simulation and simulated clinical.

Stages of Concern

Stages of concern are one diagnostic dimension of the Concerns Based Assessment Model for assessing and guiding the effective implementation of an innovation, a highly personal developmental process. Seven stages represent the developmental nature of the intensity of concern about innovation (George et al., 2006).

Traditional clinical experience

Traditional clinical experience means teaching in a medical setting (Institute of Medicine, 2000); site-based learning experiences (American Association of Colleges of Nursing, 1999); care of people in a health care settings that provide an opportunity for application of behaviors necessary to improve the quality and safety of the environment (International Nursing Standards Committee, 2016). In this study, traditional clinical experience is the direct care of people in a live patient environment. Synonyms used in this study for traditional clinical experience include the live-patient environment, traditional clinical setting.

Assumptions, Delimitations, and Limitations

Assumptions of this study relate to BSN-program nursing faculty employment status, organizational input, course assignments, use of simulation, and expression of personal concerns. The assumptions are:

1. BSN programs are taught by a mixture of full-time and part-time faculty.
2. Nursing faculty members listed in a university's faculty directory are full-time unless otherwise designated.
3. When a BSN-level nurse educator teaches more than one section of a clinical course, the educator teaches the sections the same way, with the same amount of traditional clinical and simulated clinical in each section.
4. Some BSN programs are using simulation, and some BSN programs may not be using simulation to provide clinical experiences to students.
5. BSN-level nurse educators are likely to have a variety of concerns about using simulation as clinical experience.

Delimitations of the study relate to the boundaries about the selection of the sample participants. The sampling frame includes full-time BSN-level nurse educators in traditional BSN programs nationally accredited by the Commission on Collegiate Nursing Education (CCNE) and who have an email account published on their university's website. The sample choice of CCNE accredited baccalaureate programs involved the number of eligible programs and potential participants for this study. The number of eligible CCNE accredited baccalaureate programs (76) in the geographic region covered by the study is much higher than the overall combined number of both the Accreditation Commission for Education in Nursing (ACEN) (Accreditation Commission for Education in Nursing, 2017) and the National League of Nursing

Commission for Nursing Education Accreditation (NLN CNEA) (National League for Nursing, 2019), (14), in the same geographic region. Additionally, studying traditional BSN programs accredited by CCNE avoids the potential appearance of a conflict of interest for the researcher who is faculty within a traditional BSN program accredited by ACEN within the same geographical area. This study excludes programs accredited by ACEN or NLN CNEA.

Limitations relate to resources available to conduct this study, including time and finances. The purposive sample (Creswell, 2014) does not include the entire U.S. population of nurse educators. Instead, it includes only one region comprised of the nurse educators of CCNE accredited BSN programs in the west north-central region of the U.S. who have an email address published on their university's website. This study used a cross-sectional design and web-based survey, which introduces a limitation because it relied on self-reports when participants answered the questions. Another limitation of this study may be the participants' rate of response to the survey. Bryman (2012) explains that often participants complete web-based surveys with fewer unanswered questions than postal questionnaires. Sometimes, web-based surveys' response rates are higher than mailed surveys, and sometimes they are not (Bryman, 2012). However, prior research done similarly has earned reasonable response rates; for example, Rommelfaenger (2015) earned a response rate of 29.5% of nurse educators using the SoC measurement tool, which is the stages of concern questionnaire (SoCQ). This researcher believed that examining nurse educators' concerns about the new technologic innovation of using simulation in traditional clinical experience were of interest to nurse educators. Therefore, nurse educators would likely be willing to respond to the web-based survey.

Summary

Current literature includes the benefits of simulated clinical teaching experiences to students. To date, no research literature exists about nurse educators' intensity of concerns about using simulation by stages of concern. Rogers' (2003) diffusion of innovation theory depicts an innovation's adoption and notes that innovation adoption relies on communication among social system members. The SoC dimension of the CBAM asserts that users of innovation have concerns that are said to affect the adoption of an innovation (Hall, 1974; Hall et al., 1979). The data collection tool, which is the SoCQ for the SoC dimension of the CBAM, generates profile data for each respondent, the entire group of respondents, or by a combination of one or more subgroups. This study's results, and conclusions drawn from the analysis of results, may be of particular significance to the body of LIS literature about the adoption of computer technology innovations, LIS researchers interested in simulation and its various forms, and other pre-licensure BSN program stakeholders. Knowing nurse educators' concerns about using simulation help inform baccalaureate nurse educators and program administrators to know what concerns to anticipate reducing uncertainty and increase simulation as an innovation. This knowledge helps bridge the gap between needed clinical experience and available opportunities for traditional clinical experience. Chapter two reviews the literature about the CBAM and various forms of simulation as technology innovations.

Chapter 2: Literature Review

This chapter is a review of the literature used to inform the study. The literature review involved searching terms nursing, nursing education, simulation, simulators, human patient simulation, concerns, concerns-based adoption model, CBAM, stages of concern, innovation, and diffusion of innovation for the years 2000 – 2019. The search included Pro-Quest, ERIC, CIHNAL, PubMed, Pro-Quest nursing journals, Pro-Quest Allied health sources, Pro-Quest Dissertations, and Google Scholar. The search revealed published sources about simulation as computer technology in high-reliability organizations, including nursing education. The chapter begins by reviewing the history of simulation, information about the standards of practice, and national guidelines for using simulation in nursing education. Then, information about student learning benefits when using simulation is addressed. Next, information about implications that affect nurse educators when adopting and using simulation as clinical experience are discussed. Finally, findings in studies of demographic factors affecting technology integration are identified. These published resources inform the writing of nurse educator demographics, which are independent variables in this study.

The remainder of this literature review presents the evolution of ideas resulting in the concerns-based adoption model and the stages of concern (George et al., 2006; Hall et al., 1979), contributing to this study's important dependent variable. Highlights of previous utilization of the concern questionnaire stages in nursing education (Rommelfaenger, 2015; Siegrist, 1999) are emphasized. Giving credit to Everett Rogers (2003) for his coverage of the elements and attributes of diffusion of innovation, the diffusion of innovation theory provides insight into how social systems react to and assimilate innovation and include Library and Information Science sources. This part of the search involved the use of the Library and Information Science Source database using the search terms diffusion of innovation theory and library and information science from 2010 – 2019. Lastly, a comparison of Rogers' (2003) diffusion of innovation and the CBAM SoC categories (McLean, 2005) is acknowledged.

Simulation Technology

Use of technology is not new to learning environments. The decision to adopt an innovation has been researched across multiple disciplines and influences business, education, and everyday life. However, the concept of using simulation as clinical experience is increasingly becoming integrated into nursing education as a means of providing clinical experience to nursing students. Therefore, it is essential to understand aspects of simulation evolution in nursing education, nurse educators' concerns as they use or think about using simulation as an innovation, and diffusion of innovation throughout an organization.

History of Simulation

The history of simulation in nursing education is already clearly evident in the literature (Frotjold, 2015; Hayden et al., 2014; Nehring et al., 2001; Sanford, 2010; Sanko, 2017). First presented is a brief history to set the context for the study.

Dating back to the mid-1800's Florence Nightingale used jointed skeleton models to demonstrate basic first aid and infection prevention (Sanko, 2017). Today, basic jointed models and static body models are known as low-fidelity simulators. Low-fidelity simulators, also known as task trainers, allow students to learn and practice nursing tasks. The tasks that students may practice on task trainers include injections, inserting and maintaining catheters, maintaining tubes including tracheostomy tubes and chest tubes, inserting intravenous catheters and maintaining catheter sites, providing wound care, and performing cardiopulmonary resuscitation (Nehring & Lashley, 2010; Sanford, 2010). In the late 20th century, human simulators' fidelity began to evolve from static simulators to very-high functioning, full-scale, computerized simulators (Jeffries, 2005; Kim et al., 2016; Norman et al., 2012; Norman, 2012). Since the Institute of Medicine report on medical errors, *To Err is Human* (2000), full-scale simulators have been implemented in nursing education to validate psychomotor skills and clinical judgment required of nursing students (Decker et al., 2008; Sanford, 2010).

The use of simulation to confirm understanding and skill is not new to high-reliability organizations. For decades the military, aviation, and nuclear fields have used simulation as a training tool and for learners to prove competency before they are allowed to engage in professional practice (Al-Elq, 2010; Blickensderfer et al., 2005; Frotjold, 2015; Gaba, 2004; Gore & Thomson, 2016; Hamman, 2004). In aviation, training with simulators is required of all pilots and crews to learn to manage challenging situations in a controlled environment (Hamman, 2004). High-reliability organizations, such as aviation and nursing, must prove a low-failure rate despite the inherent risks of the profession because "errors [may] have devastating effects" (Hamman, 2004, p. i72). Like in other high-reliability organizations, the use of high fidelity simulators in health care education allows students the opportunity to provide proper and safe care (Hamman, 2004; Sanford, 2010), prepare for the complexity of patients (Gore & Thomson, 2016; Jeffries, 2005) and grow critical thinking within a controlled and safe environment which is replicable as needed.

To help prepare nurse educators to use simulation in nursing education, Jefferies (2005) developed a simulation framework. The framework includes components of "best practices in education, student factors, teacher factors, simulation design characteristics, and outcomes" (Jeffries, 2005, p. 96). The framework intends to help guide nurse educators through the processes of designing, implementing, and evaluating simulations (Jeffries, 2005). The framework, which includes the conceptual components of teacher, student, educational practices, simulation design, and expected student outcomes, focuses on using simulation to help students build self-confidence, promote student clinical competency, and assess learner outcomes (Jeffries, 2005). Additionally, to prepare for and sustain the adoption and use of simulation in nursing education, standards of best practices and national guidelines are in place.

Jeffries, Dreifuerst, Kardong-Edgren, & Hayden (2015) published information on the importance of faculty development and education when designing a nursing curriculum using simulated clinical experiences. Jefferies et al. (2015) expounded on the importance of nurse educators knowing how to implement simulated clinical experiences and the value of debriefing. The researchers emphasize the need for nurse educators to receive education about conducting simulation and about debriefing and the importance of facilitating a debriefing session with students following the simulated experience. They stressed that the education nurse educators receive about teaching using simulated clinical experiences impacts student and program outcomes (Jeffries et al., 2015).

Standards of Practice

The International Nursing Association for Clinical Simulation and Learning (INACSL) has published *Standards of Best Practice: Simulation*. The best practices include nine standards and guidelines (Alexander et al., 2015) that address the following: a) terminology, b) professional integrity of participants, c) participant objectives, d) facilitation methods, e) simulation facilitator, f) the debriefing processes, g) evaluation of expected outcomes, h) simulation-enhanced interprofessional education, i) simulation design. Also, national guidelines that recommend replacing traditional clinical experience with an acceptable amount of simulated clinical experience have been established based on *The NCSBN National Simulation Study* (Hayden et al., 2014).

National Guidelines

The National Council of State Boards of Nursing (NCSBN) studied nursing students to determine an acceptable amount of simulated clinical experience to use in place of traditional clinical experience while maintaining the same learning outcomes. The national randomized control study's targeted sample was 847 nursing students from ten geographically diverse prelicensure registered nurse programs, including five associate degree nursing (ADN) programs and five BSN programs, representing rural and urban populations in the United States (Hayden et al., 2014). The study aimed to determine the impact that substitution of traditional clinical hours had on undergraduate nursing student outcomes, including “knowledge, clinical competency, critical thinking, and readiness for practice” (Hayden et al., 2014, p. S36) as well as both course and end-of-program outcomes (Hayden et al., 2014). The sample included students who began clinical nursing courses in fall 2011 and graduated in the spring of 2013. The students were randomly assigned to one of three study groups and continued with the same group throughout the two-year study. All three groups engaged in some traditional clinical experiences, and some traditional clinical time was replaced with simulation. The control group replaced no more than 10% of traditional clinical hours with simulation. The experimental groups included a 25% group and a 50% group. The groups respectively replaced 25% and 50% of their traditional clinical hours with simulated clinical experiences. Of the targeted sample, 666 students completed the study (Hayden et al., 2014).

For the study, the simulated clinical experiences followed Jeffries’ (2005) simulation framework (Hayden et al., 2014). The conditions of the study included formal training in simulation pedagogy for all faculty members, an adequate number of faculty to support the number of student learners, subject matter experts to conduct debriefing, and use of equipment and supplies to create a realistic clinical environment (Hayden et al., 2014). The study results include evidence that, under comparable conditions, using a 1:1 ratio of clinical hours, up to 50% of traditional clinical experience hours can be replaced with simulated clinical hours (Hayden et al., 2014). However, in this study, it is not known why the researchers chose to limit their research to replacing only up to 50% of traditional clinical hours with simulated clinical hours.

In addition to establishing the amount of traditional clinical experience that can be replaced by simulated clinical experience, "concern emerged that nursing programs might begin to substitute simulation for traditional clinical experience without the appropriate environment, administrative support, or faculty preparation" (Alexander et al., 2015). Thus, the NCSBN convened an expert panel to develop national guidelines for simulation in nursing programs (Alexander et al., 2015). The guidelines outline the essential criteria that must be understood by nursing programs while planning, preparing, adopting, and implementing simulation in a nursing curriculum (Alexander et al., 2015). The guidelines include the following criteria (Alexander et al., 2015):

1. Setting up short-term and long-term objectives, including a budgetary plan for procuring and sustaining simulators, supplies, and faculty training
2. Ensuring appropriate physical space to create realistic simulated clinical experiences and adequate space for storage, supplies, and student learning
3. Ensuring technical and educational resources to meet the objectives of the simulated experiences
4. Training and preparing faculty to lead simulated clinical experiences

5. Faculty understanding of the policies and processes associated with simulated clinical experiences

These guidelines help state boards of nursing evaluate nursing programs' capability to use simulation as a substitute for traditional clinical experiences and help programs establish evidence-based simulation programs (Alexander et al., 2015).

Benefits to Students

Research provides evidence of nursing students' benefit when nurse educators use simulation as a teaching modality (Al-Ghareeb & Cooper, 2016; Norman, 2012; Sundler et al., 2015). Simulated experiences provide nursing students the opportunity to practice their clinical and decision-making skills and interventions in a safe real-world environment (Feingold et al., 2004; Kim et al., 2016; Murphy et al., 2011; Nehring et al., 2001; Robinson & Dearmon, 2013). Simulated experiences also allow students to experience crises and other situations that they may not otherwise encounter while in nursing school (Sanford, 2010). Because full-scale simulators respond to interventions in real-time, students can experience the consequences of a right or wrong intervention, plan the next steps of care, and learn how to proceed accordingly (Murphy et al., 2011; Nehring et al., 2001).

Simulated clinical experiences allow multiple students to have the same clinical experience (Nehring et al., 2001) and allows nurse educators to evaluate a student’s critical thinking, clinical reasoning skills, synthesis of knowledge, and comfort and confidence while in a safe clinical setting (Nehring & Lashley, 2004). Additionally, debriefing, feedback, and reflection about the simulated clinical experience are essential to student learning (Jeffries, 2005; Murphy et al., 2011; Robinson & Dearmon, 2013; Sundler et al., 2015). Students perceived the time spent in reflection as a meaningful learning experience that deepens their knowledge

(Sundler et al., 2015). Videotaping simulated clinical experiences allows both the faculty and student to review the simulated experience and provide feedback on what happened during the scenario (Feingold et al., 2004; Kim et al., 2016; Nehring et al., 2001). Feedback may include the sequence of interventions, patient and student responses to the interventions, and consequences of the interventions (Nehring et al., 2001).

Implications for Nurse Educators

Clinical training using simulation represents a computer technology innovation that nurse educators are encouraged to adopt (Institute of Medicine, 2011). Adopting and using simulation requires nurse educators to shift their teaching pedagogy from teaching in live patient clinical situations to teaching in simulated patient clinical situations (Al-Ghareeb & Cooper, 2016; Breymier et al., 2015; Jeffries, 2005; Nehring et al., 2001; Nehring & Lashley, 2004; Robinson & Dearmon, 2013). Such a shift requires a change in nurse educators' thinking and teaching in a clinical environment (Jeffries, 2005). Although adoption of simulation is occurring, educators have only barely moved beyond the persuasion stage of diffusion, which manifests at the lowest end possible of Rogers' (2003) stages of implementing simulation as a teaching modality (Abell, 2009).

Many faculty embrace clinical simulation because it has the potential to "support and enhance nursing education" (Akhtar-Danesh et al., 2009, p. 312) and because students are excited to engage in simulated clinical learning (Frotjold, 2015). However, as the simulators' front-line users, some nurse educators felt a lack of knowledge about teaching using simulated clinical experiences and believe that adopting simulation was imposed on them by senior administration (Frotjold, 2015). Teaching with clinical simulation requires additional support in terms of both the time required to engage in teaching and the needed resources to support the use of simulation, including initial and ongoing faculty training (Abell, 2009; Akhtar-Danesh et al., 2009; Al-Ghareeb & Cooper, 2016; Breymier et al., 2015; Jeffries, 2008; Nehring et al., 2001; Robinson & Dearmon, 2013; Sundler et al., 2015).

For some, the primary barrier to learning new technology is the time to learn (Lewis & Watson, 1997). Using simulation as a teaching modality "takes more time to develop than traditional teaching methods" (Tuoriniemi & Schott-Baer, 2008, p. 108). Time and training are needed to prepare for and implement a simulated clinical experience (Akhtar-Danesh et al., 2009; Feingold et al., 2004; Nehring et al., 2001; Nehring & Lashley, 2004; Seropian et al., 2004). Many nurse educators are also unaware of the time allotment needed to prepare and conduct a simulated clinical experience (Gore & Thomson, 2016; Simes et al., 2018). Nurse educators who know of the time it takes to learn to teach with simulators believe they would be more likely to use full-scale simulation if administrators made provisions for faculty to have release time. The amount of release time suggested is between .25 full-time equivalent (FTE) and 1.0 FTE for one semester to learn how to plan, implement, and evaluate simulation (Jones & Hegge, 2008).

It takes time for nurse educators to learn and figure out simulation and plan for and carry out a simulated clinical experience (Al-Ghareeb & Cooper, 2016; Jansen et al., 2009; Nehring et al., 2001; Nehring & Lashley, 2004; Robinson & Dearmon, 2013). "The key to a successful simulation experience depends on activities in the development phase" (Robinson & Dearmon, 2013, p. 207), including preparing the simulated scenario, developing role-play interactions, and setting up the lab" (Sanford, 2010, p. 1010). A further need is to "[ensure] that the specific purpose in teaching-learning experience [links] to the desired outcome" (Robinson & Dearmon, 2013, p. 207). Planning and implementing roles and activities that allow numerous students to participate in the same simulation experience simultaneously is necessary to be able to perform a simulation with the same number of students an educator would have in traditional clinical experience (Jansen et al., 2009; Starkweather & Kardong-Edgren, 2008).

Time is also an essential need for students in clinical simulation experiences (Sundler et al., 2015). Students need time to be pre-briefed on the simulation scenario and ground rules and then allowed ample time to learn and practice nursing skills (Jeffries, 2008). Following a simulated experience, students need time to offer feedback to each other about the experience. Also, educators need time to conduct constructive feedback sessions to build on students' existing knowledge and build confidence (Jeffries, 2005). Additionally, it takes time for the nurse educator to self-debrief and makes notes regarding modifications for the next time the scenario is presented (Starkweather & Kardong-Edgren, 2008).

Besides time, faculty workload associated with the use of simulation has raised concern (Jansen et al., 2009; Nehring et al., 2001; Nehring & Lashley, 2004), and faculty resources to support and sustain simulated clinical experiences are needed (Al-Ghareeb & Cooper, 2016; Breymier et al., 2015; Cant & Cooper, 2009; Nehring et al., 2001). Large class sizes and faculty-to-student ratios require faculty to be creative in planning roles and engaging all the students in the learning activity (Jansen et al., 2009). The average faculty to student ratio is 1:8-9 for traditional supervised clinical instruction (Breymier et al., 2015), and the average faculty to student ratio for simulated clinical instruction ranges from 1:4-5 (Breymier et al., 2015) to 1:10 (Richardson et al., 2014). In a simulated clinical environment, like in a traditional clinical environment where one or two students pair with one patient, only a few students can work at the bedside at a time (Nehring et al., 2001). Unlike a traditional clinical environment where multiple patients are often present, in a simulated clinical environment, it is not unusual to be limited to having only a few or maybe even just one simulator (Nehring et al., 2001). It is difficult for faculty to engage large groups of students in a simulated clinical environment (Simes et al., 2018) because it takes time to accommodate simulated experiences for all the students (Nehring et al., 2001). Moreover, conducting back-to-back simulations and debriefing to accommodate large groups of students causes faculty fatigue (Jeffries, 2008). Consequently, although utilizing simulation as clinical experience is necessary to provide needed clinical opportunities, utilizing simulation as clinical experience, in essence, doubles the nurse educators' clinical workload (Jansen et al., 2009).

Creating a clinical environment to simulate a traditional clinical environment requires adequate resources. The cost to set up one full-scale simulator, including annual maintenance, ancillary equipment and supplies, and maintenance and replacement of equipment and supplies (Jansen et al., 2009) necessary to create a realistic simulated clinical environment, is upward of $200,000 - $300,000 (Nehring et al., 2001). Once set up, the faculty must negotiate simulation space and equipment with other faculty vying for simulation in place of traditional clinical time (Jansen et al., 2009). Finding sufficient space to conduct a simulated clinical experience is challenging, especially when working with large numbers of students (Jansen et al., 2009) and when different groups of students are working on different simulated experiences at the same time (Jeffries, 2008). One study revealed a disconnect between funding available to purchase full-scale simulation technology and the lack of funding for necessary academic and staff support to implement the simulation program effectively (Frotjold, 2015). The sentiment extends beyond the study as literature echoes that in addition to the cost associated with creating a simulated clinical environment, there is a need to invest in faculty training (Jansen et al., 2009; Jeffries, 2008; Robinson & Dearmon, 2013; Simes et al., 2018).

The importance of faculty development and education when designing a nursing curriculum using simulated clinical experiences has been recognized (Akhtar-Danesh et al., 2009; Jansen et al., 2009; Jeffries et al., 2015; Robinson & Dearmon, 2013; Simes et al., 2018; Starkweather & Kardong-Edgren, 2008). The faculty need training to use the technology and plan for and execute a simulated clinical experience (Jansen et al., 2009). "Faculty need to know how to conduct simulations and achieve the decided outcomes" (Jeffries, 2008, p. 73), and they need to know how to prepare constructive summaries of the simulated experience (Akhtar-Danesh et al., 2009; Jeffries, 2008; Simes et al., 2018). Faculty fear that their peers and students will judge their ability to implement a simulated clinical experience (Akhtar-Danesh et al., 2009). They fear that they will be embarrassed if the simulated clinical experience does not go as planned (Simes et al., 2018). For faculty, the fear creates stress, which leads them to question their "culture of safety" (Akhtar-Danesh et al., 2009, p. 325) when using simulation. Many faculty lack confidence in using technology (Starkweather & Kardong-Edgren, 2008). Attending conferences and workshops helps faculty to understand better and know how to use simulation as a teaching modality (Jeffries, 2008). In addition to training faculty on how to teach using simulated clinical experiences, faculty need to know how to train students to interact with the simulator. Students need to be trained on how to engage with the simulator, including communication, implementing appropriate procedures, and the expectation that the simulated clinical experience is the same as if the student were working with a live patient (Robinson & Dearmon, 2013).

In this study, assessing nurse educators' current stages of concern about using simulation as clinical experience and identifying the characteristics that are possibly associated or even predictive of these stages helps to inform strategies better to mediate simulation adoption. Before detailing the concerns-based adoption model, specifically, the stages of concern dimension and concern-related studies specific to nursing education, the next section of this chapter examines demographic factors affecting technology integration, including age, teaching experience, education level, and experience with the innovation.

Demographic Factors Affecting Technology Integration

Hall et al. (1979) did not find traditional demographic variables to be related to the intensity of concern. However, the reviewed literature revealed that some demographic factors are associated with concerns about incorporating technology in the classroom. Some of the demographic variables include age (Elsaadani, 2013; Overbaugh & Lu, 2008), teaching experience (Al-Rawajfih et al., 2010; Christou et al., 2004; Elsaadani, 2013; Gudyanga & Jita, 2018; Myers et al., 2012), educational level (Çetinkaya, 2012; Gudyanga & Jita, 2018), and experience with the innovation (Gudyanga & Jita, 2018). Thus, it seems plausible that these demographic factors and extensions of these demographic factors may be related and may even predict nurse educators' simulation adoption concerns.

Age

The process involved in learning to incorporate technology in the classroom is one that educators of all ages must go through. Hall et al. (1979) did not consider age to be a variable that influences concerns about adopting an innovation. However, more recent studies indicate that age does correlate with attitudes toward the use of technology to facilitate learning (Elsaadani, 2013) and technology adoption concerns (Overbaugh & Lu, 2008; Quazi & Talukder, 2011). Overbaugh and Lu (2009) found that older teachers expressed more concerns about managing the student's innovation and the consequence of innovation engagement. In contrast, younger teachers had more intense concerns related to self and task.

Teaching Experience

Early concerns-based research found that concerns of the teachers with less teaching experience express self-concern more intensely. As the years of experience as an educator and time with the innovation increases, the focus of the educator's concern changes from self-concern to focus on the impact of the innovation on learning (George et al., 2006). More recent studies reveal that the stages of concern about online learning innovation in Jordanian schools showed that experienced teachers' concerns were more intense at the personal stage. In contrast, teachers with up to five years of teaching experience had more intense concerns at the collaboration stage (Al-Rawajfih et al., 2010). Al-Rawajfih et al. (2010) concluded that teachers with more extensive experience lagged young teachers in online learning as an innovation.

Education Level

Some studies found no difference between the education level or academic degree and the intensity of concern when adopting or thinking about adopting an innovation. However, other studies report that teachers' education level impacted their concerns about innovation (Çetinkaya, 2012) and innovation adoption (Less, 2003). Teachers with higher academic preparation levels are more willing to adopt an innovation (Less, 2003) and focus on collaboration to continue implementing an innovation (Jennings, 2015).

Experience with Innovation

Hall et al. (1979) suggest a relationship between the degree of experience as a user of innovation and the intensity of concern. George et al. (2006) identified the profile of nonuser concerns as illustrative of more intense concerns related to informational and personal concerns and less intense concerns related to consequence, collaboration, and refocus. A study of postsecondary faculty found a significantly high technology integration level in their teaching by faculty with up to three years of teaching experience (Adams, 2002). Adams (2002) also concluded that faculty with less than ten years of teaching experience and those with more than twenty years of teaching experience integrate technology into their teaching more than faculty with ten to nineteen years of teaching experience.

Concerns-Based Adoption Model

The CBAM evolved to understand the concerns of individuals as they use or think about using an innovation. The CBAM is a “process-driven model of change . . . [that] . . . offers insight into support structures that can aid individuals in their innovativeness” (McLean, 2005, p. 4). Numerous educational researchers use the CBAM framework to understand the change process when adopting and using innovation (George et al., 2006; Hall et al., 1991). The framework “describes, explains, and predicts probable behaviors throughout the change process” (George et al., 2006, p. 5) and considers that people's concerns shift as change evolves.

Hall (2013) described the overarching principles of the CBAM as processes that occur over time, not a point-in-time-event, and that people move through change over time. The model stems from Fuller's (1969) work, which described a three-phase conceptualization of sequential concerns of teachers involved in adopting a change (Hall, 1974). The three phases of concern include a pre-teaching or non-concern phase, which indicates a lack of interest or low involvement, an early teaching phase, and a late teaching phase. The early teaching phase includes both covert and overt apprehensions about the innovation. In contrast, the teacher’s focus on the benefit to the student depicts the late teaching phase. It is during the late teaching phase that the teacher can evaluate him- or her- self (Fuller, 1969).

The early studies conducted by Fuller (1969) assessed concerns of teachers using the open-ended concerns statement: “When you think about your teaching, what are you concerned about? (Do not say what you think others are concerned about but only what concerns you now.) Please be frank.” (Hall et al., 1991, p. 12). However, variations in respondent information, including the format of responses and submission of blank pages, compounded problems with inter-rater reliability and estimates of validity; thus, Fuller sought other researchers' assistance to develop a questionnaire (Hall et al., 1991). Additionally, over time, patterns associated with educators' worries as innovations emerged, and notes generated by the researchers prompted the move from concerns about teaching to educators' concerns about change; thus, the CBAM emerged (Hall et al., 1991).

The CBAM contains three dimensions, each addressing a different aspect of the change process to identify the needs of individuals involved in the process (George et al., 2006). The three dimensions are stages of concern (SoC), levels of use (LoU), and innovation configurations (IC). Both the SoC and LoU focus on the individuals involved in innovation, but the approaches to knowing the individual's needs are different. “SoC addresses the affective aspects of change, such as people’s reactions, feelings, perceptions, and attitudes” (Hall et al., 2006, p. 1); whereas, LoU is a behavioral phenomenon that focuses on what an individual or group is doing or not doing with the innovation (Hall et al., 2006). Unlike the SoC and LoU that focus on the individual, a third component of the CBAM, the IC, “ addresses what the innovation or change looks like as it is made operational by each implementer” (Hall et al., 2006, p. 1). Of the three CBAM dimensions, the SoC dimension was the founding construct of the CBAM (Hall et al., 2006) and is known as “the hallmark of CBAM work” (George et al., 2006, p. 2). The SoC dimension focuses on an understanding of concern, which is “an aroused state of personal feelings and thoughts” (Hall, 1977, p. 13) that individuals have about an innovation.

The CBAM framework, created by Hall, Wallace, and Dossett in 1973, evolved from the primary research conducted in 1969 by Francis Fuller that focused on concerns of pre-service K-12 teachers related to change in an educational setting (Hall et al., 1979; Hall & Hord, 2020). The framework's basis is the belief that facilitating change requires understanding the existing perceptions and behaviors of the individuals involved in the change process (George et al., 2006; Hall, 1974). The CBAM characterizes individuals' needs and explains how the needs impact the successful implementation of change (Hall et al., 1979).

The information collected by Fuller in 1969 began with teachers answering prompted open-ended questions about their teaching. Through an analysis of the answers, Fuller determined that teachers' concerns clustered into four categories: unrelated, self, task, and impact (Hall, 1977; Hall et al., 1979). According to Fuller's work (Hall, 1977; Hall et al., 1979; Hall & Hord, 2020), educators who fall in the "unrelated" category "do have concerns, but the concerns they have are not [related to the innovation]" (Hall & Hord, 2020, p. 104). Educators' focus in the "self" category is personal issues such as feeling prepared to teach and handle student situations. It is not on the process of their teaching or their learners. Educators' focus in the "task" category is that of teaching and improving their teaching skills. The focus of the "impact" category recognizes the impact that their teaching has on the student. Thus, educators who land in the impact category seek to align their teaching with the students' needs. Fuller noted that beginning teachers have more self or survival concerns, whereas more experienced educators' concerns were more about how their teaching impacted the students (Hall et al., 1979).

The SoC focuses on understanding concerns about innovation. Hall (1977) defined the term concern as "an aroused state of personal feelings and thoughts" (p. 13) that individuals have about an innovation. The SoC addresses the affective process, which is the feelings and thoughts related to change. It represents a quasi-developmental process by which individuals adopt an innovation (Hall, 1974; Hall & Hord, 2020). The SoC compares implementing change to a journey, which neither necessarily moves in one direction, nor is limited to only one stage of concern at a time (Hall & Hord, 2020). The SoC measurement tool is the Stages of Concern Questionnaire (SoCQ) (George et al., 2006).

The SoCQ assesses concerns about adopting and using innovation. Knowing the concerns related to the adoption and the use of innovation is the first step to addressing concerns and implementing interventions to facilitate the change process (George et al., 2006). Although change begins with individuals, and although the SOCQ measures an individual's concerns, aggregating the data allows for examining concerns across sub-groups and organizations (Hall & Hord, 2020). Thus, the SoCQ instrument's use is not limited to a specific setting or process (George et al., 2006). Instead, the SoCQ may provide a means for measuring individuals, groups, and organizations' concerns about an innovation (Hall & Hord, 2020).

Stages of Concern

The SoC dimension (Appendix A) addresses concerns that individuals experience with innovation, influencing an organization's innovation adoption. SoC asserts that an organization cannot change until individuals within the organization change and that the intensity of individuals' concerns is developmental. The concerns that appear early in the innovation process may change as knowledge of and experience with the innovation is gained (George et al., 2006).

When first developed, "the term, 'Stages of Concern,' was deliberately chosen to reflect the idealized, developmental approach to change" (Hall & Hord, 2020, p. 110). Unfortunately, in most instances, change is not viewed and treated as a process, but as an event" (Hall & Hord, 2020, p. 110). Concerns about an innovation differ among individuals, and individuals tend to react to change in a predictable pattern that reflects a developmental continuum of concerns in that concerns that appear early in the innovation must be addressed before other concerns can emerge (George et al., 2006; Hall et al., 1979). As one learns of an innovation, the intensity of their perceived feelings and thoughts change from awareness or little concern to general knowledge and interest in learning more (George et al., 2006; Hall et al., 1979). Knowing of the innovation elicits personal uncertainty about the demands the innovation may place on them. The focus of concern about innovation often shifts when uncertainty resolves. For example, the innovation user may focus on personal gain to collaborate with other people in the social system and may even refocus on the innovation by exploring more benefits from the innovation (George et al., 2006; Hall et al., 1979).

Seven stages represent the developmental nature of the intensity of concern about innovation. When one type of concern subsides, another level of concern emerges (George et al., 2006). A number ranging from zero to six and a descriptor name identifies each stage. Stage 0, labeled unrelated, is when an individual indicates that they have little concern or involvement with the innovation. In stage 1, the informational stage, the user's concerns center around learning more about the innovation, how it will work, and what the innovation will do for the user. In stage 2, the personal stage, the user is most concerned about how they will be affected by using the innovation; that is, the effect the innovation will have on their routine. In stage 3, labeled as the management stage, the user's concern revolves around learning to use the innovation and the resources available to support learning. Stage 4, the consequence stage, manifests when the individual is concerned about the innovation's outcomes, including student performance and competencies. In stage 5, the collaboration stage, the user is interested in how their colleagues use the innovation. The user is eager to share their use of innovation with others.

Stage 6, the refocusing stage, signifies the individual's focus of concern is exploring ways to make the innovation better or replacing the innovation with another alternative (George et al., 2006).

Overall, the seven stages of concern cluster into categories: unrelated, self, task, and impact (George et al., 2006; Hall & Hord, 2020). George et al. (2006) and Hall and Hord (2020) describe each concern category. Unrelated indicates little concern or involvement with the innovation and more intense concern about things unrelated to the innovation (Hall & Hord, 2020). Self-concerns focus on oneself and range on a spectrum from showing no interest in the innovation to the point of being focused on the unique reward structure that the innovation will provide them. Task concerns encompass the concerns about day-to-day aspects of the innovation and the responsibilities of adopting the innovation. Impact concerns are associated with the influence of the student's innovation, collaborating with others, and exploring possibilities of making changes to the existing innovation or replacing it with another innovation. Results of the SoC assessment tool, the Stages of Concern Questionnaire (SoCQ), provide a profile of the intensity of an individual's perceived feelings and thoughts as they become involved in adopting an innovation (George et al., 2006; Hall, 1977; Hall et al., 1979).

Stages of Concern Questionnaire

The SoCQ originated as a paper-pencil data collection tool for the SoC dimension of the CBAM. The SoCQ is a highly reliable (Hall & Hord, 2020) "quantitative tool that measures what a teacher or user is feeling about an innovation" (George et al., 2006, p. ix). The "35-item questionnaire has strong reliability estimates (test/retest reliabilities range from .65 to .86) and internal consistency (alpha coefficients range from .66 to .83)" (Hall & Hord, 2020, p. 114). The SoCQ provides the means for graphically presenting a concerns profile of individuals, groups, and organizations (Hall & Hord, 2020). Since the inception of the SoCQ, the tool evolved from four initial categories, unrelated, self, task, and impact, to seven specific concerns about the innovation (Hall & Hord, 2020). The category first titled as unrelated has changed several times to titles such as awareness and unconcerned. “Currently, the Frances Fuller label of ‘unrelated’ seems best” (Hall & Hord, 2020, p. 108), thus preserving the original ideas of unrelated, self, task, and impact. However, “based on research findings, the self and impact areas have been clarified by distinguishing stages within each” (Hall & Hord, 2020, p. 107). The division of self-concern now represents two parts of self, which are informational and personal. Stage 1, the informational component of the self-category, indicates that a person knows a little about the innovation but wants to know more. Stage 2, the personal component of the self-category, reflects that the individual is concerned about what they will have to give up for the innovation.

Since the development of the SoCQ, “it has had extensive use in studies” (Hall & Hord, 2020, p. 114), including studies associated with schools, colleges, and other settings such as businesses. The SoCQ has been “repeatedly tested for estimates of reliability, internal consistency and validity” (George et al., 2006, p. 11), and Cronbach’s alpha reliability for various studies are discussed in the manual. “In 2006, the SoCQ items and statistics were revisited, and the new version (Form 075) was established” (Hall & Hord, 2020, p. 114). The statistics changed for stage 0 only. The internal consistency of stage 0 was .64 in 1974. As of 2006, the internal consistency for stage 0 increased to .66, while other stages' internal consistency did not change (George et al., 2006). Now, the SoCQ is available in an online form developed by Southwest Educational Development Laboratory (SEDL) (Hall & Hord, 2020).

SoCQ and Nursing Education

Studies have employed the SoCQ and respondent demographics to understand nurse educators' concerns about implementing curricular innovations. The curricular innovations included shifting from an authoritarian teacher-student relationship to a collegial and egalitarian teacher-student relationship (Newton, 1992), adding community sites outside of the hospital acute care setting for clinical instruction (Siegrist, 1999), and moving from a systems-based curriculum to a concept-based curriculum (Rommelfaenger, 2015). In each study, data from the SoCQ provides descriptions of educators' concerns about the innovation and are used to determine the relationships between SoC profile scores and demographic data of nurse educators as independent variables. This review of publications reveals that no studies to date have utilized the SoC dimension of the CBAM to investigate simulation in nursing education, as is noted in chapter one.

Utilizing Stages of Concern Questionnaire in Nursing Education

Teaching and nonteaching studies have utilized the SoCQ (George et al., 2006). Studies of nursing education utilized the SoCQ to understand faculty concerns about innovative curricular change. Most recently, in nursing education, the SoCQ was used to examine teachers' perspectives of changing the framework for delivering content to nursing students from a traditional nursing curriculum to a concept-based curriculum model (Rommelfaenger, 2015). Similarly, a previous study employed the SoCQ to understand nursing faculty concerns about adding a new dimension to the clinical experience, specifically facilitating clinical experiences in community sites other than hospitals (Siegrist, 1999). Both studies employed the SoCQ to understand nurse educators' concerns about adopting innovation; however, Siegrist (1999) also employed the optional open-ended question feature of concern to understand the nursing faculty's concerns.

While both studies sought to determine nurse educators’ concerns about curricular innovations, participants' breadth and the overarching questions differed. Rommelfaenger’s (2015) study sample included 11 baccalaureate nursing programs across the U.S.; whereas, although the sampling frame used by Siegrist (1999) also included nurse educators associated with multiple baccalaureate nursing programs (12), Siegrist’s study was limited to one state, Kentucky. Both studies used the SoCQ, but they administered it via different avenues; Rommelfaenger employed email, while Siegrist employed U.S. postal mail. Rommelfaenger sent the survey link to the administrative contact for each nursing program, and the administrator dispersed the link to the faculty members (Rommelfaenger, 2015). Of the 396 nurse educators targeted in her study, 117 nurse educators responded, producing a 29.5% survey response rate (Rommelfaenger, 2015). The sampling frame for Siegrist (1999) included 197 nursing faculty teaching in 12 baccalaureate nursing programs in Kentucky, including public and private universities. Siegrist sent invitations to participate in her study via U.S. postal mail. One hundred thirty-one faculty members responded and agreed to participate in the study. “Of these 131 educators, 110 completed and returned the demographic and SoCQ, via mail (Siegrist, 1999, p. 57). However, 23 participants did not complete the open-ended statement of concern; therefore, data analysis included responses from only 87 individuals (Siegrist, 1999). Unlike Rommelfaenger’s (2015) quantitative study that sought to understand nurse educators’ concerns using the SoCQ and other quantitative survey tools, Siegrist (1999) utilized quantitative and qualitative data to describe nurse educators’ stages of concern related to the innovation of community-based nursing education. In her study, the results of the SoCQ 35-close-ended questions elicited a profile score of nurse educators’ concerns, and the open-ended statement of concern allowed participants to provide personal descriptions of their concerns regarding the innovation of community-based nursing education (Siegrist, 1999).

Rommelfaenger sought to understand baccalaureate nurse educators' concerns about changing from a traditional nursing curriculum format to a concept-based model of nursing education and asked the question "What are the relationships between grouped-categorical profile scores of the stages of concern questionnaire (SoCQ) . . . and educational level, level of experience, and time from the adoption of the new curriculum?" (Rommelfaenger, 2015, p. 21). Whereas, researchers sought to understand the concerns of nursing faculty within a particular state and asked, "What are the stages of concern of baccalaureate nursing faculty in Kentucky about the innovation of community-based nursing education?" (Siegrist, 1999, p. 8). The independent variables in Rommelfaenger's study included educational level (BSN, MS, Doctoral), faculty' experience level as a nurse educator (years of experience), and time within the new curriculum as measured by years working within the new curriculum from the beginning of the change (Rommelfaenger, 2015). Siegrist's (1999) study independent variables included the nurse educator's identified area of expertise, teaching experience, age, gender, educational preparation, academic rank, experience with community-based nursing education, and stage of implementation of the curriculum innovation. Although the independent variables differed between the studies, the descriptive analysis of two variables was similar; more respondents held a master's degree than a doctoral degree. Most respondents were aged 50 or over (Rommelfaenger, 2015; Siegrist, 1999). Both researchers recognized that these demographics follow national profile trends of nurse educators, as reported by the National Council of State Boards of Nursing (2015) (Rommelfaenger, 2015; Siegrist, 1999).

Both Rommelfaenger (2015) and Siegrist (1999) identified no significant correlations between the demographic data and the stages of concern. However, both studies indicated that self-concern, which encompasses stages 0, 1, and 2, ranked highest in frequencies and percentile determination among the categorical profile groups (Rommelfaenger, 2015; Siegrist, 1999). For both studies, impact concern followed self-concern in intensity (Rommelfaenger, 2015; Siegrist, 1999). In addition to the SoCQ 35 closed-ended questions, Siegrist (1999) employed the open-ended statement of concern and quantified the concerns to understand better specific concerns of nurse educators who were implementing a community-based curriculum. The quantitative findings indicated that of the 79% of the population which fell within stages 0-2, awareness, information, and person, the highest-profile score was stage 0, awareness, for 55% of the population (Siegrist, 1999). The remainder of the population's profile scores represented the stages of management, collaboration, and refocusing equally (Siegrist, 1999). Unlike the quantitative results from the 35 closed-ended questions, when the respondents described their concerns on the open-ended statement, no respondents profiled at stage 0 awareness. Like the quantitative profile scores, no respondents profiled at stage 6, refocusing (Siegrist, 1999). Furthermore, the largest respondents by number profiled at stage 3, management, followed by stage 4, consequences, then stage 5, collaboration, stage 2, personal, and lastly, stage 1, informational (Siegrist, 1999).

Diffusion of Innovation

Central to the CBAM is Everett Rogers's' (2003) theory of diffusion of innovation to explain its consequences. Rogers defines diffusion as “the process in which an innovation is communicated through certain channels over time among the members of a social system” (p. 5). This definition depicts vital elements of the diffusion process: innovation, communication channels, time, and social system. He describes the diffusion of innovation as a dynamic information behavior process through which individuals or groups move when adopting something new. He stresses that “the diffusion of an innovation is an uncertainty reduction process” (Rogers, 2003, p. 232). Understanding this dynamic process is essential because it predicts the diffusion of innovation in a social system.

In addition to the vital elements associated with the diffusion of innovation, the theory includes five stages of the innovation-decision process, five adopter categories, and five characteristic attributes of innovations. Understanding this theory provides the lens through which administrators and faculty of baccalaureate nursing programs may better know and thus be able to address the uncertainty that nurse educators may have about the adoption of an innovation. Addressing the uncertainties may increase simulation as clinical experience and allow more students who may progress through BSN programs, thereby adding to the BSN prepared workforce.

Elements

Innovation is an idea, practice, or project perceived as new by an individual or social system (Rogers, 2003). Rogers (2003) explains that the term “perceived” is critical because regardless of the time-lapse since the inception of the innovation, it is new to them if the person sees the change as new. This researcher aims to examine the perception of nurse educators’ concerns about using the innovation simulation as clinical experience. Another element of the diffusion of innovation, and perhaps the most core component of the diffusion process, is communication (Hall & Hord, 2020). Communication occurs through channels, sharing information, and developing a mutual understanding of the participants (Rogers, 2003). Rogers (2003) clarifies that diffusion of innovation is not just a means of communicating by sending or receiving a message. Instead, communication is the sharing of ideas thought to be new to members of a social network. However, communication is not always one-way and is not always accurate (Hall & Hord, 2020). Thus, “knowing who is talking with whom and what is being said about the innovation is important” (Hall & Hord, 2020, p. 289). The diffusion perspective places a high priority on the importance of communicating an innovation (Hall & Hord, 2020; Rogers, 2003). For this study, a high priority was to allow nurse educators to indicate their concerns about using simulation as clinical experience. The findings of this study inform an information perspective about using simulation as clinical experience.

Another element in the diffusion of innovation is time, which is the adoption rate of innovation. For Rogers (2003), the rate of adoption is the relative speed with which change occurs. He suggests that one’s social system influences the adoption of innovation and follows a predictable process beginning with initially knowing about the innovation through a decision to adopt or reject the innovation (Rogers, 2003). Rogers (2003) defines a social system as a group of people involved in an innovation adoption process and suggests that its network structure influences its diffusion rate. He explains that in some social systems, the choice to adopt or reject an innovation is optional. In other social systems, the decision to adopt or reject an innovation is by consensus among the members. In yet other social systems, the system's network structure precludes individual members from influencing the decision to adopt or reject an innovation; instead, a select few individuals decide. Regardless of the social system involved in the decision-making process, the process does not occur instantaneously. Instead, it occurs over time and consists of evaluating a new idea and deciding whether to adopt the innovation into practice or reject it (Rogers, 2003). For this research, demographic data (Appendix B) will inform an information perspective about nurse educators’ use of simulation as clinical experience.

Stages of the Process

Cognitive and affective processes are the logic and emotions involved in making decisions that guide an individual's journey through the decision-making stages (Rogers, 2003). The journey or stages of the innovation-decision process includes information seeking and information processing "to reduce uncertainty about the advantages and disadvantages of an innovation" (Rogers, 2003, p. 172). The information-seeking and information-processing aspects of the innovation-decision process include knowledge, persuasion, decision, implementation, and confirmation.

The definition of knowledge includes the cognitive process of knowing an innovation exists and gaining an understanding of how it works as a precursor to decreasing uncertainty about the innovation. To gain knowledge, individuals seek to answer the questions "what," "how," and "why" as they determine "what the innovation is and how and why it works" (Rogers, 2003, p. 21). To answer each of the questions requires cognitive development of three types of knowledge: awareness-knowledge, how-to-knowledge, and principles-knowledge. Awareness-knowledge means that the person or people involved in the organization recognize that an innovation exists. One must first have awareness-knowledge before advancing into the how-to or principles-knowledge states. How-to-knowledge results from knowing the attributes of the innovation and understanding the use and usefulness of the innovation. Thus, how-to-knowledge predicts the rate of adoption. Lastly, principles-knowledge is possessing the cognitive ability to understand the grassroots and underlying tenets of the innovation. Understanding the underlying principles of the innovation helps the decision-maker judge and know with reasonable certainty the conditions and potential outcomes of the innovation (Rogers, 2003). For this study, examining nurse educators' concerns about using simulation as clinical experience will present evidence of the most prevalent stages of concern. Knowing this may help baccalaureate nurse educators and program administrators recognize what modifications to make to reduce uncertainty about using simulation as clinical experience. Knowing nurse educators' concerns may lead to increased simulation as an innovation to bridge the gap between needed clinical experience and available opportunities for traditional clinical experience.

Another stage of the innovation-decision process is persuasion. Persuasion is the act of influencing a favorable or unfavorable attitude or belief about the innovation. The persuasion stage describes the individual's perception of the evidence's credibility rather than a predisposed decision forced upon the receiver of information. Persuasion relies on thinking practically about innovation's perceived advantages and disadvantages as validated by innovation's attributes (Rogers, 2003).

The decision stage is the time when the choice to adopt or reject an innovation occurs. Adoption is the decision to "make full use of an innovation as the best course of action available" (Rogers, 2003, p. 177), and rejection is the "decision not to adopt an innovation" (Rogers, 2003, p. 177). Rogers (2003) explains that, when possible, a trial or probationary adoption of innovation helps with the decision stage. He asserts that trying the innovation allows individuals to experience the associated attributes and that the experience may be the influential factor in the decision-making process. Further, he explains that, although some people adopt change without first trying it out, trial time is critical to speeding up the adoption process (Rogers, 2003). Rejection of innovation during the decision phase may occur outright or follow some degree of innovation adoption. Outright rejection typically occurs at the knowledge stage whereby intended users of the innovation forget about the innovation after gaining awareness. Another form of rejection is discontinuance, which occurs following some degree of adoption of an innovation. Discontinuance may occur at any time, even into the process of deciding to adopt yet another change (Rogers, 2003).

The implementation stage occurs when the use of innovation occurs. Rogers (2003) explains that at some point, as the adopter embeds the innovation into daily operations, the newness of the change disappears. Consequently, some adopters consider the point of implementation to be the end of the innovation-decision process. For others, adopting and implementing innovation leads to embracing innovation and modeling the use of innovation to other people in the social system.

The final stage of diffusion of innovation is the confirmation stage. The confirmation stage is a time when the adopter of the innovation, once again, attempts to reduce uncertainty about his or her decision to adopt the innovation by seeking support from other members of the social system to either continue or discontinue using the innovation (Rogers, 2003). Like in the decision stage, discontinuance may also occur in this stage. Rogers (2003) defines discontinuance as a decision to reject an innovation after adopting it. Further, he specifies two types of discontinuances: replacement and disenchantment. Replacement discontinuance is “a decision to reject an idea to adopt a better idea that supersedes it” (Rogers, 2003, p. 190). Disenchanted discontinuance is “a decision to reject an idea due to dissatisfaction with its performance” (Rogers, 2003, p. 190). Attributes of the innovation, which may lead to concerns about the innovation, influence the user to either continue or discontinue using an innovation. The decision to engage in innovation is the confirmation stage of diffusion of innovation (Rogers, 2003).

Attributes of Innovations

Rogers (2003) explains five attributes of innovations, which are not sequenced but are essential factors to consider when deciding to adopt or reject an innovation: relative advantage, compatibility, trialability, observability, and complexity. These attributes emphasize how members of the social system view the innovation (Rogers, 2003). Of these attributes, the first four increase adoption rate; whereas, complexity negatively affects adoption speed (Rogers, 2003).

Rogers (2003) emphasizes that the relative advantage, as perceived by members of the social system, is the most influential factor determining innovation's adoption rate. Relative advantage is the degree to which one perceives the innovation to be better than the idea it supersedes (Rogers, 2003); it is the “ratio of the expected benefits and the cost of adoption of an innovation” (Rogers, 2003, p. 233). Rogers (2003) describes compatibility as the innovation being consistent with the intended user's values, experiences, and needs. He explains that if the innovation is compatible with an individual’s needs, including socio-cultural values, previous ideas, and the end-user requirements, then uncertainty will decrease, and the rate of innovation adoption will increase (Rogers, 2003).

Trialability and observability are two more attributes that positively affect the rate of adoption of an innovation. Rogers (2003) defined trialability as the opportunity to experiment with the innovation for a limited time. He explains that “trying out” (Rogers, 2003, p. 258), the new practice, activity, or object allows the user to find out how the innovation works under actual or similar conditions intended for its use. Trialability is the trying out of innovation in the same environment as intended for use, and observability explains the ease of learning the innovation and explaining the innovation to other people.

Unlike the attributes that increase adoption rate, complexity negatively affects adoption speed (Rogers, 2003). “Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use” (Rogers, 2003, p. 257); it creates barriers to learning and decreases the rate of adoption. Additionally, Rogers (2003) explains that although decision-makers within an organization choose to adopt an innovation, the innovativeness, which is the rate that individuals within an organization adopt the innovation, varies.

For Rogers (2003), innovativeness, although a continuous process, describes the degree to which an individual is eager to adopt an innovation compared to other members of their social system. The scale on which to measure innovativeness contains categories of adopters. The categories of adopters are innovators, early adopters, early majority, late majority, and laggards. Innovators represent a small minority who are risk-takers and are willing to venture beyond the local social system into new territory. They are willing to accept occasional setbacks to adapt to new technologies. Innovators can cope with a “high degree of uncertainty” (Rogers, 2003, p. 282). They are essential to the diffusion process because of their ability to communicate new ideas and initiate change (Rogers, 2003).

Early adopters, unlike innovators, are more bound to their local social system. They subjectively evaluate an innovation to recognize its potential and decrease uncertainty about innovation before deciding to adopt (Rogers, 2003). According to Rogers (2003), unlike early adopters, early majority adopters thoughtfully consider and deliberate the change. They are willing to adopt an innovation, but only after others have taken the risk in their social system. Early majority adopters usually account for one-third of the members within a social system. Like early majority adopters, late majority adopters usually make up one-third of the social system members. However, unlike early majority adopters, late majority adopters tend to be skeptical and cautious and adopt ideas after the social network's average member. Despite their high level of uncertainty, late majority adopters' motivation to act is often due to peer pressure (Rogers, 2003). The term laggard describes individuals who wait for evidence from other social system members to know that innovation adoption adds value to the organization. Laggards do not intend disrespect; instead, they tend to fear or resist change. They struggle with letting go of the known. They are inclined to hold “relatively traditional values” (Rogers, 2003, p. 284) because of their uncertainty about both the change and the perception of failure.

Understanding that innovation diffusion is a dynamic process necessary to dispersing an innovation through a social system (Rogers, 2003) is imperative when implementing change. In an educational context, when planning the diffusion of innovation, in order to develop professional activities and support structures to help members of a social system navigate through the adoption and implementation process, concerns of the users and the potential users of the innovation must be known and understood (Dooley, 1999).

Library and Information Science Studies on Diffusion of Innovation

A search of the Library and Information Science Source database using the keywords diffusion of innovation theory and library and information science for the years 2010-2019 identified 16 relevant results. Of these results, nine publications convey how LIS researchers studied new computer technology adoption in the last decade. This review indicates that Everette Rogers’ (2003) diffusion of innovations theory has been used in LIS to address the adoption of technological innovations in libraries, including the use of Facebook, online databases, e-journal publishing, Apple technology, e-books, digital rights management, and Creative Commons, open-access repositories, search engines, and open-education resource. This present study contributes to this list of new computer technology innovations by exploring the adoption of simulation as a teaching innovation in the highly technical field of nursing education.

Two attributes of diffusion of innovation, which are relative-advantage and compatibility, positively influenced public librarians in New Zealand to implement the use of Facebook as a marketing tool; however, the attribute of complexity may negatively influence their use of Facebook (Neo & Calvert, 2012). Attributes that positively affect the adoption of innovation include relative advantage, compatibility, trialability, and observability. The attribute of complexity may negatively affect the adoption of innovation. The attributes that positively affect the adoption of innovation influenced faculty and librarians' decision from the 8th Zone of Islamic Azad University in Tehran to adopt and use online databases to access online reference material (Nazari et al., 2013). A study of 82 Malaysian journal publishers revealed that trialability and observability were significant contributors to e-journal adoption rates (Sanni et al., 2013). Relative advantage alone was the most prominent attribute resulting from a survey of 341 potential adopters of smartwatches to determine their intention to adopt the Apple Watch and other smartwatches technology (Hsiao, 2017). The relative advantage attribute was also the most outstanding attribute revealed in a survey of 177 Library and Information Science students in Israel to determine the student's willingness to accept e-book reader rather than print materials (Aharony & Bar-Ilan, 2018). Likewise, Rogers (2003) recognized the relative advantage as the most influential factor determining the adoption rate of innovation.

The knowledge element of diffusion of innovation, which is information-seeking and information processing, explained the knowledge diffusion, transmission, and use of digital rights management (DRM) technology and Creative Commons licenses on digital content on the web (Moscon, 2011). The diffusion of innovation element knowledge also influenced the adoption of open access repositories worldwide (Pinfield et al., 2014). Social systems have also influenced the adoption process. For example, professors and friends who demonstrate innovators' and early adopters' roles influence students' adoption and use of a specific search engine (Akbari et al., 2012). Similarly, librarians and faculty who possess the roles of innovator and early adopter influence the rate of adoption of open-education resources as course material by those who have not found these resources to be an effective alternative to the content they currently use (Braddlee & VanScoy, 2019). This study focused on adopting computer simulation as an instructional tool in nursing education and added to the LIS literature investigating innovation diffusion. This study reveals the intensity of concern that nurse educators have about using computer simulation as a new information technology during clinical experiences.

Pairing Diffusion of Innovation with Stages of Concern

McLean (2005) suggests that pairing Rogers' (2003) stages of the innovation-decision process and attributes of an innovation with the CBAM SoC categories (Hall & Hord, 1987) may provide insight into concerns that may influence the rate of adoption. Hall (1977) explains that although it seems that time, experience, knowledge, and skill would contribute to the development of higher stage concerns, merely having more knowledge about or time with innovation does not resolve lower concerns and arouse higher concerns. Additionally, forcing these attributes to speed up adoption "is an assured way to increase the intensity of lower stage concerns" (Hall, 1977, p. 15). Thus, concern about an innovation depends on many factors, including the person, the innovation, and the environment (Hall, 1977), and individuals move back and forth between stages rather than moving in a one-way forward direction through the stages of concern (Hall, 1977; Hall & Hord, 2020; McLean, 2005). Pairing stages and attributes of diffusion of innovation with the categories of stages of concern is presented in Table 1.

Table 1

Pairing Stages and Attributes of Diffusion of Innovation with the Categories of Stages of Concern

Diffusion of Innovation		Stages of Concern
Stage	Attribute	
Knowledge	Complexity	Stage 3 Management
Persuasion	Trialability	Stage 1 Informational
	Observability	Stage 2 Personal
Decision	Trialability	Stage 1 Informational
	Observability	Stage 2 Personal
Implementation	Relative advantage	Stage 4 Consequences
		Stage 5 Collaboration
		Stage 6 Refocusing
Confirmation	Compatibility	Stage 4 Consequences
		Stage 5 Collaboration
		Stage 6 Refocusing

This study employed the CBAM, specifically the SoCQ, to examine nurse educators' concerns about using simulation as clinical experience. Evidence from this study will help inform BSN-level nurse educators and program administrators about educators' concerns of using simulation as clinical experience. Addressing their concerns may reduce nurse educators' uncertainty about using simulation and, in turn, increase the use of full-scale simulation as innovation to bridge the gap between needed student clinical experience and the availability of real-life clinical experiences.

Summary

The history of the development of simulation, including the early use of simulation in aviation to achieve a low failure rate despite inherent risks, provides an overview of and context for simulation as one computer technology in nursing education. The evolution of ideas resulting in the concerns-based adoption model emphasizes the stages of concern dimension and the stages of concern questionnaire. Previous utilization of the stages of concern questionnaire in nursing education research includes publications about the innovative use of curriculum and the innovative use of clinical sites outside of the hospital acute care setting. Giving credit to Evert Rogers for his coverage of diffusion of innovations, an overview of the theory development is presented and linked to the concerns-based adoption model. Further, library and information science publications from 2010-2019 related to the adoption of computer technology innovations included e-books, online databases, e-journals, Apple technology, Creative Commons, open educational resources, Facebook, open access repositories, and search engines. The literature review revealed that LIS researchers had not yet studied simulation as computer technology. Chapter 3 describes the method used to explore nurse educators’ concerns about using simulation as clinical experience.

Chapter 3: Methodology

This quantitative study approach (Creswell, 2014, p. 26) uses descriptive, comparative, and correlation designs to examine clinical nurse educators' concerns about using simulation as clinical experience in the west north-central region of the U.S. This chapter describes the methods and procedures for this study. Included are the purpose, research questions and hypotheses, design, variables, data collection, sample and setting, instrument, data analysis, validity concerns, a brief statement about the researcher, ethical procedures, the timeline, assumptions and limitations, and summary.

This quantitative study used a standardized survey instrument to examine nurse educators' concerns about using simulation as clinical experience and explored various demographic variables. This study produced descriptive information and inferential data. The concerns-based adoption model, specifically the nurse educators' stages of concern, provided this study's framework.

Purpose of the Study

The purpose of this study was to,

1. Understand the intensity of nurse educators' stages of concern about using simulation as clinical instruction.
2. Determine if there are differences in nurse educators' stages of concern by their demographics.
3. Examine how nurse educators' demographic factors predict their intensity of concern in each stage of concern dimension.

The evidence can guide baccalaureate nurse educators and program administrators to better plan and implement simulation as a computer technology in a clinical experience.

Research Questions and Hypotheses Statements

This research answered the following research questions:

1. At what intensity are the baccalaureate nurse educators' stages of concern about using simulation as clinical experience in the west north-central region of the U.S.?
2. What are the significant differences in the baccalaureate nurse educators' stages of concern by their demographics in the west north-central region of the U.S.?
    a. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by their age groups.

       H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by their age groups.
    b. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by nurse educators' highest level of education.

       H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by nurse educators' highest level of education.
    c. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by their faculty rank.

       H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by their faculty rank.
    d. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by the amount of time the BSN program has engaged in simulation activities.

H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by the amount of time the BSN program has engaged in simulation activities.

e. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by their number of years the nurse educator has used simulation.

   H_1: There is no significant difference in the baccalaureate nurse educators' stages of concern by their number of years the nurse educator has used simulation.

f. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by their years of BSN teaching experience.

   H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by their years of BSN teaching experience.

g. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by the amount of time in the clinical course taught using simulated clinical experience.

   H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by the amount of time in the clinical course taught using simulated clinical experience.

h. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by the amount of time the nurse educator spends conducting a simulated clinical experience (preparation, experience, cleaning up after).

   H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by the amount of time the nurse educator spends conducting a simulated clinical experience (preparation, experience, cleaning up after).

i. H_0: There is no significant difference in the baccalaureate nurse educators' stages of concern by the average number of students the nurse educator has in a simulated clinical experience.

   H_1: There is a significant difference in the baccalaureate nurse educators' stages of concern by the average number of students the nurse educator has in a simulated clinical experience.

j. H_0: There is no significant difference in nurse educators' stages of concern by the total number of students currently in the nurse educator's baccalaureate nursing program.

   H_1: There is a significant difference in nurse educators' stages of concern by the total number of students currently in the nurse educator's baccalaureate nursing program.

3. Do the demographics of nurse educators in the west north-central region of the U.S. predict their stages of concern?

Research Design and Variables

This study used quantitative descriptive and correlational designs to understand the intensity of nurse educators' concerns and examine the relationship between the dependent variable, stages of concern about using simulation as clinical experience, and the independent variables. The ten independent variables are: (a) the age of the nurse educator, (b) highest degree attained, (c) faculty rank, (d) the number of years the BSN program has engaged in simulation activities, (e) the number of years using simulation as a teaching modality, (f) years of experience of teaching BSN education, (g) percent of clinical time per semester that the clinical course includes using simulation, (h) the average amount of time that the educator spends teaching one clinical simulation experience, (i) the average number of students the educator has in one simulation experience per semester, and (j) the total number of students in the nurse educator's nursing program. Descriptive and inferential statistics were used to analyze the data and report the results related to each research question and hypothesis statement. All data analysis was conducted using the IBM SPSS version 24 software.

The Stages of Concern Questionnaire addresses the seven stages that represent the intensity of concern about innovation. The Stages of Concern (SoC) is the dependent variable for this study. The participants rated the extent to which they agreed with each statement related to the innovation using simulation as a clinical experience, which is the focus of this study.

Two independent variables, which are the highest level of education and faculty rank, were structured using a selective survey response and are reported as nominal categorical variables. For the independent variable highest level of education, doctoral-level is reported as all doctoral respondents, regardless of doctoral degrees' focus.

Study Participants

This study's population was full-time nurse educators teaching in a traditional prelicensure BSN program at a college or university during the spring 2020 academic semester. The BSN educators were from nursing programs located in the west north-central region of the U.S., including North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, and Missouri. The programs were accredited by the Commission of Collegiate Nursing Education (CCNE, 2017) at the study time. CCNE is one of the three recognized accrediting agencies for undergraduate nursing education in the United States. Two other recognized accrediting agencies for undergraduate nursing education in the United States are the Accreditation Commission for Education in Nursing (ACEN) (Accreditation Commission for Education in Nursing, 2017) and the National League of Nursing Commission for Nursing Education Accreditation (NLN CNEA) (National League for Nursing, 2019).

The CCNE accredited programs were selected because the number of baccalaureate programs (104) was much higher than the combined number of both the ACEN (Accreditation Commission for Education in Nursing, 2017) and the NLN CNEA (National League for Nursing, 2019) accredited programs (14), in the same geographic region. From the CCNE website, a list of each of the accredited baccalaureate nursing programs in the seven states was retrieved. The CCNE website lists 104 nursing programs as accredited baccalaureate nursing programs among the seven west, north-central states. The list included all the institutions that offered a baccalaureate nursing program, including traditional BSN programs and RN-BSN completion programs. If the CCNE website indicated that an institution offered only an RN-BSN program, the institution was eliminated from the list because RN-BSN programs are usually not traditional; because many are online, they often do not include simulation. If the accreditation date was not current, the institution was eliminated from the list because this study is limited to CCNE accredited baccalaureate nursing programs.

The researcher searched each institution's website remaining on the list generated from the CCNE website to determine the baccalaureate nursing program's status. Additionally, an email asking whether the program was a prelicensure BSN program or an RN-BSN, post-licensure, baccalaureate completion program was sent to each nursing program's administrator. If the institution only offered an RN-BSN track, the researcher eliminated the program from the study. RN-BSN completion programs focus on theory content since the student already holds a license as a registered nurse. Because RN-BSN programs are often not traditional, and because many are online, they often do not include simulation. Therefore, nurse educators who teach in only RN-BSN completion programs were excluded from this study.

The researcher searched the websites of institutions that offer a prelicensure BSN track for the nursing faculty's names and email addresses. If the nursing faculty's names and email addresses were not on the institution's website, the researcher eliminated the institution from the list. Thus, this study's sampling frame included nursing educators from CCNE accredited nursing programs in the west north-central region of the U.S. who had an email address published on their university's website. After careful sorting of the accredited BSN programs, 488 faculty members, from 68 universities or colleges, with institutional email addresses met the potential inclusion criteria for this study. Some nursing programs may offer both a traditional nursing education track and an RN-BSN completion track. Therefore, it is possible that some members of the pool only taught in an RN-BSN program and may have self-selected out of this study.

This study's sample represents nurse educators from both private and public universities. Forty-two percent of them hold the assistant professor's rank, and 58.9% have earned their master's degree. The number of years that the BSN program has engaged in simulation activity ranged from one to 22. In contrast, the number of years the educators' have used simulation as clinical experience ranged from one to 21. The years of BSN teaching experience ranged from less than one year to 36 years. The percent of clinical experiences facilitated using simulation ranged from 0 to 52%, with nearly half (49.8%) of the respondents using simulation for up to 10% of their clinical experiences. The average amount of time spent teaching one clinical simulation experience, including preparation, set up, experience, debriefing, and clean up, ranged from 0.5 to 65 hours. Seventy-nine respondents (34.2%) indicated that they spend five to eight hours teaching one simulated experience, whereas 72 respondents (31.2%) spend nine or more hours teaching one clinical simulation experience. Nearly half (47.2%) of the respondents indicated that they have six to ten students at one time in a simulation experience. Nearly half of the respondents (48.9%) indicated that the total number of students in their BSN program is 150 students or less. Table 2 presents the characteristics of the sample.

Table 2

Characteristics of the Sample

Demographic Categories	Frequency	Percentage		
			M	*SD*
State				
Iowa	24	10.4		
Kansas	48	20.8		
Minnesota	12	10.0		
Missouri	78	33.8		
Nebraska	29	12.6		
North Dakota	16	6.9		
South Dakota	13	5.6		
Private or Public University/College				
Private	138	59.7		
Public	93	40.3		
Gender				
Female	217	93.9		
Male	11	4.8		
Other	3	1.3		
Ethnicity				
Hispanic or Latino	3	1.3		

Not Hispanic or Latino	204	88.3	
Other	24	10.4	
Race			
American Indian or Alaska Native	2	0.9	
Asian	1	0.4	
Black or African American	5	2.2	
White	218	94.4	
Other	5	2.2	
Age		*M* = 50	*SD* = 11.2
27-40	57	24.7	
41-50	61	26.4	
51-73	108	46.8	
Not reported	5	2.2	
Highest Level of Education			
Bachelor's	3	1.3	
Master's	136	58.9	
Doctorate	92	39.8	
Academic Rank			
Instructor	67	29.0	
Assistant Professor	99	42.9	
Associate Professor	44	19.0	
Professor	21	9.1	
Years BSN Program Used Simulation		*M* = 9.4	*SD* = 4.3
1-5	44	19.0	
6-10	88	38.1	
11-22	66	28.6	
Not reported	33	14.3	

Years Educator has Used Simulation		*M* = 7.4	*SD* = 4.3
1-5	85	36.8	
6-10	82	35.5	
11-21	49	21.2	
Not reported	15	6.5	
Years of BSN Teaching Experience		*M* = 10.9	*SD* = 8.4
0.5-5	77	33.3	
6-10	54	23.4	
11-36	100	43.3	
Percent of Clinical Experiences Facilitated Using Simulation		*M* = 16.5	*SD* = 12.6
0-10	115	49.8	
11-20	58	25.1	
21 and higher	58	25.1	
Average Time Teaching One Clinical Simulation Experience - (preparation, set up, experience, debriefing, and clean up)		*M* = 10.75	*SD* = 12.1
0-4	59	25.5	
5-8	79	34.2	
9-12	30	13.0	
13 or more	42	18.2	
Not reported	21	9.1	
Average Number of Students in One Simulation Experience		*M* = 10.3	*SD* = 11.9
3-5	69	29.9	
6-10	109	47.2	
11-66	42	18.2	
Not reported	11	4.8	
Total Number of Students in BSN Program		*M* = 186.8,	*SD* = 140.3
15-150	113	48.9	

151-300	84	36.4
301-700	31	13.4
Not reported	3	1.3

Note. *n* = 231

Research Instrument

The Stages of Concern Questionnaire (SoCQ) is a standardized instrument used to measure and interpret the intensity of concerns about an innovation. The questionnaire includes 35 statements, each expressing particular concern about the innovation. To maintain the reliability and validity of the SoCQ instrument, the researcher did not alter the 35-items of the instrument or the standard explanation and example for completing the questionnaire. Following the directives related to personalizing the instrument to the innovation (George et al., 2008), this researcher personalized the introduction to the innovation, demographic questions, the name or phrase of the innovation, and concluding text. This researcher formatted the instrument through the sedl.org secure website and imported the survey into SurveyMonkey for distribution to the selected pool of participants.

Respondents marked each of the 35 items, using a 0 – 7 Likert scale, according to how true the item seems to them. Number seven indicates that the innovation statement is most relevant to the respondent at that time. Each number between below seven down to zero indicates that the innovation is less relevant to them. Marking a statement as zero indicates that the innovation statement is entirely irrelevant to the respondent at that time. The responses are analyzed by grouping the statements according to the stage of concern they represent. Of the 35 statements, five statements represent each of the seven stages of concern (George et al., 2008). The numeric stages of concern are 0 – unconcerned, 1 – informational, 2 – personal, 3 – management, 4 – consequence, 5 – collaboration, and 6 – refocusing (George et al., 2006).

Data Collection

Following approval by the Emporia State University Institutional Review Board, invitations to participate in this study were emailed to the pool of participants (488) via the email address published on the nurse educators’ institution’s website. The invitation included the informed consent and the stages of concern questionnaire. Two follow-up emails were sent to each potential participant over the three weeks following the initial invitation. Once the survey closed, data screening was conducted to guarantee the data's accuracy, find appropriate ways to deal with missing data, and assess the adequacy of fit between the data and the assumptions of the statistical procedures used in this study. Among the 308 online responses collected, 37 (12%) respondents only answered the preliminary question indicating they agreed to participate in the study but did not answer any questions; therefore, they were eliminated from the study. Of the remaining 271 respondents, 40 (14.7%) completed one or more demographic questions without any responses to the SoCQ tool and were also eliminated from the study. All items of the SoCQ tool were completed by 231 respondents (47.3%) and were included in the study. Although in all the 231 usable surveys, 33 respondents did not respond to one or more demographic variables, they were included in the study. However, the survey responses with missing data on demographic information were eliminated for the relevant statistical analysis. The final sample size (n=231) yielded a 47.3% response rate.

Data Analysis

The participant pool consisted of full-time BSN faculty who taught in a traditional CCNE accredited BSN program located in the west north-central region of the U.S. The states included in the region were North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, and Missouri. Additionally, the participants each had an email account published on their university’s website. The respondents' information to the self-completion questionnaire provided the basis for data analysis (Bryman, 2012). As recommended by Creswell (2014), the researcher used descriptive and inferential analysis to report and analyze the data related to the independent and dependent variables for the research questions and hypotheses statements in this study.

The quantitative inferential analysis consisted of statistical tests like independent t-test, one-way ANOVA, and regression analysis to examine and identify relationships between the dependent variable (the SoCQ grouped categorical profile scores) and the ten independent variables. Regression analysis was used to predict the outcome of the variables. The sample size (n = 231) was adequate to meet the data analysis requirements. ANOVA was used to test whether group means differ (Field, 2013). The report of the data includes how the results answer the research question and hypotheses. A p-value of .05 is considered statistically significant, meaning that the results were unlikely to have happened by chance, and “the null hypothesis of ‘no effect’ can be rejected” (Creswell, 2014, p. 165).

The researcher used IBM SPSS 24 software to conduct statistical analysis. The reported data includes frequencies (cases) and percentile determination (%) of the whole for each profile group. Ten independent variables produced interval level data that includes: (a) the age of the nurse educator, (b) highest degree attained, (c) faculty rank, (d) the number of years the BSN program has engaged in simulation activities, (e) the number of years using simulation as a teaching modality, (f) the number of years of experience of teaching BSN education, (g) the percentage of clinical time per semester that the clinical course includes using simulation, (h) the average amount of time that the educator spends teaching one clinical simulation experience, (i) the average number of students an educator has in one simulation experience per semester, (j) and the total number of students in nurse educator’s nursing program.

Descriptive statistics such as average mean scores and standard deviations in each of the seven stages of concern were used to examine Research Question 1: At what intensity are the baccalaureate nurse educators' stages of concern about using simulation as clinical experience in the west north-central region of the U.S.? Scoring the questionnaire requires calculating raw scores for each of the seven stages (George et al., 2008). The raw data for this study was calculated via the automated calculation matrix that resides in the sedl.org secure system, which is secure on the AIR webserver (B. Litke, personal communication, November 5, 2019). The raw data was used to conduct statistical analysis necessary to answer research questions two and three.

The raw data scores for each stage of concern were converted to a percentile score using the percentile conversion chart for the stages of concern questionnaire to know the intensity of concern for each stage (George et al., 2006). The raw data were converted to percentile scores via the automated calculation matrix that resides in the sedl.org secure system on the AIR webserver. Once the stages of concern questionnaire data were processed, percentile scores for all seven stages of concern were examined and interpreted for the whole group of respondents. The percentile score for each stage of concern was used to know nurse educators' intensity of concern about using simulation as clinical experience and answer research question one.

An independent *t*-test and one-way between-subjects ANOVAs were used to test for and compare differences in nursing educators' stages of concerns by the demographics in addressing Research Question 2 and testing the hypotheses: What are the significant differences in the baccalaureate nurse educators' stages of concern by their demographics in the west north-central region of the U.S.? Multiple regression analyses were used to know which of the ten independent variables were significantly related to each of the seven stages of concern. Also, correlation coefficients were calculated to examine the magnitude and direction of the relationship between two variables. These approaches were used to answer Research Questions 3: How do the demographics of nurse educators in the west north-central region of the U.S. relate to their stages of concern?

Assumptions and Limitations

Assumptions of this quantitative, cross-sectional study were related to web-based survey design and the proposed sample size. Assumptions of this study's method were that the invited participants would participate in the study and answer the questions independently and honestly and respond to the demographic questions and the SoCQ. Other assumptions of this study's method were that the number of respondents would be extensive enough to identify whether relationships exist between the dependent variable (the SoCQ grouped categorical profile scores) and the independent variables.

While topics related to improving healthcare deserve and typically require significant financial investments in full-time and qualified researchers, this investigation was limited to its accomplishments through doctoral research by a student and faculty committee membership. Although carefully and vigorously undertaken, locating study participants was limited to the review of university and college websites, resulting in a combination of published correct and incorrect nurse educators' email addresses. Another limitation may be that the sample of nurse educators included in this study's findings may not represent the total population of nurse educators due to the self-selection of respondents to the study. Also, the independent variables were not calculated for any national normative percentiles versus the sample.

Unfortunately, the survey's timing was precisely during the week of the on-set of COVID-19 in the United States. While this study's population includes individuals relevant to the study's topic, there was a lower than anticipated response rate, which may decrease the entire study population's representation. A small sample size can affect the survey results' reliability, which leads to higher variability and potential bias. Advertising and recruiting participants in the virtual environment were a challenge. Even nursing education department chairs who were otherwise likely to be active recruiters for the study were unwilling to encourage their faculty to participate in the study. Their view may have been that nursing faculty were already too busy and should not be expected to complete the survey at the time. The study results may be skewed to reflect mostly the opinions of those who read the invitation and participated because they may have had strong feelings about the study's topic. While the survey's timing impacts this study's results, given the unknowns surrounding the pandemic, it seemed important to gather as much input as possible from this study population about using simulation in nursing students' clinical experience. A pandemic is "an epidemic occurring worldwide, or over a vast area, crossing international boundaries and usually affecting a large number of people" (Kelly, 2011, p. 540). The COVID-19 pandemic challenged teaching modalities in nursing education. Thus, understanding nurse educators' concerns about using simulation as clinical experience adds to the evidence about simulation use in nursing education and can guide baccalaureate nurse educators and program administrators to plan and implement simulation.

The Researcher

This researcher is both a Library and Information Science scholar and a BSN nurse educator at a mid-central Kansas university. Kansas is one of the states included in this study. The researcher has taught in a BSN program since January 1994. ACEN accredits the program with which this researcher is associated. The program began using simulation as clinical experience in the year 2003. The researcher has used simulation as a clinical experience since that time. Concerns about using simulation as clinical experience raised by nursing faculty in this BSN program prompted this researcher to examine BSN nurse educators' concerns about simulation as clinical experience.

Summary

This chapter describes the research method used to conduct the study. Data collected through the submission of the web-based survey were analyzed. The results include knowing nurse educators' concerns about using simulation as clinical experience in place of traditional clinical experiences. The results and interpretation of the results for this proposed study are presented in chapter 4.

Chapter 4: Results

This chapter presents the results of this study. The purposes of the study were to (a) understand the intensity of stages of concern of nurse educators in the west north-central region of the U.S. about using simulation as clinical instruction; (b) determine if there are differences in the intensity of the nurse educators' stages of concern by their demographics; (c) examine if demographics of nurse educators relate to the intensity of their stages of concern. This chapter presents the results related to the research questions in the order proposed in Chapter 1.

Results Related to the Research Questions

The following section presents and describes the data analysis results of the three research questions.

1. At what intensity are the baccalaureate nurse educators' Stages of concern about using simulation as clinical experience in the west north-central region of the U.S.?
2. What are the significant differences in the baccalaureate nurse educators' stages of concern by their demographics in the west north-central region of the U.S.?
3. Do the demographics of nurse educators in the west north-central region of the U.S. predict the intensity of their Stages of concern?

Research Question 1: Intensity of Nurse Educators' Stages of Concerns

At what intensity are the baccalaureate nurse educators' stages of concern about using simulation as clinical experience in the west north-central region of the U.S.?

Descriptive statistics of overall raw mean scores and standard deviations are presented for each of the seven constructs of stages of concern in (a) unrelated, (b) informational, (c) personal, (d) management, (e) consequences, (f) collaboration, and (g) refocusing. Table 3 summarizes the survey item statements and the raw mean and standard deviation of each concern stage.

According to George, Hall, and Stiegelbauer (2006), reporting each statement's mean and standard deviation is not as meaningful as knowing the mean and standard deviation of each stage of concern, as shown in Table 3. However, each statement's mean and standard deviation within each stage is provided in Appendix F: Stages of Concern Statement/Response Table.

Table 3

Survey Items, and Raw Mean and Standard Deviation of Each Stage of Concern

Stage of Concern Item Statement		
Stage 0: Unrelated	*M* = 2.41	*SD* = 1.10
I am more concerned about another innovation.		
I am not concerned about simulation as clinical experience at this time.		
I am completely occupied with things other than simulation as clinical experience.		
I spend little time thinking about simulation as clinical experience.		
Currently, other priorities prevent me from focusing my time on simulation as clinical experience.		
Stage 1: Informational	*M* = 2.51	*SD* = 1.82
I have very limited knowledge about simulation as clinical experience.		
I would like to discuss the possibility of using simulation as clinical experience.		
I would like to know what resources are available if we decide to adopt simulation as clinical experience.		
I would like to know what the use of simulation as clinical experience will require in the immediate future.		

I would like to know how simulation as clinical experience is better than what we have now.		
Stage 2: Personal	*M* = 2.76	*SD* = 1.76
I would like to know the effect of reorganization on my professional status.		
I would like to know who will make the decision in the new system.		
I would like to know how my teaching or administration is supposed to change.		
I would like to have more information on time and energy commitments required by simulation as clinical experience.		
I would like to know how my role will change when I am using simulation as clinical experience.		
Stage 3: Management	*M* = 2.30	*SD* = 1.41
I am concerned about not having enough time to organize myself each day (in relation to simulation as clinical experience).		
I am concerned about conflict between my interests and my responsibilities.		
I am concerned about my inability to manage all that simulation as clinical experience requires.		
I am concerned about time spent working with nonacademic problems related to simulation as clinical experience.		
Coordination of tasks and people (in relation to simulation as clinical experience) is taking too much of my time.		
Stage 4: Consequences	*M* = 3.95	*SD* = 1.39
I am concerned about students' attitudes toward simulation as clinical experience.		
I am concerned about how simulation as clinical experience affects students.		

I am concerned about evaluating my impact on students (in relation to simulation as clinical experience).		
I would like to excite my students about their part in simulation as clinical experience.		
I would like to use feedback from students to change the program.		
Stage 5: Collaboration	*M* = 4.00	*SD* = 1.69
I would like to help other faculty in their use of simulation as clinical experience.		
I would like to develop working relationships with both our faculty and outside faculty using simulation as clinical experience.		
I would like to familiarize other departments or persons with the progress of this new approach.		
I would like to coordinate my efforts with others to maximize the effects of simulation as clinical experience.		
I would like to know what other faculty are doing in this area.		
Stage 6: Refocusing	*M* = 2.79	*SD* = 1.37
I now know of some other approaches that might work better than simulation as clinical experience.		
I am concerned about revising my use of simulation as clinical experience.		
I would like to revise the simulation as clinical experience approach.		
I would like to modify our use of simulation as clinical experience based on the experiences of our students.		
I would like to determine how to supplement, enhance, or replace simulation as clinical experience.		

Note. Likert scale choices are: 0 represents “irrelevant”; 1 represents “not true of me now”; 2 represent a lower range of “somewhat true of me now”; 3 represents a middle range of “somewhat true of me now”; 4 represents a higher range of “somewhat true of me now”; 5 represents a lower range of “very true of me now”; 6 represents a middle range of “very true of me now”; and 7 represents a higher range of “very true of me now.”

The Stage 0, unrelated, stage of concern indicates little concern or little involvement with the innovation. *M* = 2.41 in the stage 0 concern represented the lower range of “somewhat true of me now,” indicating that nurse educators’ perception about using simulation as clinical experience is of little concern, or they have little involvement with the innovation. Stage 1, informational, stage of concern measures the nurse educators’ concern intensity about their interest in learning about the innovation in using simulation as clinical experience, specifically including general awareness of the innovation and learning more details about it. Similarly, *M* = 2.51 in stage 1 represents the lower range of “somewhat true of me now.” Stage 2, the personal stage of concern, indicates uncertainty about the demands of the innovation and personal commitment to the innovation. Stage 2 (*M* = 2.76) indicates that the nurse educators’ perception that they have uncertainty about the demands of the innovation or a personal commitment to the innovation is represented by the lower range of “somewhat true of me now.” Stage 3, management, stage of concern indicates a focus on the process and tasks of using the innovation. Stage 3 (*M* = 2.30) indicates that the nurse educators’ perception that their concerns focus on the process and tasks of using simulation as clinical experience is also represented by the lower range of “somewhat true of me now.” Stage 4, consequence, stage of concern indicates that the focus of the innovation is on students' impact. Stage 4 (*M* = 3.95) indicates that the nurse educators' perception that the focus of using simulation as clinical experience is that of the impact the innovation has on students is represented by the very high end of the middle range of "somewhat true of me now." The focus of stage 5, collaboration, is on coordinating and cooperating with others regarding the innovation. Stage 5 (M = 4.01) indicates that coordinating and cooperating with others regarding simulation as clinical experience is represented by the higher range of "somewhat true of me now." The focus of stage 6, refocusing, is on exploring ways to benefit from the innovation or possibly replacing the innovation with a better alternative. Stage 6 (M = 2.79) indicates that nurse educators' perception that their focus on gaining more benefit from the innovation or possibly changing to a better innovation is represented by the lower range of "somewhat true of me now" (see Table 3).

Table 4 presents the distribution of the highest stage of concern scores for participants by stage. The distribution of participants in each stage of concern indicates that the highest stage of concern for nearly half of the respondents (n = 112, 48.5%) is that of stage 0 – unrelated, indicating that other things, innovations, or activities are of greater concern than using simulation as clinical experience (see Table 4).

Table 4

Distribution of Highest Stage of Concern Scores for Participants by Stage

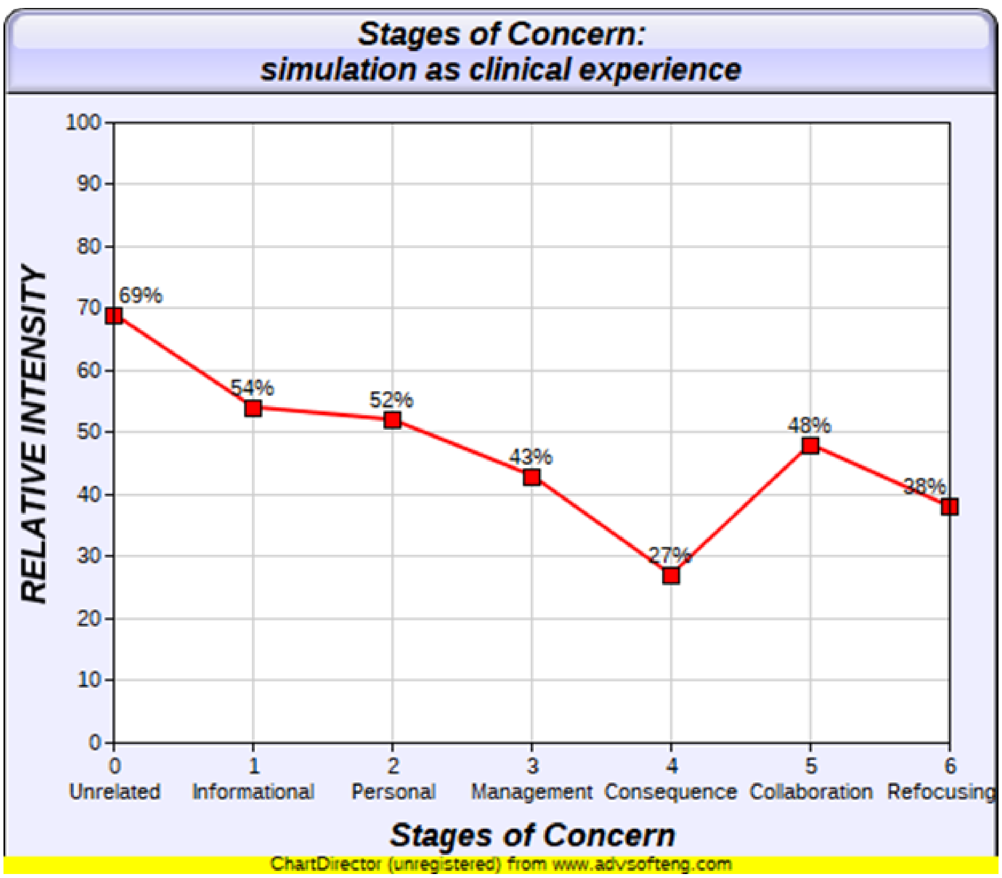
Stage of Concern	0	1	2	3	4	5	6	Total
Number of Participants	112	31	26	10	3	40	9	231
Percent of Participants	48.5	13.4	11.3	4.3	1.3	17.3	3.9	100

Using the automated calculation matrix that resides in the sedl.org secure system on the AIR webserver, the raw data were converted to percentile scores. The percentile scores create a profile of intensity of concern from 0 – 100 for each stage of concern in relation to the other stages of concern. The interpretation of high scores for each stage of concern are as follows: a) high stage 0-unrelated indicates that the respondents perceive other things or activities to be of greater concern than the innovation; b) high stage 1-informational indicates a desire to want more information about the innovation; c) high stage 2-personal indicates respondents have intense personal concerns about the innovation and its consequences for them; d) high stage 3-management suggests that the respondents have concerns about the management and use of the innovation; e) high stage 4-consequences indicates concerns about the consequences of the innovation for the students; f) high stage 5-collaboration suggests concerns about working with others concerning the innovation; g) high stage 6-refocusing indicates the respondents do not want to learn any more about the innovation, but that they have ideas for changing or replacing the innovation.

Figure 1 presents the profile that depicts the relative intensity of each stage of nurse educators' concern about using simulation as clinical experience in relation to the other stages of concern. The stage of concern with the highest relative intensity among the seven stages of concern is stage 0, unrelated (68%), indicating that nurse educators perceive other things or activities to be of greater concern than the innovation of using simulation as clinical experience. The second-highest relative intensity of concern is stage 1 informational (54%), suggesting that nurse educators have a moderately intense concern about wanting more information about the innovation of using simulation as clinical experience. Stage 2 personal (52%) was the third-highest intense stage of concern, suggesting that respondents have a moderate intensity of personal concern about the innovation and its consequences. The next intense stage of concern was stage 5 collaboration. The relative intensity of concern in Stage 5 collaboration (48%) suggests some nurse educators' have a moderate desire to learn what others are doing in relation to using simulation as clinical experience. The relative intensity of stage 3 management (43%) suggests that nurse educators have moderate to minimal concerns about managing simulation as clinical experience. The stages with the least relative intensity scores were stage 6 refocusing (38%) and stage 4 consequences (27%). Low-intensity scores for stage 6 indicate that nurse educators do not have clear ideas about doing things differently, and low intensity of concern for stage 4 suggests that nurse educators have minimal concerns about the effects of innovation on students.

Figure 1

Profile Graph of Relative Intensity Percentile Score of Nurse Educators for Each Stage of Concern



Research Question 2: Differences in Stages of Concern by Nurse Educators' Demographics

What are the significant differences in the baccalaureate nurse educators' stages of concern by their demographics in the west north-central region of the U.S.?

Descriptive statistics, including overall raw mean scores and standard deviations, and results of inferential statistical analysis are presented for each of the seven constructs of stages of concern in (a) unrelated, (b) informational, (c) personal, (d) management, (e) consequences, (f) collaboration, and (g) refocusing for each of the ten independent variables. The results of the data analysis for each of the ten hypotheses related to this research question follow.

Age

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by their age groups.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on age by categorizing the participants into the following three groups: 27 – 40 years old, 41 – 50 years old, and 51 – 73. Statistics of the between-group comparison of stages of concern by the nurse educator's age are presented in Table 5.

Table 5

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by the Age of Nurse Educator

Stage of Concern Age of Nurse Educator	*n*	*M*	*SD*	*F*	*p*	ω
Stage 0 Unrelated				0.181	.834	.007
27-40 years old	57	2.45	1.23			
41-50 years old	61	2.34	0.94			
51-73 years old	108	2.44	1.18			

Stage 1 Informational				0.673	.511	.003
27-40 years old	50	2.30	1.77			
41-50 years old	55	2.71	1.77			
51-73 years old	98	2.48	1.87			
Stage 2 Personal				1.352	.261	.003
27-40 years old	57	2.45	1.76			
41-50 years old	61	2.75	1.78			
51-73 years old	108	2.92	1.75			
Stage 3 Management				0.098	.906	.009
27-40 years old	57	2.36	1.47			
41-50 years old	61	2.31	1.35			
51-73 years old	108	2.26	1.44			
Stage 4 consequences				0.008	.992	.010
27-40 years old	52	3.95	1.47			
41-50 years old	58	3.94	1.43			
51-73 years old	100	3.92	1.31			
Stage 5 Collaboration				0.138	.871	.008
27-40 years old	57	4.00	1.73			
41-50 years old	61	3.89	1.53			
51-73 years old	108	4.03	1.76			
Stage 6 Refocusing				0.036	.964	.009
27-40 years old	57	2.83	1.25			
41-50 years old	61	2.78	1.30			

51-73 years old	108	2.77	1.46

The Levene's test was used to assess the assumptions of homogeneity of variances among the three age groups within each of the seven stages of concern. The homogeneity of variances are met for all the seven stages of concern: 1) stage 0 unrelated, $X^2(2, 223) = 1.310$, p=.272; 2) stage 1 informational, $X^2(2, 200) = 0.105$, p=.901; 3) stage 2 personal, $X^2(2, 223) = 0.034$, p=.966; 4) stage 3 management, X^2 (2, 223) = 0.127, p=.881; 5) stage 4 consequences, X^2 (2, 207), p = 0.913, p=.403; 6) stage 5 collaboration, X^2 (2, 223) = 1.831, p=.163; and 7) stage 6 refocusing, $X^2(2, 223) = 2.322$, p=.100.

The one-way between-subject ANOVAs reveal that there were not statistically significant differences in the intensity of all the following seven stages of concern by the age group: 1) stage 0 unrelated, $F(2, 223) = 0.181$, p =. 834, ω =.007; 2) stage 1 personal, $F(2, 200) = 0.673$, p =. 511, ω =.003; 3) stage 2 informational, $F(2, 223) = 1.352$, p =. 261, ω =.003; 4) stage 3 management, $F(2, 223) = 0.098$, p =. 906, ω =.009; 5) stage 4 consequences, $F(2, 207) = 0.008$, p =. 992, ω =.010; 6) stage 5 collaboration, $F(2, 223) = 0.138$, p =. 871, ω =.008; and 7) stage 6 refocusing, $F(2, 223) = 0.036$, p =. 964, ω =.009. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in the intensity of all the seven stages of concern of baccalaureate nurse educators by their age groups.

Highest Level of Education

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by nurse educators' highest level of education.

Independent-samples t-test was conducted to compare stages of concern on nurse educators' highest level of education by categorizing the participants into the following two groups: master's degree and doctorate. Statistics of the *t*-test by the nurse educators' highest level of education are presented in Table 6.

Table 6

Descriptive and inferential Statistics of the Between Groups t-Test Comparison on Stages of Concern by Highest Level of Education of Nurse Educator

Stage of Concern	*n*	*M*	*SD*	*t*	*p*	*d*
Highest Level of Education of Nurse Educator						
Stage 0 Unrelated				-2.75	.006*	.180
Master's	136	2.25	1.03			
Doctorate	92	2.65	1.17			
Stage 1 Informational				0.003	.997	.0002
Master's	123	2.50	1.87			
Doctorate	82	2.50	1.73			
Stage 2 Personal				-0.926	.355	.064
Master's	136	2.66	1.83			
Doctorate	92	2.88	1.65			
Stage 3 Management				-1.960	.051	.129
Master's	136	2.14	1.38			
Doctorate	92	2.51	1.43			
Stage 4 Consequences				0.413	.681	.028
Master's	125	3.97	1.39			
Doctorate	88	3.89	1.40			
Stage 5 Collaboration				1.581	.115	.105

Master's	136	1.14	1.67			
Doctorate	92	3.78	1.71			
Stage 6 Refocusing				-1.407	.161	.093
Master's	136	2.68	1.31			
Doctorate	92	2.94	1.45			

Note. * = $p < .05$

Levene's tests indicate that the assumption of homogeneity of variances was violated for the nurse educators' highest level of education at the stage 1 informational stage of concern and the stage 2 personal stage of concern; therefore, the *t* statistic not assuming homogeneity of variance was used for both stage 1 and stage 2 of the stages of concern. Levene's tests reveal that homogeneity variances were met for the other five stages of concern; therefore, the *t* test statistics assuming non-homogeneity of variance were used to determine the potential significant difference. Independent *t*-tests indicate that the nurse educators with doctoral degree (*M* = 2.65, *SD* = 1.17) have significantly higher intensity of stage 0 unrelated concerns than the nurse educators with master's degree (*M* = 2.25, *SD* = 1.03), *t*(226) = -2.75, *p* = .006, *d* = .180. Although not statistically significant at $p < .05$, the doctorate-prepared nurse educators (*M* = 2.51, *SD* = 1.43) have higher intensity of stage 3 management concerns than the masters-prepared nurse educators (*M* = 2.14, *SD* = 1.38), *t*(226) = -1.960, *p* = .051, *d* = .129. There is no significant difference in the baccalaureate nurse educators' stages of concern by the highest level of education for the following stages of concern: 1-informational, *t*(203) = 0.003, *p* = .997, *d* = .0002; 2-personal *t*(226) = -0.926, p = .355, *d* = .064; 4-consequences *t*(211) = 0.413, *p* = .681, *d* = .028; 5-collaboration *t*(226) = 1.581, *p* = .115, *d* = .105; and 6-refocusing, *t*(226) = -1.407, *p* = .161, *d* = .093. The values of all *d* indicate small effect sizes.

Faculty Rank

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by their faculty rank.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on faculty rank by categorizing the participants into the following four groups: instructor, assistant professor, associate professor, and professor. The ANOVA statistics are presented in Table 7.

Table 7

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Faculty Rank

Stage of Concern Faculty Rank	*n*	*M*	*SD*	*F*	*p*	ω
Stage 0 Unrelated				0.575	.632	.006
Instructor	67	2.27	1.11			
Assistant Professor	99	2.45	1.11			
Associate Professor	44	2.50	1.07			
Professor	21	2.50	1.08			
Stage 1 Informational				1.506	.214	.007
Instructor	59	2.74	1.85			
Assistant Professor	89	2.52	1.85			
Associate Professor	40	2.54	1.92			
Professor	19	1.73	1.15			
Stage 2 Personal				0.610	.609	.005

Instructor	67	2.79	1.85			
Assistant Professor	99	2.72	1.80			
Associate Professor	44	2.98	1.65			
Professor	21	2.36	1.45			
Stage 3 Management				0.452	.716	.007
Instructor	67	2.26	1.46			
Assistant Professor	99	2.28	1.44			
Associate Professor	44	2.50	1.32			
Professor	21	2.11	1.39			
Stage 4 consequences				1.420	.238	.006
Instructor	61	4.03	1.59			
Assistant Professor	94	3.80	1.36			
Associate Professor	41	4.28	1.17			
Professor	19	3.69	1.24			
Stage 5 Collaboration				0.969	.408	.0004
Instructor	67	4.02	1.88			
Assistant Professor	99	4.01	1.55			
Associate Professor	44	4.23	1.70			
Professor	21	3.47	1.65			
Stage 6 Refocusing				0.177	.912	.011
Instructor	67	2.85	1.41			
Assistant Professor	99	2.77	1.31			
Associate Professor	44	2.82	1.47			

Professor	21	2.61	1.38

Levene's tests indicate that the assumptions of homogeneity of variances in six of the seven stages of concern are met: 1) stage 0 unrelated, X^2 (3, 227) = 0.040, *p* = .989; 2) stage 2 personal, X^2 (3, 227) = 2.157, *p* = .094; 3) stage 3 management, X^2 (3, 227) = 0.162, *p* = .922; 4) stage 4 consequences, X^2 (3,211) = 1.505, *p* = .214; 5) stage 5 collaboration, X^2(3, 227) = 1.374, *p* = .252; and 6) stage 6 refocusing, X^2 (3, 227) = 0.325, *p* = .808. Homogeneity of variances was violated for stage 1 informational, X^2(2, 203) = 2.734, *p* = .045, in which the ANOVA statistics assuming non-homogeneity of variance were used to determine the potential significant difference.

The one-way between-subject ANOVAs reveal that there were not statistically significant differences in the intensity of all the following seven stages of concern by faculty rank: 1) stage 0 unrelated, *F*(3, 227) = 0.575, *p* = .632, ω =.006; 2) stage 1 personal, *F*(3, 203) = 1.506, *p* =. 214, ω =.007; 3) stage 2 informational, *F*(3, 227) = 0.610, *p* =. 609, ω =.005; 4) stage 3 management, *F*(2, 223) = 0.098, *p* =. 906, ω =.009; 5) stage 4 consequences, *F*(3, 211) = 1.420, *p* =. 238, ω =.006; 6) stage 5 collaboration, *F*(3, 227) = 0.969, *p* =. 408, ω =.0004; 7) stage 6 refocusing, *F*(3, 227) = 0.177, *p* = .912, ω =.011. These results accept the null hypothesis that there is no significant difference in the intensity of all the seven stages of concern of baccalaureate nurse educators by faculty rank.

Amount of Time the BSN Program Has Engaged in Simulation Activities

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by the amount of time the BSN program has engaged in simulation activities.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on the amount of time the BSN program has been engaged in simulation activities by categorizing the participants into the following three groups: 1 – 5 years, 6 – 10 years, and 11 – 22 years. The ANOVA statistics are presented in Table 8.

Table 8

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by the Amount of Time in Years the BSN Program Has Been Engaged in Simulation Activities

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Years the BSN Program Has Engaged in Simulation Activities						
Stage 0 Unrelated				0.710	.493	.003
1 – 5 years	44	2.17	0.92			
6 – 10 years	88	2.40	1.23			
11 – 22 years	66	2.30	0.88			
Stage 1 Informational				2.315	.102	.015
1 – 5 years	38	2.87	1.76			
6 – 10 years	83	2.53	1.89			
11 – 22 years	56	2.08	1.68			
Stage 2 Personal				1.650	.195	.007
1 – 5 years	44	2.91	1.66			
6 – 10 years	88	2.81	1.89			
11 – 22 years	66	2.37	1.62			
Stage 3 Management				0.205	.815	.008

1 – 5 years	44	2.22	1.28			
6 – 10 years	88	2.32	1.39			
11 – 22 years	66	2.19	1.34			
Stage 4 consequences				0.025	.976	.011
1 – 5 years	39	3.90	1.33			
6 – 10 years	82	3.92	1.48			
11 – 22 years	62	3.96	1.42			
Stage 5 Collaboration				0.103	.902	.009
1 – 5 years	44	4.03	1.64			
6 – 10 years	88	4.00	1.73			
11 – 22 years	66	3.90	1.81			
Stage 6 Refocusing				0.674	.511	.003
1 – 5 years	44	2.90	1.31			
6 – 10 years	88	2.84	1.39			
11 – 22 years	66	2.63	1.39			

Levene’s tests indicate that the assumptions of homogeneity of variances are met for all following seven stages of concern by amount of time in years the BSN program has been engaged in simulation activity: 1) stage 0 unrelated, X^2 (2, 195) = 2.359, p=.097; 2) stage 1 informational, X^2 (2, 174) = 0.962, p= .384; 3) stage 2 personal, X^2 (2, 195) = 1.798, p=.168; 4) stage 3 management, X^2 (2, 195) = 0.342, p=.710; 5) stage 4 consequences, X^2 (2, 207), p = 0.913, p=.403; 6) stage 5 collaboration, X^2 (2, 195) = 0.467, p=.627; 7) stage 6 refocusing, X^2 (2, 195) = 0.188, p=.829.

The one-way between-subject ANOVAs reveal that there were not statistically significant differences in the intensity of all the following seven stages of concern by the amount of time in years the BSN program has been engaged in simulation activity: 1) stage 0 unrelated, $F(2, 195) = 0.710$, $p = .493$, ω =.003; 2) stage 1 personal, $F(2, 174) = 2.315$, $p = .102$, ω =.015; 3) stage 2 informational, $F(2, 195) = 1.650$, $p = .195$, ω =.007; 4) stage 3 management, $F(2, 195) = 0.205$, $p = .815$, ω =.008; 5) stage 4 consequences, $F(2, 180) = 0.025$, $p = .976$, ω =.011; 6) stage 5 collaboration, $F(2, 195) = 0.103$, $p = .902$, ω =.009; 7) stage 6 refocusing, $F(2, 195) = 0.674$, $p = .511$, ω =.003. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in the intensity of all the seven stages of concern of baccalaureate nurse educators by the amount of time the BSN program has been engaged in simulation activities.

Number of Years the Nurse Educator Has Used Simulation

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by their number of years the nurse educator has used simulation.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on the number of years the nurse educator has used simulation by categorizing the participants into the following three groups: 1 – 5 years, 6 – 10 years, and 11 – 21 years. The statistics of ANOVA are presented in Table 9.

Table 9

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Number of Years the Nurse Educator Has Used Simulation

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω

Number of Years the Nurse Educator Has Used Simulation

Stage 0 Unrelated				0.614	.542	.004
1 – 5 years	85	2.42	1.16			
6 – 10 years	82	2.38	1.07			
11 – 21 years	49	2.21	0.84			
Stage 1 Informational				3.815	.024*	.028
1 – 5 years	69	2.99	1.89			
6 – 10 years	80	2.37	1.75			
11 – 21 years	43	2.10	1.68			
Stage 2 Personal				2.313	.101	.012
1 – 5 years	85	3.08	1.84			
6 – 10 years	82	2.68	1.76			
11 – 21 years	49	2.44	1.58			
Stage 3 Management				2.145	.120	.010
1 – 5 years	85	2.55	1.56			
6 – 10 years	82	2.13	1.25			
11 – 21 years	49	2.20	1.25			
Stage 4 consequences				0.360	.698	.006
1 – 5 years	78	4.09	1.45			
6 – 10 years	76	3.91	1.35			
11 – 21 years	47	4.00	1.34			
Stage 5 Collaboration				1.218	.298	.002
1 – 5 years	85	4.23	1.63			

6 – 10 years	82	3.87	1.72			
11 – 21 years	49	4.25	1.58			
Stage 6 Refocusing				0 .143	.867	.008
1 – 5 years	85	2.89	1.38			
6 – 10 years	82	2.80	1.36			
11 – 21 years	49	2.76	1.34			

Note. * = $p < .05$

Levene's tests show that the assumptions of homogeneity of variances are met for all the seven stages of concern: 1) stage 0 unrelated, $X^2(2, 213) = 1.110$, $p = .332$; 2) stage 1 informational, $X^2(2, 189) = 1.616$, $p = .201$; 3) stage 2 personal, $X^2(2, 213) = 2.010$, $p = .137$; 4) stage 3 management, $X^2(2, 213) = 2.892$, $p = .058$; 5) stage 4 consequences, $X^2(2, 198) = 0.281$, $p = .756$; 6) stage 5 collaboration, $X^2(2, 213) = 0.140$, $p = .869$; 7) stage 6 refocusing, $X^2(2, 213) = 0.068$, $p = .935$.

The ANOVA revealed a significant difference by the number of years the nurse educator has used simulation for only the stage 1 informational stage of concern, $F(2,189) = 3.815$, $p = .024$, $\omega = .028$. These results support the alternative hypothesis that there is a significant difference in baccalaureate nurse educators' stage 1 informational concerns by the number of years the nurse educator has used simulation. Post hoc analyses were conducted using Bonferroni post-hoc test. Based on the Bonferroni value of $p = .034$, the intensity of stage 1 informational concerns for the group of nurse educators who used simulation for 11 – 21 years (*M* = 2.10, *SD* = 1.68) was significantly lower than in the 1 – 5 year group (*M* = 2.99, *SD* = 1.89) and the 6 – 10 year group (*M* = 2.37, *SD* = 1.75).

The ANOVAs also reveal that there were not statistically significant differences in the intensity of all the following six stages of concern by the age group: 1) stage 0 unrelated, $F(2, 213) = 0.614$, $p = .542$, ω =.004; 2); stage 2 informational, $F(2,189) = 2.313$, $p = .101$, ω =.012; 3); stage 3 management, $F(2, 213) = 2.145$, $p = .120$, ω =.010; 4) stage 4 consequences, $F(2, 198) = 0.360$, $p = .698$, ω =.006; 5); stage 5 collaboration, $F(2, 231) = 1.218$, $p = .298$, ω =.002; 6); stage 6 refocusing, $F(2, 213) =0 .143$, $p = .867$, ω =.008. The values of all ω indicate small effect sizes. The null hypothesis that there is no significant difference in the baccalaureate nurse educators' stages of concern by the number of years the nurse educator has used simulation as clinical experience is accepted for the above six stages of concern.

Years of BSN Teaching Experience

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by their years of BSN teaching experience.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on the nurse educators' years of BSN teaching experience. Respondents were classified into three groups by years of BSN teaching experience: 0.5 - 5 years, 6 – 10 years, and 11 – 36 years. The statistics of the ANOVAs are presented in Table 10.

Table 10

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Years of BSN Teaching Experience

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Years of BSN Teaching Experience						
Stage 0 Unrelated				2.016	.136	.022
.5 – 5 years	77	2.42	1.18			

6 – 10 years	54	2.65	1.27			
11 – 36 years	100	2.28	.898			
Stage 1 Informational				3.371	.036*	.009
.5 – 5 years	62	2.96	1.89			
6 – 10 years	52	2.55	1.73			
11 – 36 years	92	2.19	1.77			
Stage 2 Personal				0.917	.401	.001
.5 – 5 years	77	2.97	1.80			
6 – 10 years	54	2.70	1.79			
11 – 36 years	100	2.62	1.70			
Stage 3 Management				0.199	.820	.007
.5 – 5 years	77	2.37	1.56			
6 – 10 years	54	2.32	1.37			
11 – 36 years	100	2.24	1.33			
Stage 4 consequences				0.448	.639	.005
.5 – 5 years	71	4.06	1.46			
6 – 10 years	50	3.97	1.26			
11 – 36 years	94	3.85	1.42			
Stage 5 Collaboration				1.105	.333	.001
.5 – 5 years	77	4.17	1.67			
6 – 10 years	54	3.73	1.66			
11 – 36 years	100	4.03	1.71			
Stage 6 Refocusing				0.333	.717	.006

.5 – 5 years	77	2.88	1.41
6 – 10 years	54	2.81	1.26
11 – 36 years	100	2.71	1.40

Note. * = $p < .05$

Levene's tests for homogeneity of variances supported six of the seven stages of concern: 1) stage 1 informational, $X^2(2, 204) = 1.114$, $p = .330$; 2) stage 2 personal, $X^2(2, 228) = 0.663$, $p = .516$; 3) stage 3 management, $X^2(2, 228) = 0.725$, $p = .486$; 4) stage 4 consequences, $X^2(2, 212) = 0.611$, $p = .544$; 5) stage 5 collaboration, $X^2(2, 228) = 0.354$, $p = .702$; and 6) stage 6 refocusing, $X^2(2, 228) = 0.868$, $p = .421$. The ANOVA statistics assuming homogeneity of variance were computed for these constructs. The assumption of homogeneity of variance was found to be violated for the construct stage 0 unrelated, $X^2(2, 228) = 3.079$, $p = .048$. The ANOVA statistics not assuming homogeneity of variance was used for this stage.

Tests of one-way between-subjects ANOVA yielded results indicating a significant difference among the mean scores on stage 1 information stage of concern construct by years of BSN teaching experience, $F(2, 204) = 3.371$, $p = .036$, $\omega^2 = .009$ (see Table 10). These results support the alternative hypothesis that there is a significant difference in the baccalaureate nurse educators' stage 1 informational concerns by their years of BSN teaching experience. Follow-up tests using the Bonferroni procedure supports the indication that there is a significant difference in mean scores on the informational stage of concern, $p = .031$. The intensity of concern at the information stage of concern was significantly less for educators who have 11 - 36 years of BSN teaching experience ($M = 2.19$, $SD = 1.76$) than the other those who have 0.5 – 5 years of BSN teaching experience ($M = 2.96$, $SD = 1.89$). However, the 6 – 10 years condition ($M = 2.55$, $SD =$

1.73) did not significantly differ from the 0.5 – 5 years or the 11 – 36 years conditions of the number of years of BSN teaching experience.

The ANOVAs also reveal that there were no statistically significant differences in the intensity of all the following six stages of concern by the number of years of BSN teaching experience: 1) stage 0 unrelated, $F(2, 228) = 2.016$, $p = .136$, $\omega = .022$; 2) **s**tage 2 personal, $F(2, 228) = 0.917$, $p = .401$, $\omega = -.001$; 3) stage 3 management, $F(2, 228) = 0.199$, $p = .820$, $\omega = .007$; 4) stage 4 consequences, $F(2, 212) = 0.448$, $p = .639$, $\omega = .005$; 5) stage 5 collaboration, $F(2, 228) = 1.105$, $p = .333$, $\omega = .001$; 6) stage 6 refocusing, $F(2, 228) = 0.333$, $p = .717$, $\omega = .006$. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in the baccalaureate nurse educators' stage of concern by their years of BSN teaching experience for the above five stages of concern

Percent of Clinical Course Taught Using Simulated Clinical Experience

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by the percent of total clinical course time taught using simulated clinical experience. A one-way between-subjects ANOVAs was conducted to determine whether there is a significant intensity difference for each stage of concern by the percent of total clinical course time taught using simulated clinical experience. The total clinical course time taught using simulated clinical experience was grouped by 0% - 10%, 11% - 20%, and 21% and higher. The ANOVA statistics are presented in Table 11.

Table 11

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by the Percent of Total Clinical Course that is Taught Using Simulated Clinical Experience

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Percent of Clinical Course Time Taught Using Simulated Clinical Experience						
Stage 0 Unrelated				0.437	.647	.005
0% – 10 %	115	2.46	1.11			
11% - 20 %	58	2.30	1.16			
21% and higher	58	2.42	1.02			
Stage 1 Informational				1.233	.294	.002
0 – 10 %	104	2.37	1.83			
11% - 20 %	51	2.47	1.78			
21% and higher	52	2.85	1.81			
Stage 2 Personal				1.066	.346	.001
0 – 10 %	115	2.87	1.76			
11% - 20 %	58	2.47	1.87			
21% and higher	58	2.82	1.63			
Stage 3 Management				0.538	.585	.004
0 – 10 %	115	2.23	1.30			
11% - 20 %	58	2.46	1.63			
21% and higher	58	2.29	1.48			
Stage 4 consequences				2.105	.124	.010
0 – 10 %	103	3.75	1.46			
11% - 20 %	55	4.20	1.45			
21% and higher	57	4.06	1.17			
Stage 5 Collaboration				2.708	.069	.017

0 – 10 %	115	3.77	1.70			
11% - 20 %	58	1.40	1.83			
21% and higher	58	4.38	1.43			
Stage 6 Refocusing				1.069	.345	.001
0 – 10 %	115	2.72	1.40			
11% - 20 %	58	3.02	1.33			
21% and higher	58	2.70	1.34			

Levene's tests indicate that the homogeneity of variances between the groups was met for all seven stages of concern: 1) stage 0 unrelated, $X^2(2, 228) = 0.588$, $p = .556$; 2) stage 1 informational, $X^2(2, 204) = 0.034$, $p = .967$; 3) stage 2 personal, $X^2(2, 228) = 1.006$, $p = .367$; 4) stage 3 management, $X^2(2, 228) = 2.918$, $p = .056$; 5) stage 4 consequences, $X^2(2, 212) = 1.856$, $p = .159$; 6) stage 5 collaboration, $X^2(2, 228) = 2.516$, $p = .083$; and 7) stage 6 refocusing $X^2(2, 228) = 0.452$, $p = .637$.

The results of ANOVAs indicated that there is no significant difference in the intensity of any of the stages of concern by the percent of total clinical course time that is taught using simulated clinical experience: 1) stage 0 unrelated, $F(2, 228) = 0.437$, $p = .647$, $\omega = .005$; 2) stage 1 informational, $F(2, 204) = 1.233$, $p = .294$, $\omega = .002$; 3) stage 2 personal, $F(2, 228) = 1.066$, $p = .346$, $\omega = .001$; 4) stage 3 management, $F(2, 228) = 0.538$, $p = .585$, $\omega = .004$; 5) stage 4 consequences, $F(2, 212) = 2.105$, $p = .124$, $\omega = .010$; 6) stage 5 collaboration, $F(2, 228) = 2.708$, $p = .069$, $\omega = .017$; and 7) stage 6 refocusing $F(2, 228) = 1.069$, $p = .345$, $\omega = .001$. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in the baccalaureate nurse educators' stages of concern by the percent of total clinical course time that is taught using simulated clinical experience.

Time Spent Conducting One Simulated Clinical Experience

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by the amount of time the nurse educator spends conducting a simulated clinical experience (preparation, experience, cleaning up after).

One-way between-subjects ANOVAs was used to determine whether there is a significant intensity difference for each stage of concern by the amount of time in hours that the nurse educator spends conducting one simulated clinical experience by categorizing the participants into the following four groups: 0 – 4 hour, 5 – 8 hours, 9 – 12 hours, and more than 12 hours. The ANOVA statistics are presented in Table 12.

Table 12

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Amount of Time, in Hours, the Nurse Educator Spends Conducting One Simulated Clinical Experience

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Hours the Nurse Educator Spends Conducting One Simulated Experience						
Stage 0 Unrelated				1.667	.175	.009
0 – 4 hours	59	2.48	1.14			
5 – 8 hours	79	2.53	1.04			
9 – 12 hours	30	2.14	0.99			
More than 12 hours	42	2.20	0.93			
Stage 1 Informational				1.639	.182	.010

0 – 4 hours	53	2.37	1.66			
5 – 8 hours	70	2.67	1.93			
9 – 12 hours	27	2.32	1.68			
More than 12 hours	39	3.12	1.75			
Stage 2 Personal				0.354	.787	.009
0 – 4 hours	59	2.80	1.68			
5 – 8 hours	79	2.91	1.80			
9 – 12 hours	30	2.59	1.82			
More than 12 hours	42	2.98	1.67			
Stage 3 Management				1.176	.320	.003
0 – 4 hours	59	2.24	1.46			
5 – 8 hours	79	2.23	1.26			
9 – 12 hours	30	2.89	1.46			
More than 12 hours	42	2.69	1.43			
Stage 4 consequences				0.239	.869	.012
0 – 4 hours	53	4.12	1.42			
5 – 8 hours	75	3.93	1.31			
9 – 12 hours	28	4.00	1.66			
More than 12 hours	40	4.09	1.17			
Stage 5 Collaboration				0.226	.879	.011
0 – 4 hours	59	4.20	1.72			
5 – 8 hours	79	4.05	1.52			
9 – 12 hours	30	4.31	1.80			

More than 12 hours	42	4.16	1.58			
Stage 6 Refocusing				0.263	.852	.011
0 – 4 hours	59	2.99	1.41			
5 – 8 hours	79	2.93	1.42			
9 – 12 hours	30	2.77	1.38			
More than 12 hours	42	2.80	1.00			

Levene's tests indicate that the homogeneity of variances are met for six of the seven stages of concern as follows: 1) stage 0 unrelated, $X^2(3, 206) = 0.046$; p =.987; 2) stage 1 informational, $X^2(3, 185) = 2.235$; p =.086; 3) stage 2 personal, $X^2(3, 206) = 0.731$; p =.534; 4) stage 3 management, $X^2(3, 206) = 0.239$; p =.869; 5) stage 5 collaboration, $X^2(3, 206) = 0.454$; p =.715; and 6) stage 6 refocusing, $X^2(3, 206) = 2.286$; p =.080. The homogeneity of variances between the groups was violated in stage 4 consequences, $X^2(3, 192) = 2.882$, p = .037, therefore, the ANOVA statistics assuming non-homogeneity of variance were used to determine the potential significant difference.

The ANOVAs reveal that there were not statistically significant differences in the intensity of all the following seven stages of concern by amount of time the nurse educator spends conducting one simulated clinical experience: 1) stage 0 unrelated, $F(3,206) = 1.667$; p =.175; ω =.009; 2) stage 1 informational, $F(3,185) = 1.639$; p =.182; ω =.010; 3) stage 2 personal, $F(3,206) = 0.354$; p =.787; ω =.009; 4) Stage 3 management, $F(3,206) = 1.176$; p =.320; ω =.003; 5) stage 4 consequences, $F(3,192) = 0.239$; p =.869; ω =.012; 6) stage 5 collaboration, $F(3,206) = 0.226$; p =.879; ω =.011; 7) stage 6 refocusing $F(3,206) = 0.263$; p =.852; ω =.011. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in the baccalaureate nurse educators' stages of concern by the amount of time in hours that the nurse educator spends conducting a simulated clinical experience.

Average Number of Students in One Simulated Clinical Experience

H_0: There is no significant difference in the intensity of the baccalaureate nurse educators' seven stages of concern by the average number of students the nurse educator has in a simulated clinical experience.

One-way between-subjects ANOVAs compared each stage of concern on the average number of students in one simulated clinical experience by categorizing the participants into three groups: 3 – 5 students, 6 – 10 students, and 11 or more. Between-group comparison of stages of concern by the average number of students in one simulated clinical experience is presented in Table 13.

Table 13

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Average Number of Students in One Simulated Clinical Experience

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Average Number of Students in One Simulated Clinical Experience						
Stage 0 Unrelated				0.009	.991	026
3 – 5 students	69	2.37	0.99			
6 – 10 students	109	2.36	1.09			
11 – 66 students	42	2.38	1.19			
Stage 1 Informational				3.618	.029*	.009
3 – 5 students	68	2.09	1.69			

6 – 10 students	93	2.87	1.83			
11 – 66 students	37	2.59	1.97			
Stage 2 Personal				4.846	.009*	.034
3 – 5 students	69	2.26	1.68			
6 – 10 students	109	2.95	1.75			
11 – 66 students	42	3.19	1.73			
Stage 3 Management				2.705	.060	.015
3 – 5 students	69	2.01	1.19			
6 – 10 students	109	2.39	1.37			
11 – 66 students	42	2.61	1.75			
Stage 4 Consequences				1.830	.162	.008
3 – 5 students	61	3.72	1.43			
6 – 10 students	102	4.14	1.38			
11 – 66 students	41	4.07	1.25			
Stage 5 Collaboration				0.906	.405	.001
3 – 5 students	69	3.84	1.77			
6 – 10 students	109	4.16	1.64			
11 – 66 students	42	4.19	1.57			
Stage 6 Refocusing				0.973	.379	.0002
3 – 5 students	69	2.65	1.33			
6 – 10 students	109	2.91	1.41			
11 – 66 students	42	2.96	1.30			

Note. * = $p < .05$

The Levene's tests show that the assumption of homogeneity of variances are met for six of the seven stages of concern: 1) stage 0 unrelated, $X^2(2, 217) = .575$; *p u*=.564; 2) stage 1 informational, $X^2(2, 195) = .511$; $p = .601$; 3) stage 2 personal, $X^2(2, 217) = .167$; $p = .846$; 4) stage 4 consequences, $X^2(2, 201) = .187$; $p = .829$; 5) stage 5 collaboration, $X^2(2, 217) = .676$; $p = .510$; and 6) stage 6 refocusing, $X^2(2, 217) = .130$; $p = .878$. Levene's test for equality of variances between the groups was violated for the stage of concern stage 3 management, $X^2(2, 217) = 3.290$, $p = .039$. Therefore, an ANOVA statistic for within groups was computed for stage 3 management.

The one-way between-subject ANOVAs reveal that there is a significant difference by average number of students in one simulated clinical experience and two of the seven stages of concern as follows: stage 1 informational, $F(2, 195) = 3.618$, $p = .029$, $\omega = .009$; stage 2 personal, $F(2, 217) = 4.846$, $p = .009$, $\omega = .034$. Post hoc analyses were conducted using the Bonferroni post hoc test. Based on the Bonferroni value of $p = .024$, the intensity of stage 1 informational concerns for the group of nurse educators with an average of 3 – 5 students in one simulated clinical experience ($M = 2.094$, $SD = 1.690$) was significantly lower than the group of nurse educators with an average of 6 – 10 students in one simulated clinical experience ($M = 2.871$, $SD = 1.832$). However, the intensity of stage 1 informational concerns for the group of nurse educators with an average of more than ten students in one simulated clinical experience ($M = 2.589$, $SD = 1.971$) did not significantly differ from 3 – 5 students or 6 – 10 students. The Bonferroni test also indicated that the intensity of stage 2 personal concerns for the group of nurse educators with an average of 3 – 5 students in one simulated clinical experience ($M = 2.258$, $SD = 1.677$) was significantly lower than the group of nurse educators with an average of 6 – 10 students in one simulated clinical experience ($M = 2.948$, $SD = 1.749$) and the group of nurse educators with more than ten students in one simulated clinical experience (*M* = 3.185, *SD* = 1.734). However, having 6 – 10 students in one simulated clinical experience did not differ significantly from having 11 or more students in one simulated clinical experience.

The one-way between-subject ANOVAs suggest that there is no significant difference by average number of students in one simulated clinical experience in the five stages of concern as follows: 1) stage 0 unrelated, $F(2, 217) = 0.009$, $p = .991$, $\omega = .026$; 2) stage 3 management, $F(2, 217) = 2.705$, $p = .060$, $\omega = .015$; 3) stage 4 consequences, $F(2, 201) = 1.830$, $p = .162$, $\omega = .008$; 4) stage 5 collaboration, $F(2, 217) = 0.906$, $p = .405$, $\omega = .001$; and 5) stage 6 refocusing, $F(2, 217) = 0.973$, $p = .379$, $\omega = .0002$. The values of all ω indicate small effect sizes.

These results support the alternative hypothesis that there is a significant difference in the baccalaureate nurse educators' stage 1 informational and stage 2 personal concerns by the average number of students the nurse educator has in a simulated clinical experience. Specifically, stage 1 informational and stage 2 personal concerns were less for nurse educators with 3 – 5 students in one simulation experience. These results support the null hypothesis that there is no significant difference in the baccalaureate nurse educators' stages of concern by the average number of students the nurse educator has in a simulated clinical experience for the following five of the seven stages of concern: 0-unconcerned, 3-management, 4-consequences, 5-collaboration, and 6-refocusing.

Total number of Students in the BSN Program

H_0: There is no significant difference in the intensity of the nurse educators' seven stages of concern by the number of students currently in the nurse educator's baccalaureate nursing program.

One-way between-subjects ANOVAs were conducted to compare each stage of concern on the total number of students in the BSN program by categorizing the participants into the following three groups: 15 – 150 students, 151 – 300 students, and 301 – 700 students. The between-group comparison of stages of concern by the number of students in the BSN program is presented in Table 14.

Table 14

Descriptive and Inferential Statistics of the Between Groups ANOVA Comparison on Stages of Concern by Total Number of Students in the BSN Program

Stage of Concern	*n*	*M*	*SD*	*F*	*p*	ω
Total Number of Students in the BSN Program						
Stage 0 Unrelated				0.631	.543	.003
15 – 150 students	113	2.32	1.06			
151 – 300 students	84	2.46	1.18			
301 – 700 students	31	2.52	1.48			
Stage 1 Informational				0.758	.470	.002
15 – 150 students	102	2.59	1.76			
151 – 300 students	75	2.51	1.90			
301 – 700 students	27	2.10	1.76			
Stage 2 Personal				0.070	.933	.008
15 – 150 students	113	2.78	1.71			
151 – 300 students	84	2.69	1.81			
301 – 700 students	31	2.72	1.86			
Stage 3 Management				0.478	.621	.005

15 – 150 students	113	2.25	1.41			
151 – 300 students	84	2.39	1.47			
301 – 700 students	31	2.13	1.21			
Stage 4 Consequences				0.955	.387	.0004
15 – 150 students	102	3.89	1.41			
151 – 300 students	80	4.08	1.42			
301 – 700 students	30	3.69	1.18			
Stage 5 Collaboration				0.213	.808	.007
15 – 150 students	113	4.01	1.74			
151 – 300 students	84	4.06	1.62			
301 – 700 students	31	3.83	1.75			
Stage 6 Refocusing				0.052	.949	.008
15 – 150 students	113	2.78	1.36			
151 – 300 students	84	2.82	1.40			
301 – 700 students	31	2.74	1.37			

The Levene's tests show that the assumptions of homogeneity of variances are met for all the seven stages of concern: 1) stage 0 unrelated, $X^2(2, 225) = 0.145$, $p = .865$; 2) stage 1 informational, $X^2(2, 201) = 0.327$, $p = .721$; 3) stage 2 personal, $X^2(2, 225) = 0.326$, $p = .722$; 4) stage 3 management, $X^2(2, 225) = 0.866$, $p = .422$; 5) stage 4 consequences, $X^2(2, 209) = 1.338$, $p = .265$; 6) stage 5 collaboration, $X^2(2, 225) = 0.038$, $p = .962$; 7) stage 6 refocusing, $X^2(2, 225) = 0.083$, $p = .920$.

The ANOVAs reveal that there were not statistically significant differences in the intensity of all the following seven stages of concern by number of students in the BSN program: 1) stage 0 unrelated, $F(2, 225) = 0.631$, $p = .543$, $\omega = .003$; 2) stage 1 personal, $F(2, 201) = 0.758$, $p = .470$, $\omega = .002$; 3) stage 2 informational, $F(2, 225) = 0.070$, $p = .933$, $\omega = .008$; 4) stage 3 management, $F(2, 225) = 0.478$, $p = .621$, $\omega = .005$; 5) stage 4 consequences, $F(2, 209) = 0.955$, $p = .387$, $\omega = .0004$; 6) stage 5 collaboration, $F(2, 225) = 0.213$, $p = .808$, $\omega = .007$; 7) stage 6 refocusing, $F(2, 225) = 0.052$, $p = .949$, $\omega = .008$. The values of all ω indicate small effect sizes. These results support the null hypothesis that there is no significant difference in nurse educators' stages of concern by the total number of students currently in the nurse educator's baccalaureate nursing program.

Overall, between-groups comparison of stages of concern for four of the ten independent variables led to the acceptance of the alternative hypothesis, which is that there is a significant difference in the baccalaureate nurse educators' stage of concern by the highest level of education, the number of years the nurse educator has used simulation, years of BSN teaching experience. The average number of students the nurse educator has in a simulated clinical experience. The study results accept the alternative hypothesis for stage 0 unrelated concerns by the highest level of education. The results also accept the alternative hypothesis for stage 1 informational concerns by the number of years the nurse educator has used simulation, the number of years of BSN teaching experience, and the average number of students the nurse educator has in a simulated clinical experience. The alternative hypothesis is also accepted for stage 2 personal concerns by the average number of students the nurse educator has in a simulated clinical experience. The null hypothesis is accepted for the other six independent variables, which are age, faculty rank, amount of time the BSN program has been engaged in simulation activities, presence of clinical course taught using simulated clinical experience, time spent conducting one simulated clinical experience, and the total number of students in the BSN program.

Research Question 3: Prediction of Stages of Concern by Nurse Educators' Demographics

Do the demographics of nurse educators in the west north-central region of the U.S. predict their Stages of Concern?

Multiple regressions were conducted to determine whether the following independent variables: (a) the number of years the BSN program has engaged in simulation activities, (b) the number of years nurse educator used simulation as a teaching modality, (c) the number of years of experience of teaching BSN education, (d) age of the nurse educator, (e) percentage of clinical time per semester that the clinical course includes using simulation, (f) the average amount of time that the educator spends teaching one clinical simulation experience, (g) the average number of students the educator has in one simulation experience per semester, (h) the total number of students in the nurse educator's nursing program, (i) highest degree attained, (j) faculty rank assistant professor versus associate professor or professor, and (k) faculty rank full professor versus assistant or associate professor, predict nurse educators' intensity of concern in each stage of concern dimension. Multiple regression was also used to determine which of these demographical factors significantly predict the intensity of the nurse educators' stages of concern model. Graphical examination such as histogram, P-P plot of regression standardized residuals, and scatter plot was used to visually examine the assumptions of normality, linearity, and homoscedasticity of each stage of concern dimension.

Demographics and Stage of Concern 0 – Unrelated Dimension

Table 15 provides descriptive statistics of the continuous predictor variables in the model for stage 0 unrelated concern.

Table 15

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 0 Unrelated Concern

Variable	*M*	*SD*	*n*
Stage 0 Unrelated	2.32	1.33	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177

The assumptions of normally distributed residuals linearity and homoscedasticity are generally met by examining the histogram (Figure 2), the P-P plot (Figure 3), and the scatterplot of standardized residuals (Figure 4). Examination of residuals provides a test of all three of the crucial assumptions for multiple regression (Field, 2013). The histogram of normally distributed residuals for stage 0 unrelated construct of concern indicated that the data contained approximately normally distributed errors (see Figure 2), as did the normal P-P plot of standardized residuals that showed the points nearly clustered on the line (see Figure 3) indicating that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data points are randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity are met. The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 16).

Figure 2

Histogram of Normally Distributed Residuals for Stage 0 Unrelated Construct of Concern

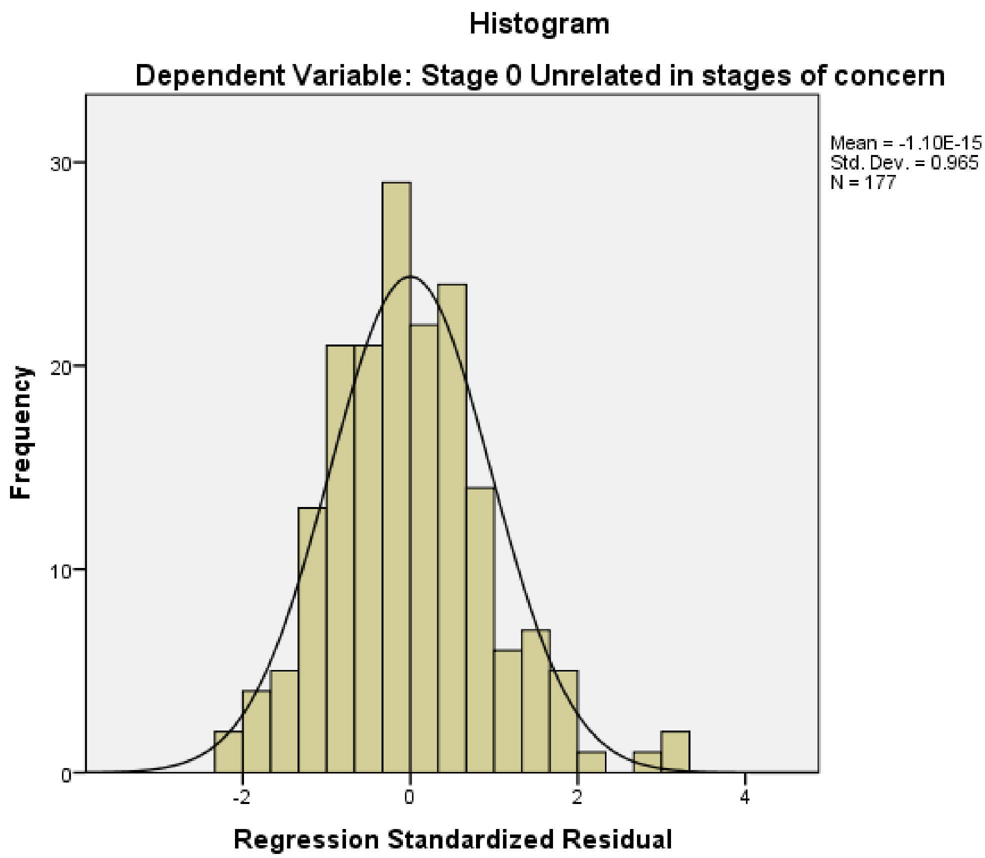


Figure 3

P-P Plot of Normally Distributed Expected versus Observed Cumulative Residuals of the Normal Distribution for Stage 0 Unrelated Construct of Concern

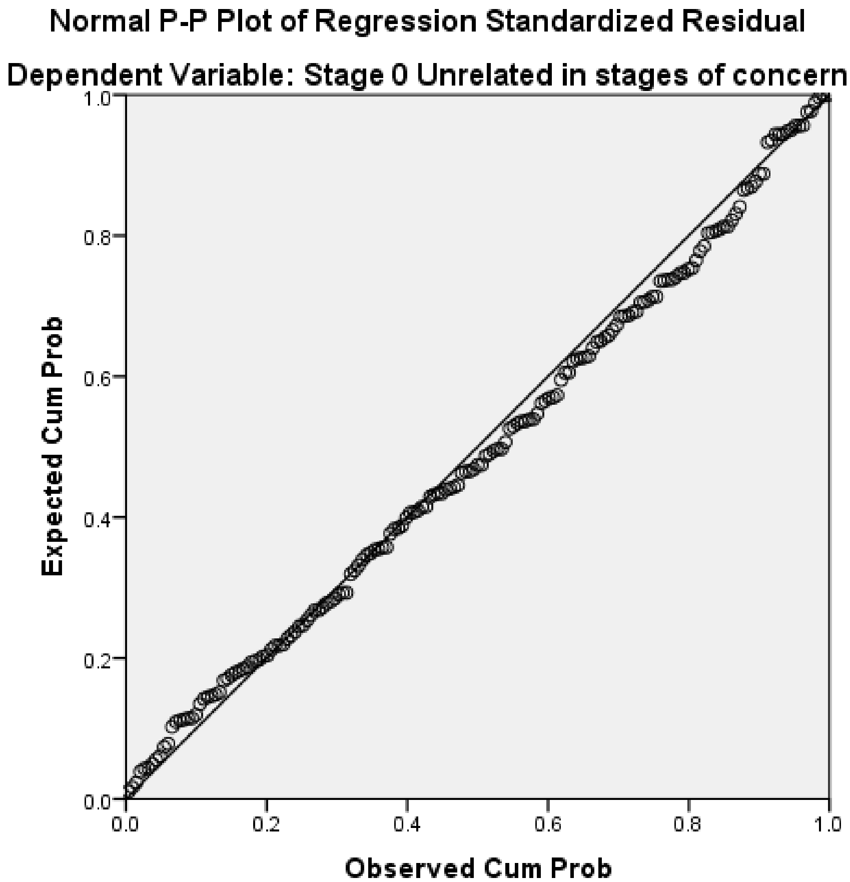
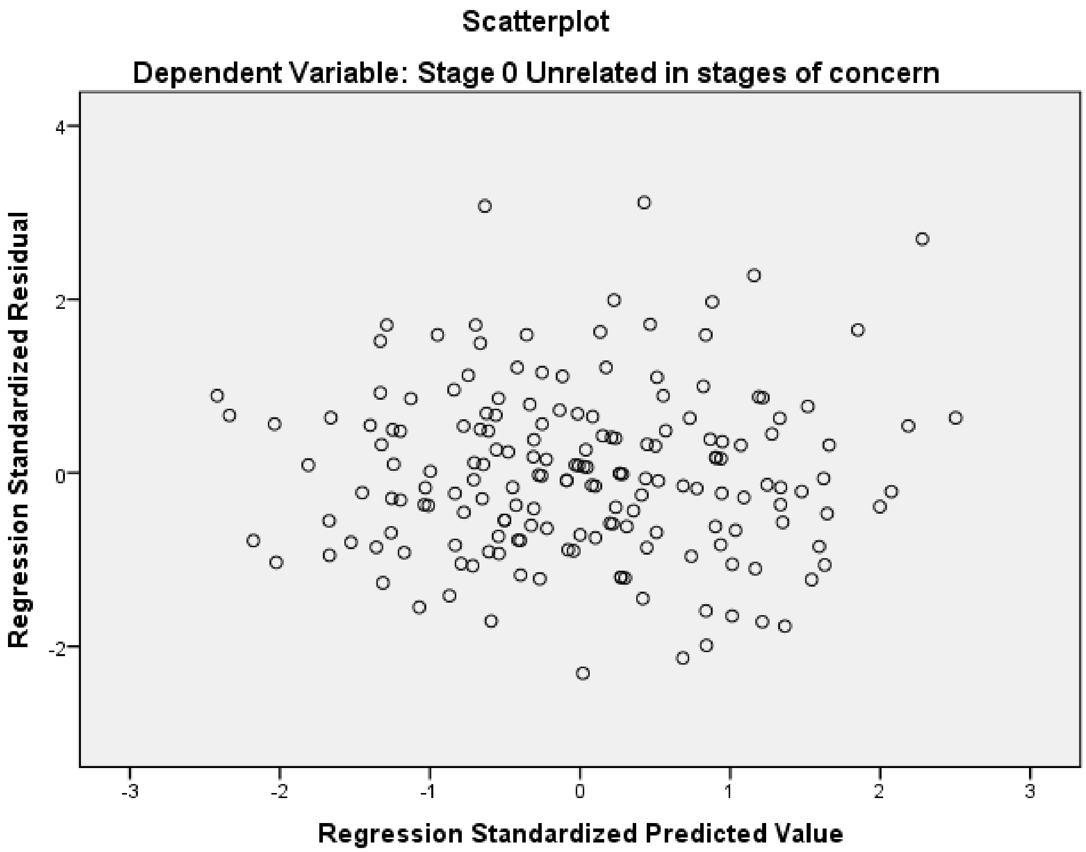


Figure 4

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 0 Unrelated Construct of Concern



Regression results indicated that the overall model does not significantly predict nurse educators' intensity of concern in the stage 0 unrelated dimension of stages of concern, *R Square* = .107, *Adjusted R Square* = .042, $F(12, 164) = 1.639$, $p = .085$. This model accounted for 10.7% of the variance in nurse educators' intensity of concern in stage 0, the unrelated dimension of concern stages.

Coefficients and other statistics of the predictor variables for the regression model are presented in Table 16. This model's results indicate that, although, when using the ANOVA table, this model is not significant using the $p = .05$, it is close at $p = .085$ at predicting nurse educators' intensity of concern in the stage 0 unrelated dimension of stages of concern. Using the coefficients table, three variables (a) years of teaching ($p = .011$), (b) total students in BSN program ($p = .042$), and (c) the highest level of education ($p = .049$) significantly predict nurse educators' highest intensity of concern about using simulation as clinical experience being stage 0 unrelated. The number of years of teaching BSN education experience was more influential than the total number of students in the nurse educator's nursing program and the highest degree attained in contributing to the prediction model. The other demographic variables are non-significant in predicting the stage of concern (see Table 16).

Table 16

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 0 Unrelated Construct of Concern

Variable	*B*	*SE*	β	*t*	*p*	*Tol* [a]	*VIF*
(Constant)	1.505	.484		3.107	.002		
Program engagement	-.006	.022	-.026	-.288	.774	.672	1.487
Educator uses of simulation	.003	.023	.011	.113	.910	.615	1.625
BSN teaching experience	-.035	.014	-.293	-2.580	.011*	.422	2.368
Age	.013	.009	.138	1.472	.143	.622	1.607
Simulated clinical time	.000	.666	.000	-.001	.999	.971	1.030
Time for one simulation	-.007	.006	-.079	-1.060	.291	.981	1.020
Students in simulation experience	.000	.007	-.005	-.062	.951	.931	1.074
Students in program	.001	.001	.162	2.053	.042*	.871	1.148
Highest degree	.360	.181	.173	1.984	.049*	.719	1.390

Rank-assis. prof. vs asso. & full prof.	.245	.209	.119	1.171	.243	.531	1.884
Rank-full prof. vs asso. & assis. prof.	.477	.282	.213	1.693	.092	.344	2.908

Note. [a] Tol = Tolerance; * = $p < .05$

Demographics and Stage of Concern 1 – Informational Dimension

Table 17 provides descriptive statistics of the continuous predictor variables in the model for stage 1 informational concern.

Table 17

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 1 Informational Concern

Variable	*M*	*SD*	*n*
Stage 1 Informational	2.32	1.33	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177

The assumptions of normally distributed residuals linearity and homoscedasticity are generally met by examining the histogram (Figure 5), the P-P plot (Figure 6), and the scatterplot of standardized residuals (Figure 7). The histogram of standardized residuals indicates that the data are slightly positively skewed with positive kurtosis (see Figure 5). The P-P plot of normally distributed residuals shows the points nearly clustered on the line (see Figure 6), which indicates that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data points are randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity are met. The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 18).

Figure 5

Histogram of Normally Distributed Residuals for Stage 1 Informational Construct of Concern

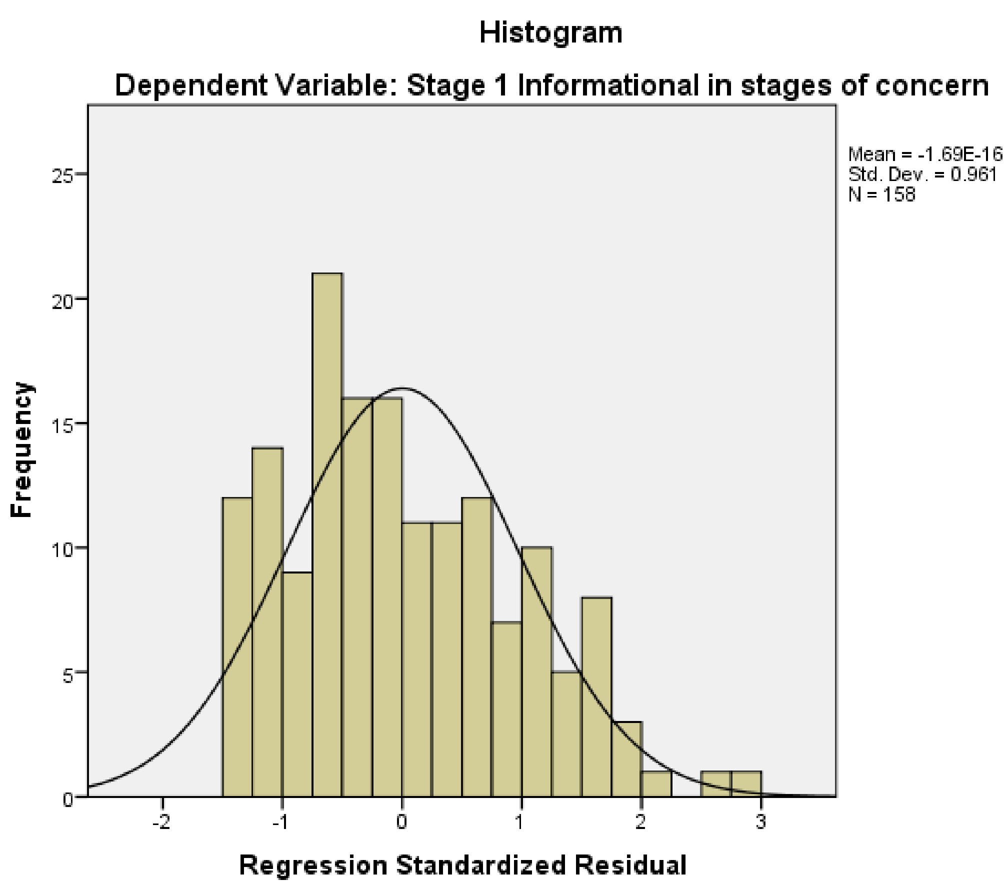


Figure 6

P-P Plot of Normally Distributed Residuals of for Stage 1 Informational Construct of Concern

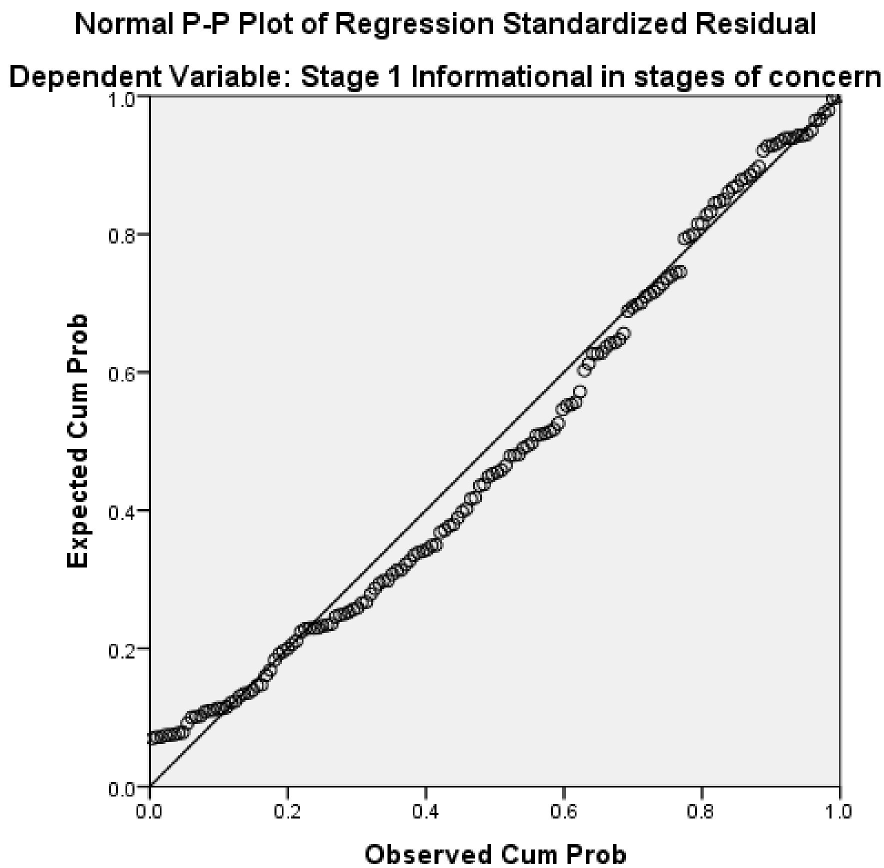
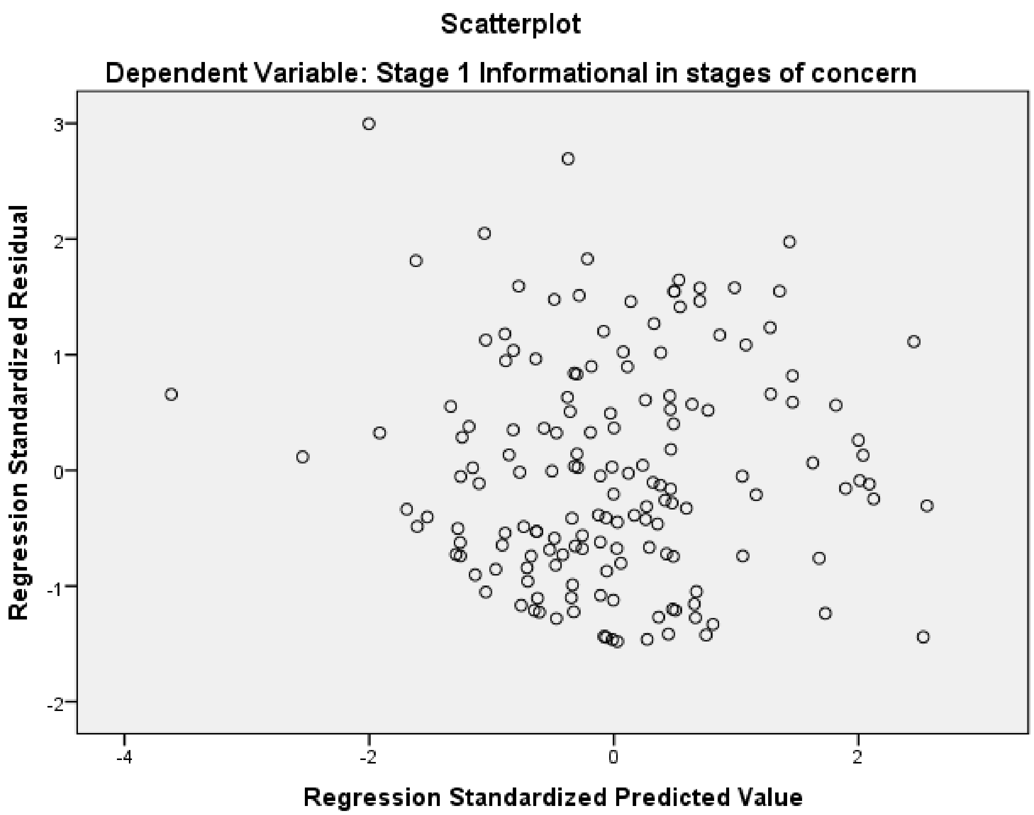


Figure 7

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 1 Informational Construct of Concern



The overall model significantly predicted nurse educators' intensity of concern in the stage 1 informational dimension of the stages of concern, *R Square* = .146, *Adjusted R Square* = .075, *F*(12, 145) = 2.064, *p* = .023. This model accounted for 14.6% of the variance in nurse educators' intensity of concern in stage 1 informational dimension of the concern stages.

Coefficients of the predictive variables for the stage 1 informational construct of concern are presented in Table 18. Three variables (a) the number of years nurse educator used simulation as a teaching modality (*p* = .023), (b) number of years of experience of teaching BSN education (*p* = .017), and (c) age of the nurse educator (*p* = .018) significantly predict nurse educators' highest intensity of concern about using simulation as clinical experience being stage 1 informational. The number of years of experience of teaching BSN education was more influential than the number of years nurse educators used simulation as a teaching modality or the nurse educator's age. The other demographic variables are non-significant in predicting the stage of concern (see Table 18).

Table 18

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 1 Informational Construct of Concern

	B	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	1.644	.894		1.838	.068		
Program engagement	.004	.040	.010	.100	.920	.658	1.519
Educator uses of simulation	-.097	.042	-.221	-2.305	.023*	.638	1.567
BSN teaching experience	-.060	.025	-.281	-2.425	.017*	.439	2.279
Age	.038	.016	.234	2.401	.018*	.621	1.610
Simulated clinical time	-.165	1.236	-.010	-.133	.894	.966	1.035
Time for one simulation	.018	.011	.125	1.619	.108	.981	1.019
Students in simulation experience	.006	.014	.035	.439	.661	.917	1.091
Students in program	.000	.001	-.012	-.145	.885	.837	1.194
Highest degree	.087	.330	.024	.265	.791	.728	1.373
Rank-assis. prof. vs asso. & full prof.	.199	.383	.055	.519	.605	.528	1.893
Rank-full prof. vs asso. & assis. prof.	.143	.514	.036	.277	.782	.349	2.866

Note. [a] Tol = Tolerance; * = $p < .05$

Demographics and Stage of Concern 2 – Personal Dimension

Table 19 provides descriptive statistics of the continuous predictor variables included in the model for stage 2 personal concern.

Table 19

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 2 Personal Concern

	M	*SD*	*n*
Stage 2 Personal	2.81	1.76	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177

The assumptions of normally distributed residuals linearity and homoscedasticity are generally met by examining the histogram (Figure 8), the P-P plot (Figure 9), and the scatterplot of standardized residuals (Figure 10). The histogram of standardized residuals indicated that the data are slightly negatively skewed with positive kurtosis (see Figure 8). The normal P-P plot of standardized residuals shows the points nearly clustered on the line (see Figure 9), which indicates that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data points are randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity are met (see Figure 10). The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 20).

Figure 8

Histogram of Normally Distributed Residuals for Stage 2 Personal Construct of Concern

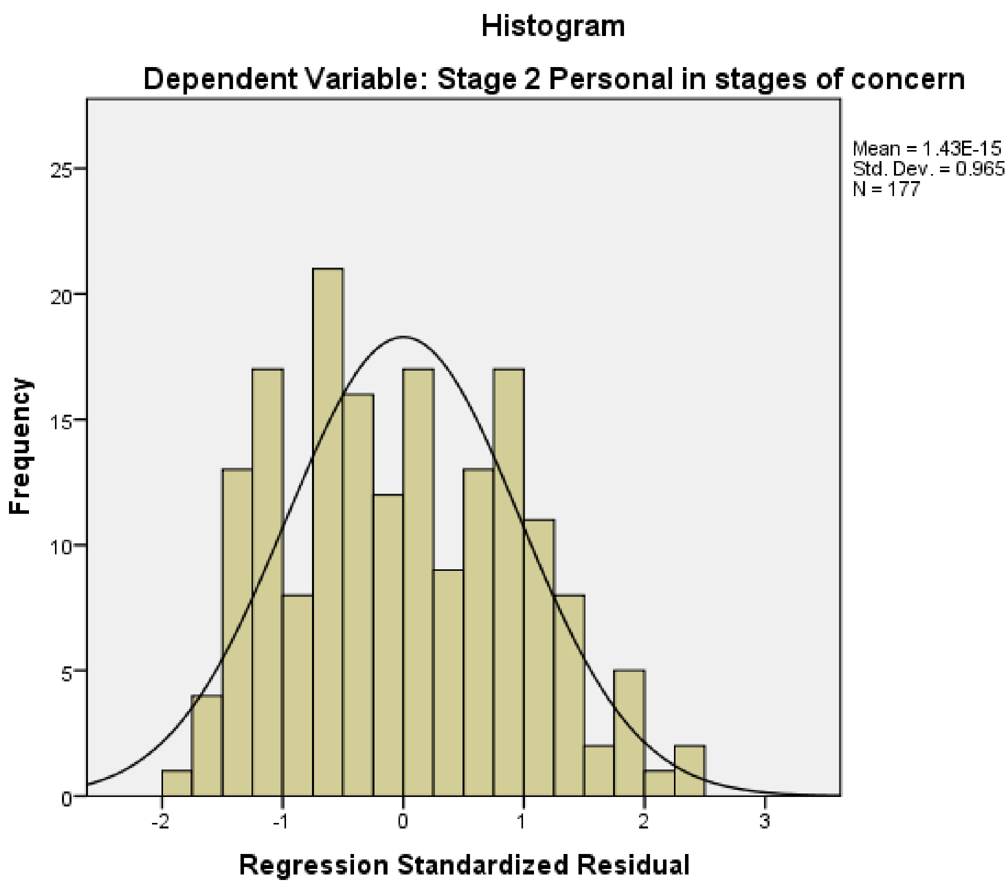


Figure 9

P-P Plot of Normally Distributed Residuals of for Stage 2 Personal Construct of Concern

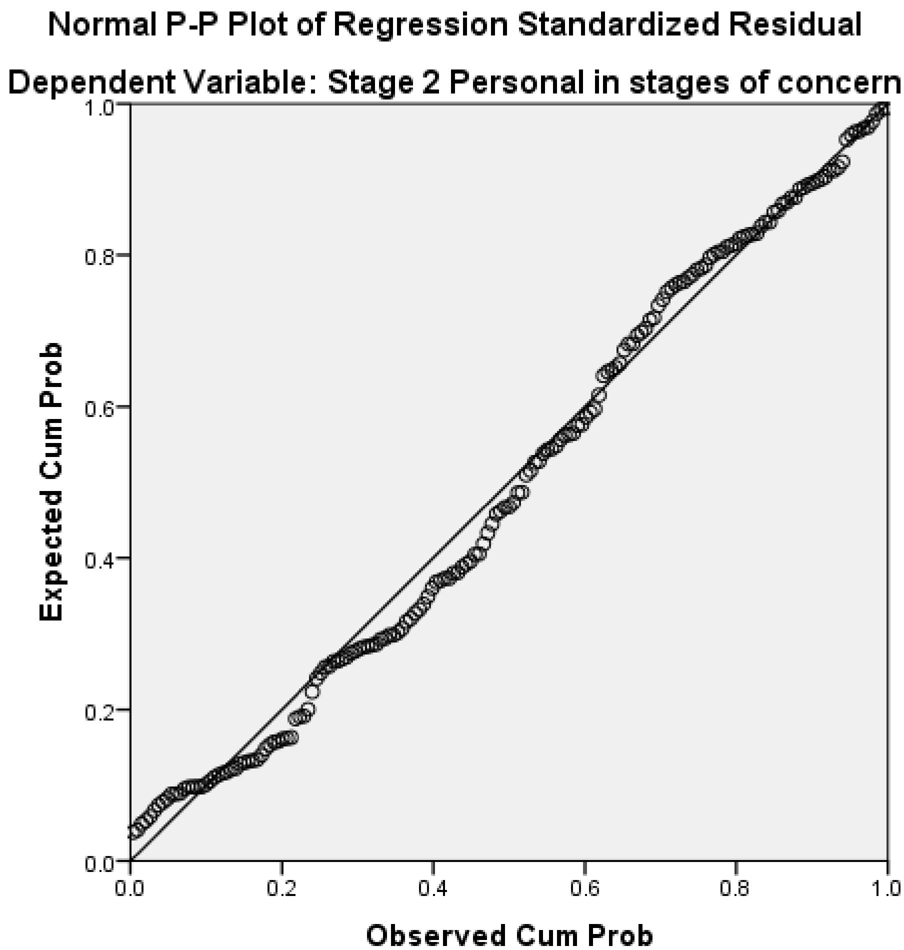
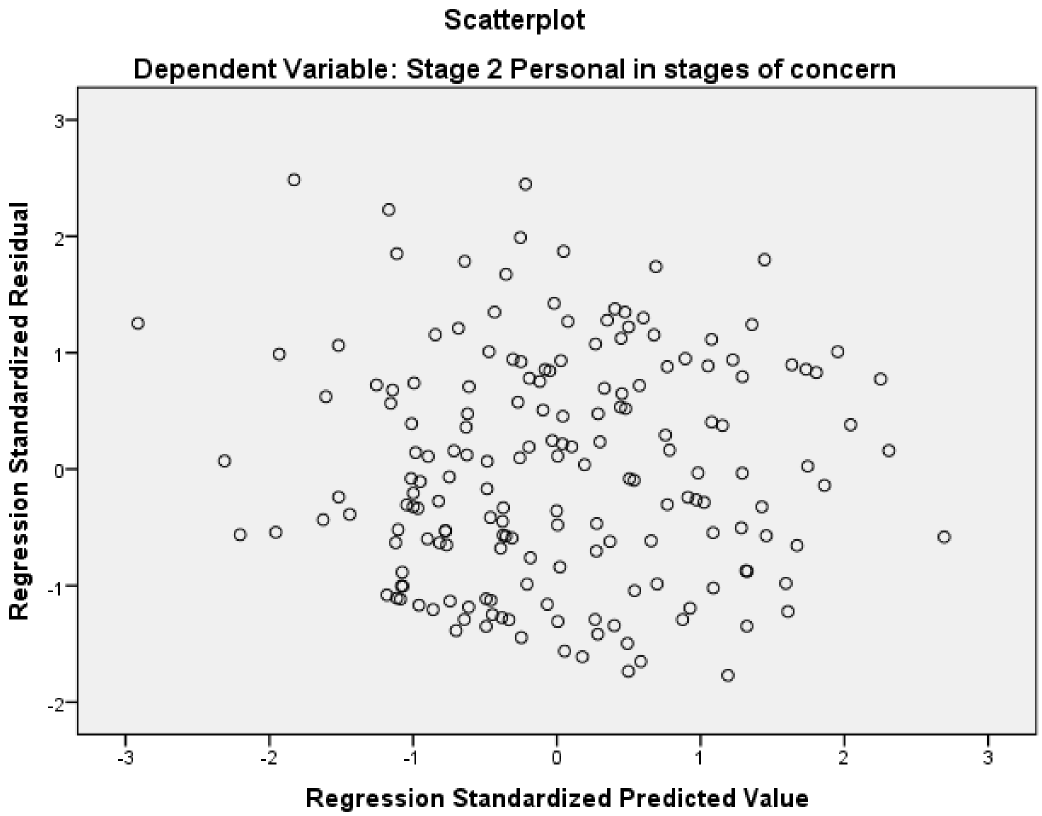


Figure 10

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 2 Personal Construct of Concern



Regression results indicated that the overall model significantly predicted nurse educators' intensity of concern in stage 2 personal dimension of the stages of concern, *R Square* = .141, *Adjusted R Square* = .078, $F(12, 164) = 2.236$, $p = .012$. This model also accounted for 14.1% of the variance in nurse educators' intensity of concern in stage 2 personal dimension of the concern stages.

Coefficients and other statistics of the predictor variables for the regression model of stage 2 personal construct of concern are presented in Table 20. The following four variables significantly predict nurse educators' highest intensity of concern about using simulation as clinical experience being stage 2 personal: (a) number of years nurse educator used simulation as a teaching modality ($p = .028$), (b) number of years of experience of teaching BSN education ($p = .023$), (c) age of the nurse educator ($p = .001$), and (d) percentage of clinical time per semester that the clinical course includes using simulation ($p = .023$). Age was more influential than the number of years nurse educators used simulation as a teaching modality, the number of years of experience teaching BSN education, and the percentage of clinical time per semester that the clinical course uses simulation in contributing to the prediction model. The other demographic variables are non-significant in predicting the intensity of this stage of concern (see Table 20).

Table 20

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 2 Personal Construct of Concern

Variable	*B*	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	1.367	.813		1.682	.094		
Program engagement	.005	.036	.012	.140	.888	.672	1.487
Educator uses of simulation	-.085	.038	-.205	-2.217	.028*	.615	1.625
BSN teaching experience	-.053	.023	-.256	-2.301	.023*	.422	2.368
Age	.051	.015	.319	3.489	.001**	.622	1.607
Simulated clinical time	-2.569	1.118	-.169	-2.298	.023*	.971	1.030
Time for one simulation	.002	.011	.012	.166	.868	.981	1.020
Students in simulation experience	.013	.012	.084	1.114	.267	.931	1.074
Students in program	.000	.001	.028	.359	.720	.871	1.148
Highest degree	.113	.304	.032	.370	.712	.719	1.390
Rank-assis. prof. vs asso. & full prof.	.324	.351	.092	.922	.358	.531	1.884

Rank-full prof. vs asso. & assis. prof.	.437	.473	.114	.923	.357	.344	2.908

Note. [a] Tol = Tolerance; * = p < .05; ** = p < .01

Demographics and Stage of Concern 3 – Management Dimension

Table 21 provides the descriptive statistics of the continuous predictor variables included in the stage 3 management concern model.

Table 21

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 3 Management Concern

Variable	*M*	*SD*	*n*
Stage 3 Management	2.32	1.33	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177

The assumptions of normally distributed residuals linearity and homoscedasticity are generally met by examining the histogram (Figure 11), the P-P plot (Figure 12), and the scatterplot of standardized residuals (Figure 13). The histogram of standardized residuals indicated that the data for this model are also slightly negatively skewed with positive kurtosis (see Figure 11), and the normal P-P plot of standardized residuals showed the points clustered close on the line (see Figure 12), indicating that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data points are randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity are met (see Figure 13). The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 22).

Figure 11

Histogram of Normally Distributed Residuals for Stage 3 Management Construct of Concern

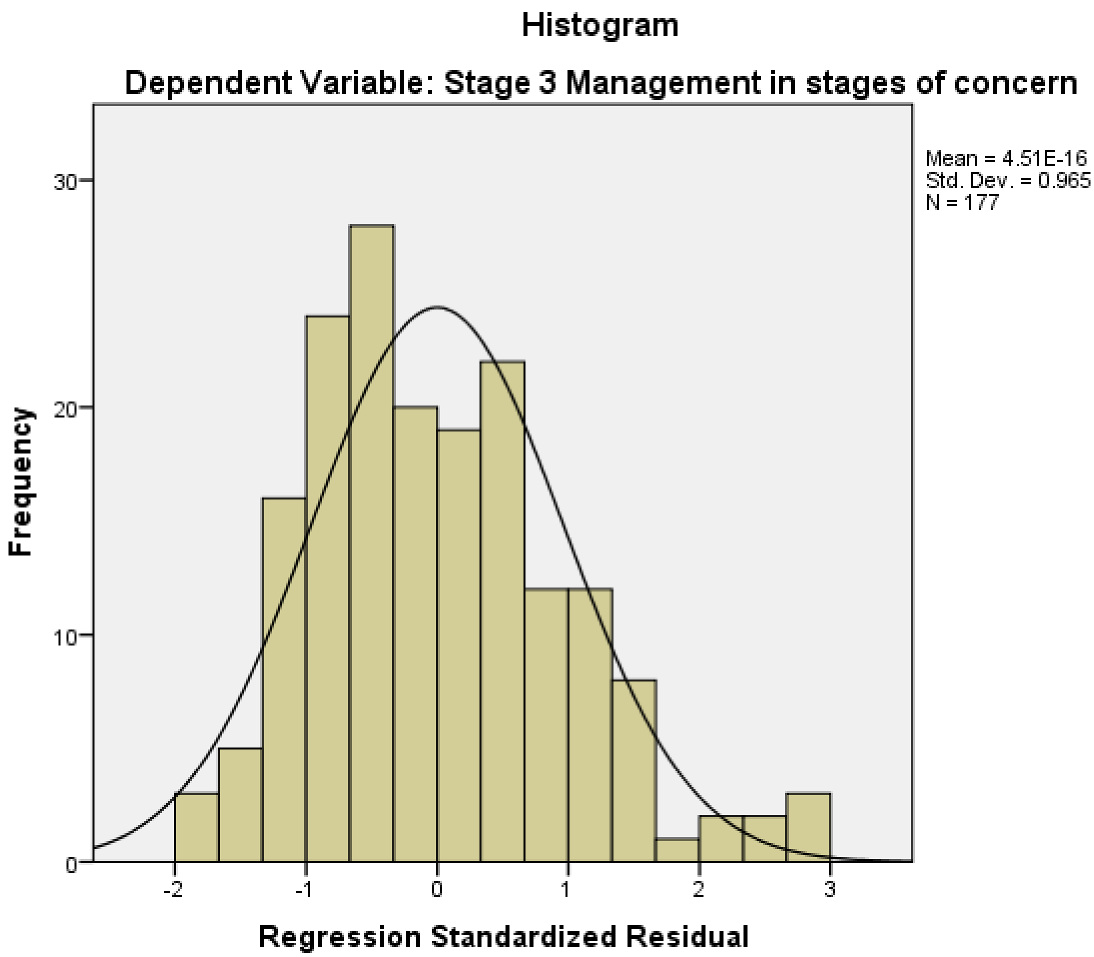


Figure 12

P-P Plot of Normally Distributed Residuals of for Stage 3 Management Construct of Concern

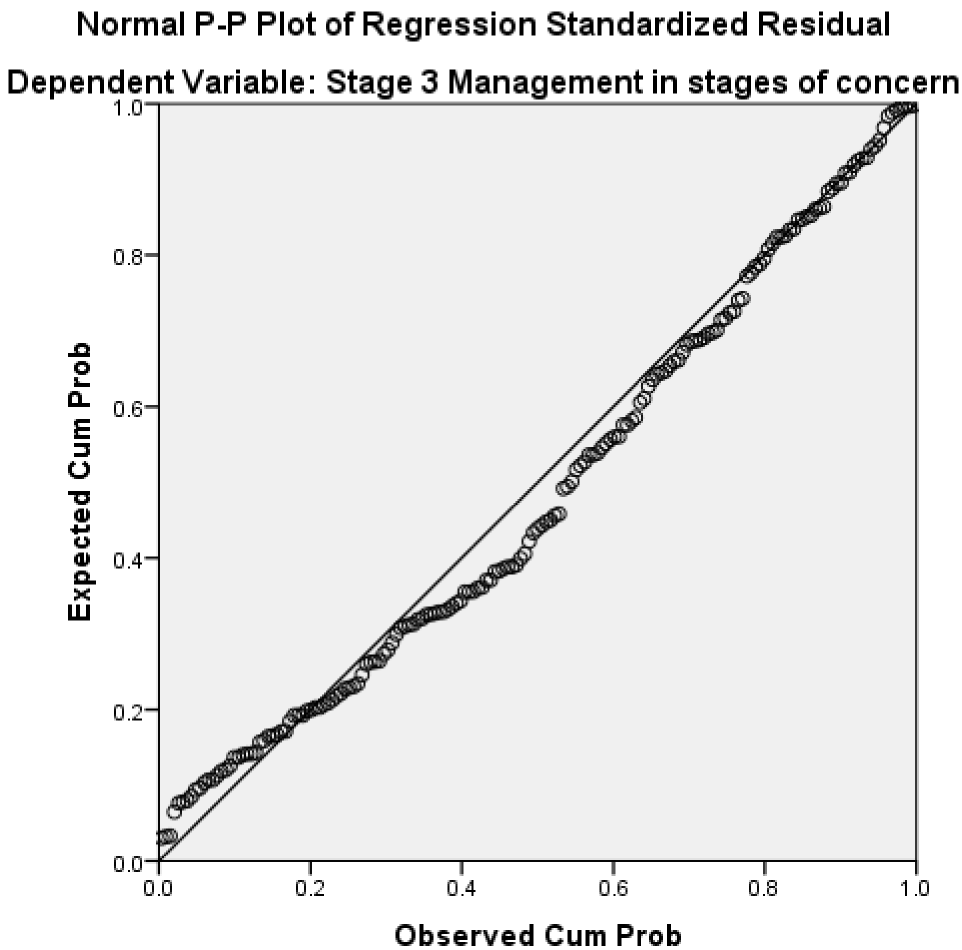
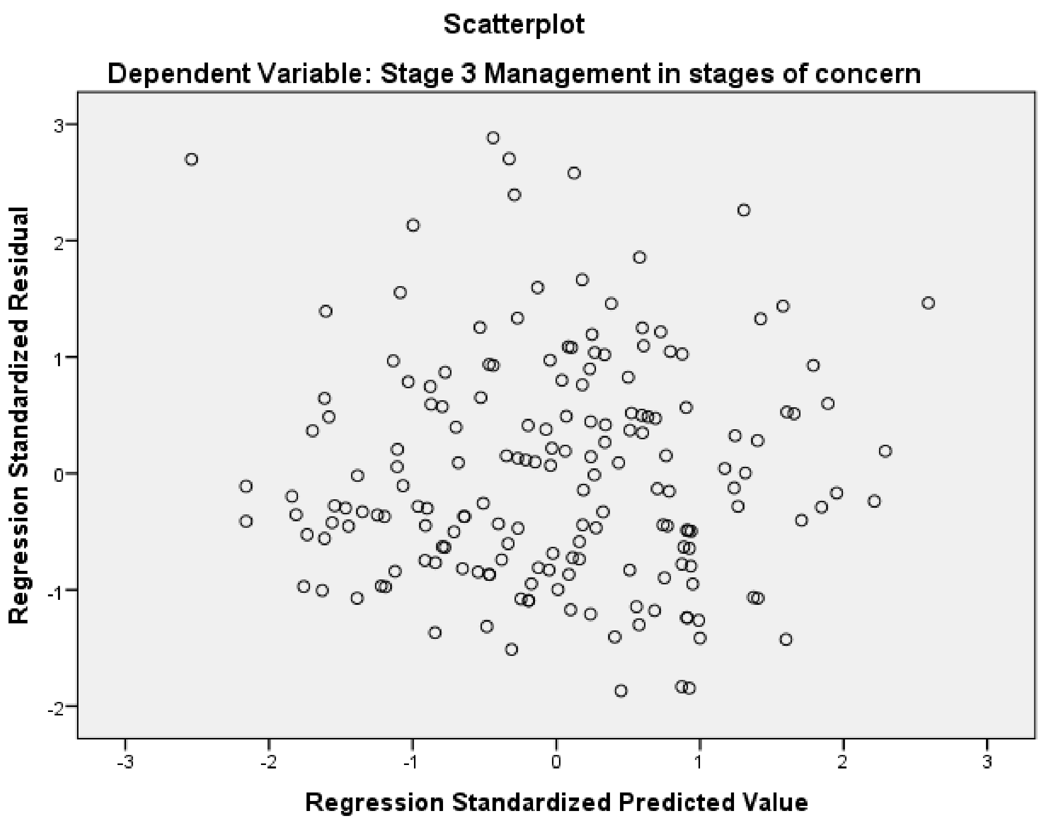


Figure 13

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 3 Management Construct of Concern



The overall model does not significantly predict nurse educators' intensity of concern in the stage 3 management dimension of the stages of concern, *R Square* = .073, *Adjusted R Square* = .005, *F*(12, 164) = 1.069, *p* = .390. This model accounted for a small percentage (7.3%) of variance in nurse educators' intensity of concern in the stage 3 management dimension of the concern stages.

Coefficients and other statistics of the predictor variables for the regression model of the stage 3 management construct of concern are presented in Table 22. The overall model does not significantly predict nurse educators' intensity of concern in the stage 3 management dimension of the concern stages. However, using the coefficients table, one variable, the number of years nurse educators used simulation as a teaching modality (p = .050), significantly predict nurse educators' highest intensity of concern about using simulation as clinical experience being stage 3 management. The other demographic variables are non-significant in predicting the stage of concern (see Table 22).

Table 22

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 3 Management Construct of Concern

Variable	*B*	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	2.144	.640		3.352	.001		
Program engagement	.012	.029	.040	.436	.663	.672	1.487
Educator uses of simulation	-.059	.0.0	-.189	-1.971	.050*	.615	1.625
BSN teaching experience	-.022	.018	-.141	-1.215	.226	.422	2.368
Age	.009	.011	.071	.744	.458	.622	1.607
Simulated clinical time	-.646	.879	-.056	-.734	.464	.971	1.030
Time for one simulation	.010	.008	.094	1.235	.218	.981	1.020
Students in simulation experience	-.004	.009	-.037	-.470	.639	.931	1.074
Students in program	.000	.001	.046	.566	.572	.871	1.148
Highest degree	.394	.239	.146	1.646	.102	.719	1.390
Rank-assis. prof. vs asso. & full prof.	.271	.276	.101	.982	.327	.531	1.884
Rank-full prof. vs asso. & assis. prof.	.469	.372	.162	1.260	.209	.344	2.908

Note. [a] Tol = Tolerance; * = $p < .05$

Demographics and Stage of Concern 4 – Consequences Dimension

Table 23 provides the descriptive statistics of the continuous predictor variables included in the model for stage 4 consequences concern.

Table 23

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 4 Consequences Concern

Variable	*M*	*SD*	*n*
Stage 4 Consequences	4.01	1.36	164
Program engagement	9.66	4.32	164
Educator uses of simulation	7.87	4.20	164
BSN teaching experience	11.71	8.50	164
Age	50.52	11.12	164
Simulated clinical time	0.16	0.12	164
Time for one simulation	10.93	11.92	164
Students in simulation experience	9.87	10.82	164
Students in program	187.62	132.44	164

The histogram of standardized residuals indicated that the data contained approximately normally distributed errors (see Figure 14), as did the normal P-P plot of standardized residuals that showed the points nearly clustered on the line (see Figure 15), indicating that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data met the assumptions of homoscedasticity and linearity. The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 24).

Figure 14

Histogram of Normally Distributed Residuals for Stage 4 Consequences Construct of Concern

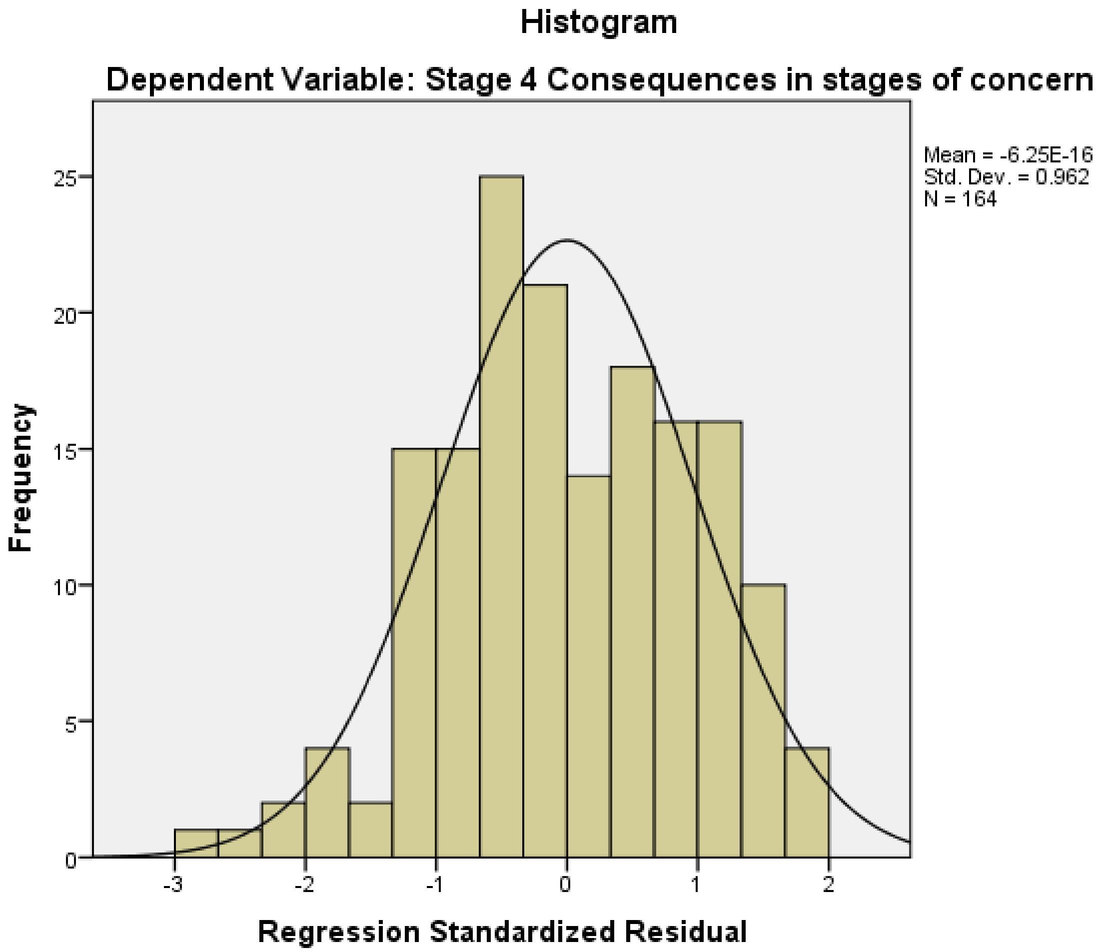


Figure 15

P-P Plot of Normally Distributed Residuals of for Stage 4 Consequences Construct of Concern

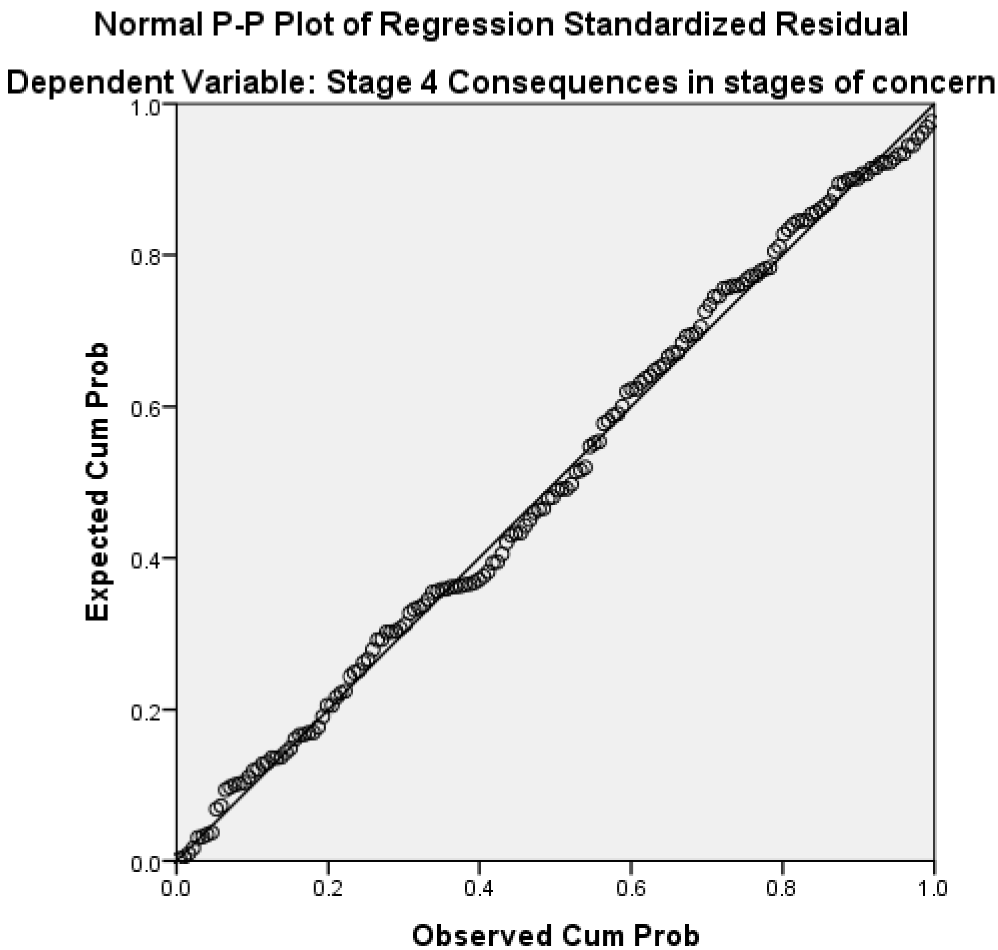
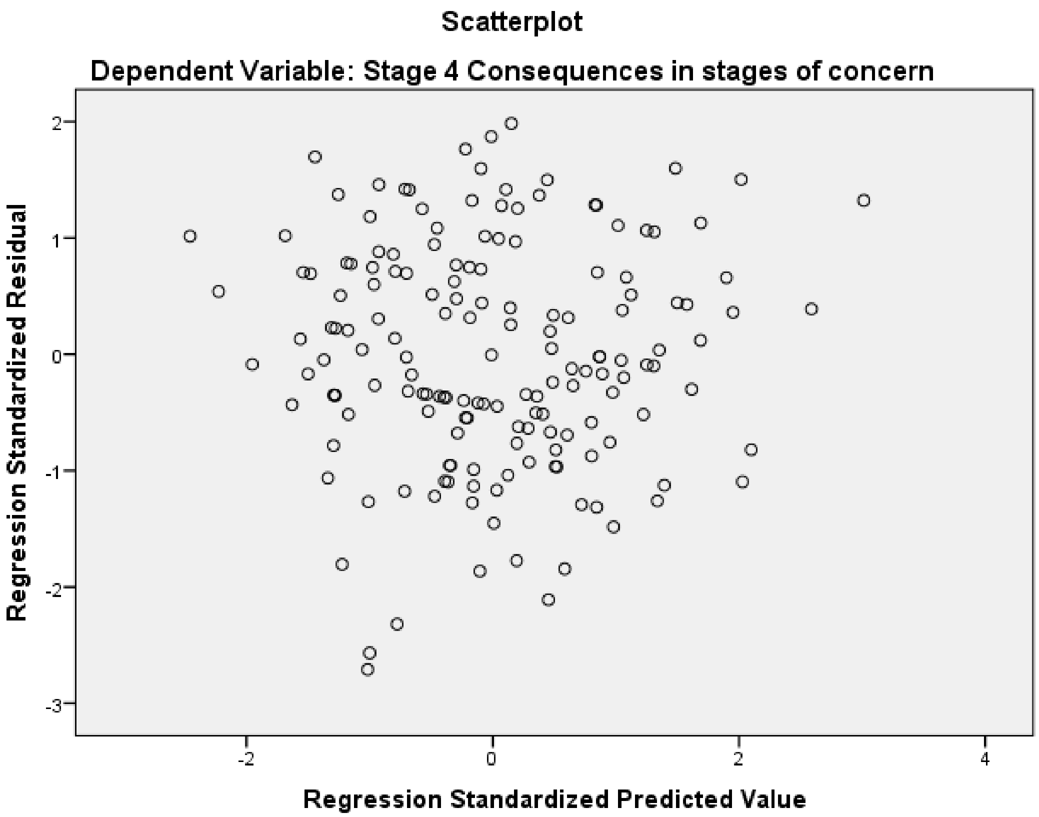


Figure 16

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 4 Consequences Construct of Concern



The overall model does not significantly predict nurse educators' intensity of concern in the stage 4 consequences dimension of the stages of concern, *R Square* = .034, *Adjusted R Square* = -.043, *F*(12, 151) = .445, *p* = .942. This regression model accounted for a very small percentage (3.4%) of variance in nurse educators' intensity of concern in the stage 4 consequences dimension of the concern stages.

Coefficients and other statistics of the predictor variables for the regression model of the stage 4 consequences construct of concern are presented in Table 24. None of the following variables significantly predict nurse educators' intensity of stage 4 consequences concern about using simulation as clinical experience : (a) the number of years the BSN program has engaged in simulation activities (p = .863), (b) the number of years nurse educator used simulation as a teaching modality (p = .357), (c) number of years of experience of teaching BSN education (p = .260), (d) age of the nurse educator (p = .497), (e) percentage of clinical time per semester that the clinical course includes using simulation (p= .844), (f) the average amount of time that the educator spends teaching one clinical simulation experience (p = .954), (g) the average number of students the educator has in one simulation experience per semester (p = .717), (h) the total number of students in the nurse educator's nursing program (p = .986), (i) highest degree attained (p = .579), (j) faculty rank assistant professor, not an associate professor or professor (p = .823), and (k) faculty rank associate or full professor, not assistant professor (p = .221).

Table 24

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 4 Consequences Construct of Concern

Variable	*B*	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	4.102	.689		5.957	.000		
Program engagement	.005	.030	.017	.173	.863	.639	1.442
Educator uses of simulation	-.030	.032	-.092	-.923	.357	.644	1.553
BSN teaching experience	-.022	.019	-.137	-1.130	.260	.437	2.286
Age	.008	.012	.069	.681	.497	.623	1.604
Simulated clinical time	-.187	.949	-.016	-.197	.844	.958	1.043
Time for one simulation	.001	.009	.005	.058	.954	.965	1.036
Students in simulation experience	.004	.0140	.030	.363	.717	.924	1.082
Students in program	1.546E-5	.001	.002	.018	.986	.862	1.159

Highest degree	-.144	.259	-.053	-.556	.579	.712	1.405
Rank-assis. prof. vs asso. & full prof.	.067	.299	.025	.224	.823	.530	1.888
Rank-full prof. vs asso. & assis. prof.	.489	.398	.165	1.228	.221	.353	2.831

Note. [a] Tol = Tolerance

Demographics and Stage of Concern 5 – Collaboration Dimension

Table 25 provides descriptive statistics of the continuous predictor variables in the model for stage 5 collaboration concern.

Table 25

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 5 Collaboration Concern

Variable	*M*	*SD*	*n*
Stage 5 Collaboration	4.10	1.68	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177
Highest degree	0.41	0.49	177
Rank-assis. prof. vs asso. & full prof.	0.44	0.50	177
Rank-full prof. vs asso. & assis. prof.	0.30	0.46	177

The histogram of standardized residuals indicated that the data contained approximately normally distributed errors (see Figure 17), as did the normal P-P plot of standardized residuals that showed the points nearly clustered on the line (see Figure 18), indicating that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data points are randomly and evenly dispersed throughout the plot, indicating that the assumptions of homoscedasticity and linearity are met (see Figure 19). The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 26).

Figure 17

Histogram of Normally Distributed Residuals for Stage 5 Collaboration Construct of Concern

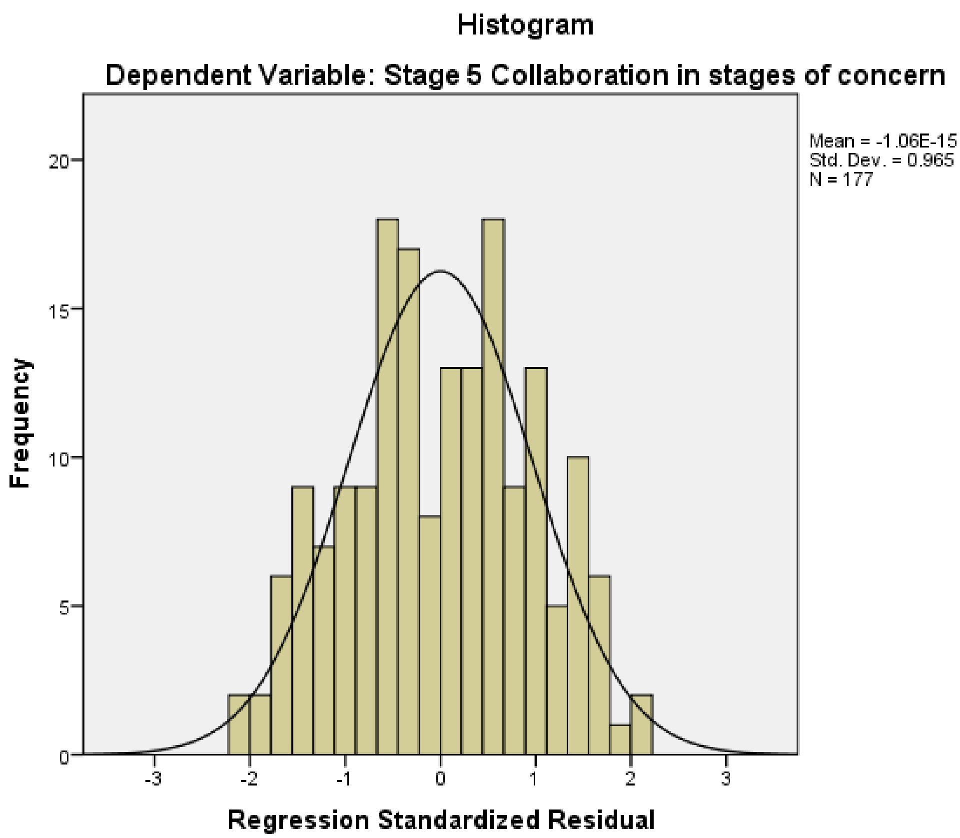


Figure 18

P-P Plot of Normally Distributed Residuals of for Stage 5 Collaboration Construct of Concern

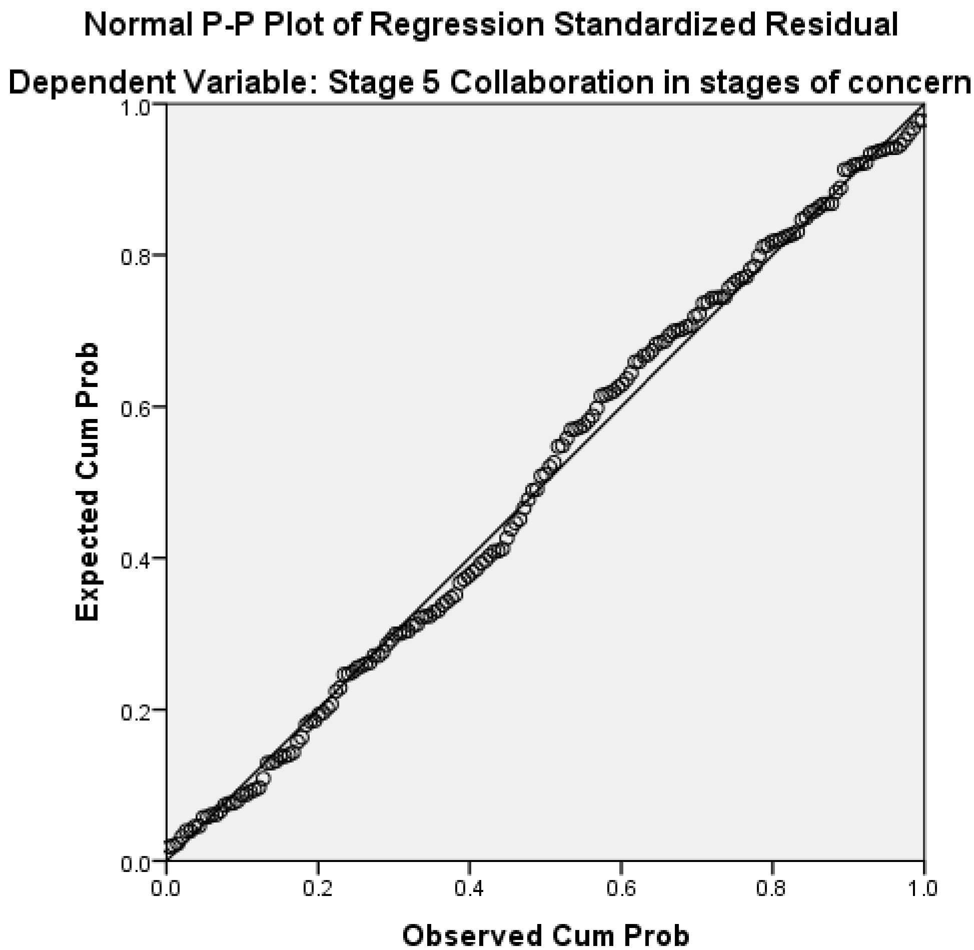
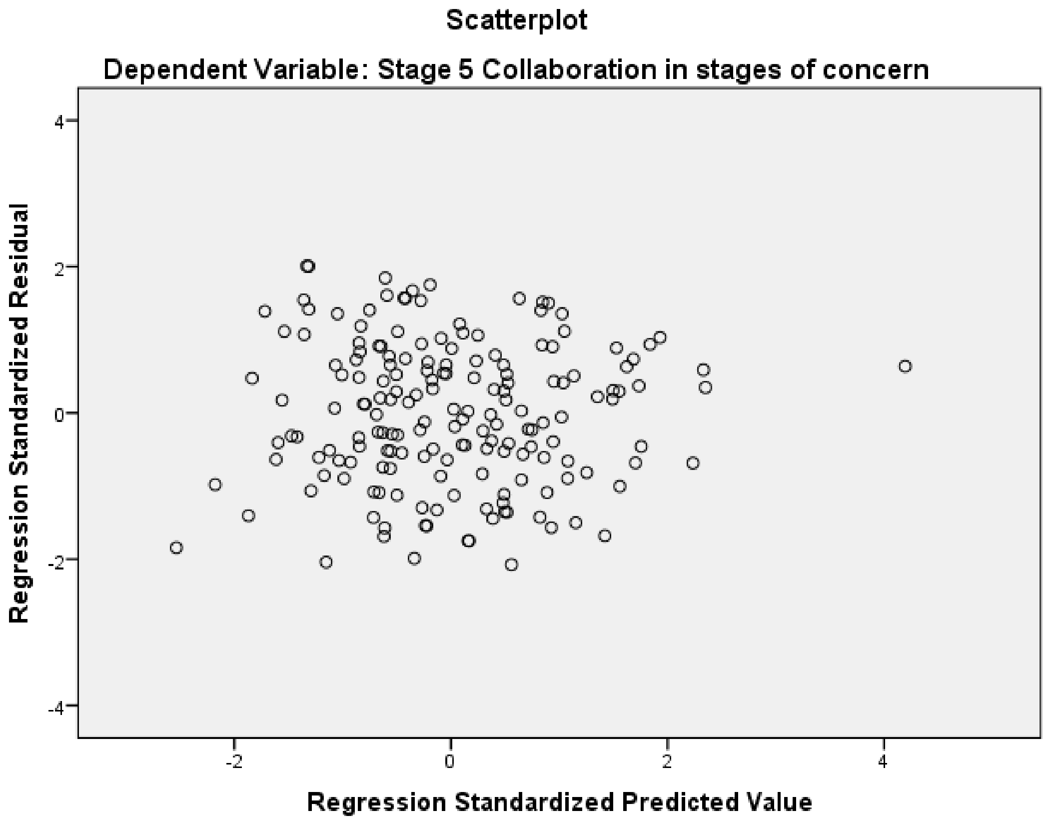


Figure 19

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 5 Collaboration Construct of Concern



The overall model does not significantly predict nurse educators' intensity of concern in stage 5 collaboration dimension of the stages of concern, *R Square* = .052, *Adjusted R Square* = -.017, *F*(12, 164) = .756, *p* = .695. This model accounted for 5.2% of the variance in nurse educators' intensity of concern in the stage 5 collaboration dimension of the concern stages.

Coefficients and other statistics of the predictor variables for the regression model are presented in Table 26. Using the coefficients table, one variable faculty rank associate or full professor versus an assistant professor (*p* = .053), significantly predict nurse educators' highest intensity of concern about using simulation as clinical experience being stage 5 collaboration.

The other demographic variables are non-significant in predicting the stage of concern (see Table 26).

Table 26

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 5 Collaboration Construct of Concern

Variable	*B*	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	3.590	.816		4.400	.000		
Program engagement	-.032	.036	-.081	-.877	.382	.672	1.487
Educator uses of simulation	.008	.038	.021	.212	.832	.615	1.625
BSN teaching experience	-.038	.023	-.193	-1.651	.101	.422	2.368
Age	.013	.015	.083	.863	.389	.622	1.607
Simulated clinical time	.898	1.122	.062	.800	.426	.971	1.030
Time for one simulation	.005	.011	.033	.429	.668	.981	1.020
Students in simulation experience	.005	.012	.032	.405	.686	.931	1.074
Students in program	.001	.001	.071	.867	.387	.871	1.148
Highest degree	-.492	.305	-.144	-1.611	.109	.719	1.390
Rank-assis. prof. vs asso. & full prof.	.420	.352	.124	1.191	.235	.531	1.884
Rank-full prof. vs asso. & assis. prof.	.925	.475	.252	1.948	.053	.344	2.908

Note. [a] Tol = Tolerance

Demographics and Stage of Concern 6 – Refocusing Dimension

The descriptive statistics of the continuous predictor variables included in the model for stage 6 refocusing concern are in Table 27.

Table 27

Descriptive Statistics of the Continuous Predictor Variables included in the Model for Stage 6 Refocusing Concern

Variable	*M*	*SD*	*n*
Stage 6 Refocusing	2.89	1.34	177
Program engagement	9.66	4.28	177
Educator uses of simulation	7.87	4.24	177
BSN teaching experience	11.76	8.58	177
Age	50.49	11.09	177
Simulated clinical time	0.16	0.12	177
Time for one simulation	10.92	12.14	177
Students in simulation experience	9.89	11.01	177
Students in program	183.07	132.50	177

The assumptions of normally distributed residuals linearity and homoscedasticity are generally met by examining the histogram (see Figure 20), the normal P-P plot of standardized residuals (see Figure 21), and the scatter plot (see Figure 22). The histogram of standardized residuals indicated that the data contained approximately normally distributed errors (see Figure 20), as did the normal P-P plot of standardized residuals that showed the points nearly clustered on the line (see Figure 21), indicating that the residuals are normally distributed. The scatterplot of standardized residuals showed that the data met the assumptions of homoscedasticity and linearity. The multicollinearity between the predictors was not a concern, with the VIF values all well below ten and the tolerance statistics above 0.2 (see Table 28).

Figure 20

Histogram of Normally Distributed Residuals for Stage 6 Refocusing Construct of Concern

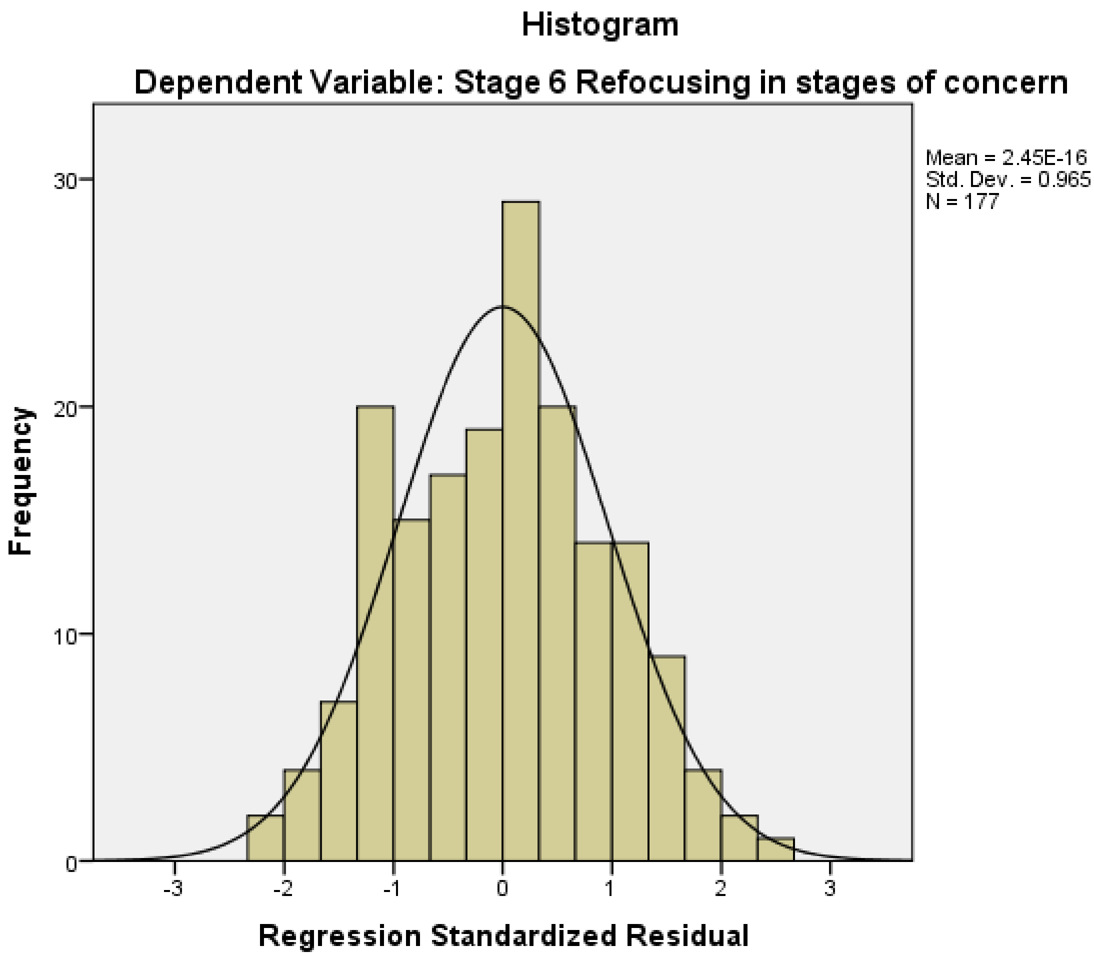


Figure 21

P-P Plot of Normally Distributed Residuals of for Stage 6 Refocusing Construct of Concern

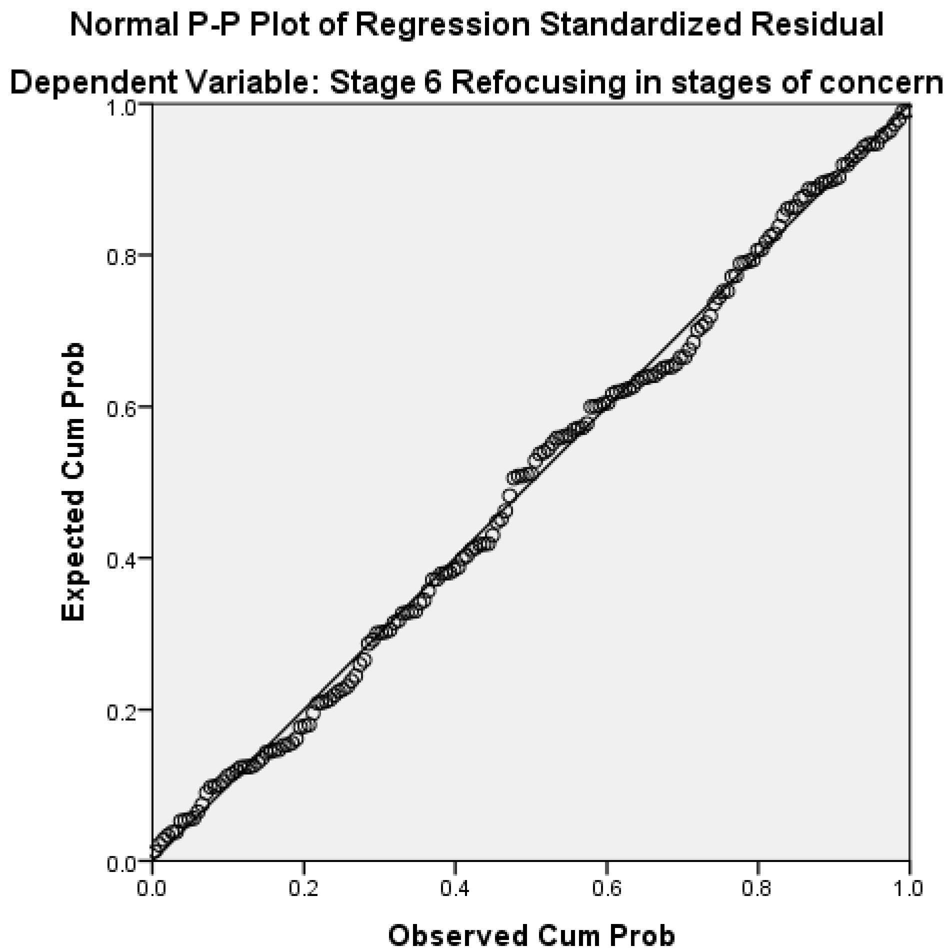
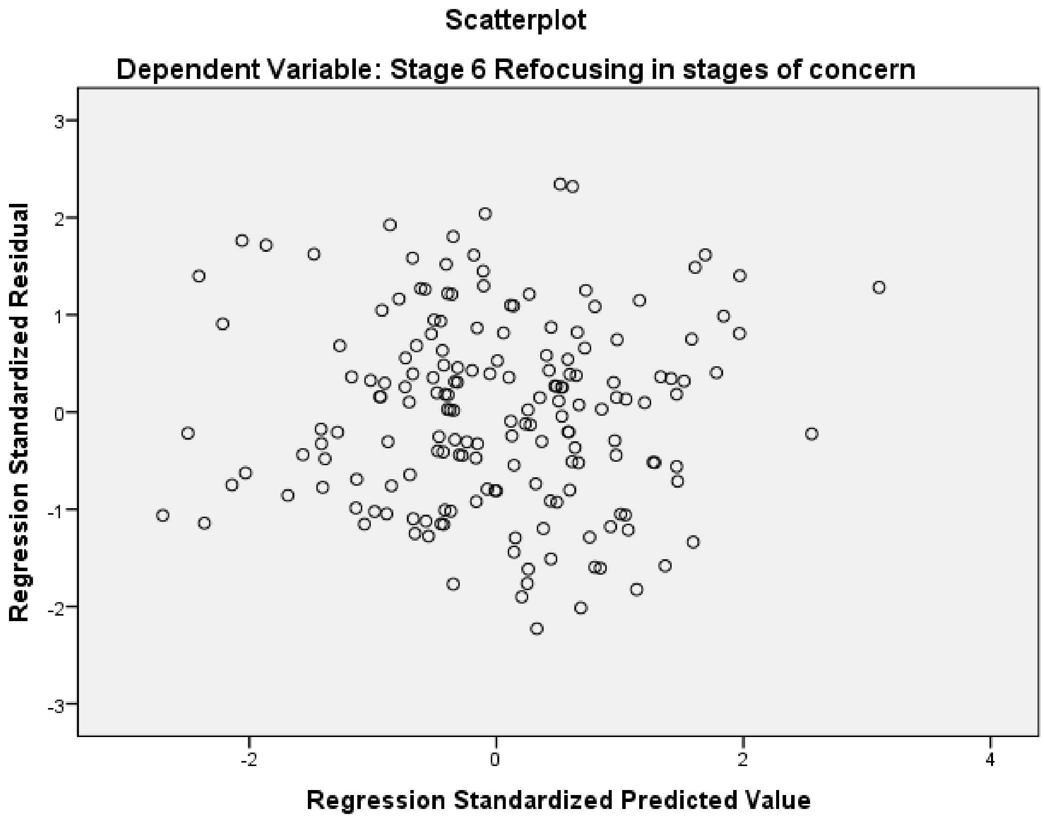


Figure 22

Residuals Plots of Standardized Residuals Versus Predicted Values for Stage 6 Refocusing Construct of Concern



The overall model does not significantly predict nurse educators' intensity of concern in stage 6 refocusing dimension of the stages of concern, *R Square* = .057, *Adjusted R Square* = -.012, *F*(12, 164) = .825, *p* = .624. This model accounted for a small percentage (5.7%) of variance in nurse educators' intensity of concern in stage 6, refocusing dimension of the stages of concern.

Although this model is not significant, one variable, the number of years of teaching BSN education (p = .036), significantly predicts nurse educators' highest intensity of concern about using simulation as clinical experience being stage 6 refocusing. The other demographic variables are non-significant in predicting the stage of concern (see Table 28). A summary of regression coefficients of the predictor variables for the stage 6-refocusing construct of concern is presented in Table 28.

Table 28

Coefficients and Other Statistics of the Predictor Variables for the Regression Model of the Stage 6 Refocusing Construct of Concern

Variable	*B*	*SE*	*β*	*t*	*p*	*Tol*[a]	*VIF*
(Constant)	2.425	.646		3.752	.000		
Program engagement	-.022	.029	-.070	-.756	.451	.672	1.487
Educator uses of simulation	.006	.030	.018	.183	.855	.615	1.625
BSN teaching experience	-.038	.018	-.246	-2.111	.036*	.422	2.368
Age	.020	.012	.162	1.688	.093	.622	1.607
Simulated clinical time	-.706	.889	-.061	-.795	.428	.971	1.030
Time for one simulation	-.001	.008	-.008	-.104	.917	.981	1.020
Students in simulation experience	.001	.010	.005	.059	.953	.931	1.074
Students in program	.001	.001	.052	.638	.524	.871	1.148
Highest degree	.368	.242	.136	1.523	.130	.719	1.390
Rank-assis. prof. vs asso. & full prof.	-.045	.279	-.017	-.163	.871	.531	1.884
Rank-full prof. vs asso. & assis. prof.	-.005	.376	-.002	-.014	.989	.344	2.908

Note. [a] Tol = Tolerance; * = $p < .05$

Comparison Among the Seven Stages of Concerns Regression Models

A comparison of the R^2, the F-ratio, and the significance of regression models of the seven stages of concern is presented in Table 29. Regression results indicated that two models significantly predicted nurse educators' intensity of concern (a) Stage 1 Informational, and (b) Stage 2 Personal. The models of other stages of concern are not significant, using the demographic variables as predictors.

Table 29

Comparison of the R^2, the F-Ratio, and the Significance of Regression Models of the Seven Stages of Concerns

Stage of Concern	R^2	*Adjusted* R^2	*F*	*p*
Stage 0 Unrelated	.107	.042	(12, 164) = 1.639	.085
Stage 1 Informational	.146	.075	(12, 145) = 2.064	.023*
Stage 2 Personal	.141	.078	(12, 164) = 2.236	.012*
Stage 3 Management	.073	.005	(12, 164) = 1.069	.390
Stage 4 Consequences	.034	-.043	(12, 151) = 0.445	.942
Stage 5 Collaboration	.052	-.017	(12, 164) = 0.756	.695
Stage 6 Refocusing	.057	-.012	(12, 164) = 0.825	.624

Note. * = *p* = <.05

Table 30 summarizes and presents the significant and non-significant predictor variables for all the seven regression models. Four demographic variables significantly predicted the model of Stage 2 personal concern, while three demographic variables significantly predict the two models of Stage 0-unrelated concerns and Stage 1-informational concerns. There is only one significant demographic predictor in the models of Stage 3-management concerns and Stage 6-refocusing concerns. No demographic variables significantly predict Stages 4-consequences and 5-collaboration concerns.

Among all the ten demographic variables included for analysis, the number of years of teaching BSN education predicts the most stages of concerns in the four constructs of stage 0 unrelated, stage 1 informational, stage 3 management, and stage 6 concerns. The variable of number of years nurse educator used simulation as a teaching modality significantly predict three stages of concern of stage 1 informational, stage 2 personal, and stage 3 management concerns. The nurse educator's age is a significant predictor for the two stages of stage 2 personal and stage 3 management concerns. The following three variables of percentage of clinical time per semester that the clinical course includes using simulation, the total number of students in the nurse educator’s nursing program, and the highest degree attained significant predict one stage of concern, respectively, stage 2 personal, stage 0 unrelated and stage 0 unrelated concern. All the other demographic variables, including the amount of time the BSN program has been engaged in simulation activities, time spent conducting one simulated clinical experience, the average number of students in one simulated clinical experience, and faculty rank, do not significantly predict any stage of concerns.

Table 30

Significant and Non-Significant Predictor Variables for All the Seven Stages Regression Models

Variable 3							
Regression Model	0	1	2	3	4	5	6
p-Value	*p*	*p*	*p*	*p*	*p*	*p*	*p*
Program engagement	.774	.920	.888	.663	.863	.382	.451
Educator use of simulation	.910	.023*	.028*	.050*	.357	.832	.855
BSN teaching experience	.011*	.017*	.023*	.226	.260	.101	.036*
Age	.143	.018*	.001**	.458	.497	.389	.093

Simulated clinical time	.999	.894	.023*	.464	.844	.426	.428
Time for one simulation	.291	.108	.868	.218	.954	.668	.917
Students in simulation experience	.951	.661	.267	.639	.717	.686	.953
Students in program	.042*	.885	.720	.572	.986	.387	.524
Highest degree	.049*	.791	.712	.102	.579	.109	.130
Rank-assis. prof. vs asso. & full prof.	.243	.605	.358	.327	.823	.235	.871
Rank-full prof. vs asso. & assis. prof.	.092	.782	.357	.209	.221	.053	.989

Note. Regression Model 0 is Unrelated Stage, Regression Model 1 is Informational Stage, Regression Model 2 is Personal Stage, Regression Model 3 is Management Stage, Regression Model 4 is Consequences Stage, Regression Model 5 is Collaboration Stage, and Regression Model 6 is Refocusing Stage.* = $p < .05$; ** = $p < .01$

Overall, four demographic variables significantly predicted the model of stage 2 personal concern, while three demographic variables significantly predict the two models of stage 0-unrelated concerns and stage 1-informational concerns. There is only one significant demographic predictor in the models of stage 3-management concerns and stage 6-refocusing concerns. No demographic variables significantly predict stage 4-consequences concern. Faculty rank was very close to predicting collaboration concerns.

Among all the ten demographic variables included for analysis, the number of years of teaching BSN education predicts the most stages of concern in the four constructs of stage 0 unrelated, stage 1 informational, stage 3 management, and stage 6 concerns. The variable of number of years nurse educator used simulation as a teaching modality significantly predict three stages of concern of stage 1 informational, stage 2 personal, and stage 3 management concerns. The nurse educator's age is a significant predictor for the two stages of stage 2 personal and stage

3 management concerns. The following three variables of percentage of clinical time per semester that the clinical course includes using simulation, the total number of students in the nurse educator's nursing program, and the highest degree attained significant predict one stage of concern, respectively, stage 2 personal, stage 0 unrelated and stage 0 unrelated concerns. All the other demographic variables, including the amount of time the BSN program has been engaged in simulation activities, time spent conducting one simulated clinical experience, the average number of students in one simulated clinical experience, and faculty rank, do not significantly predict any stage of concern.

Summary

This chapter presented the results related to each of the three overarching research questions and the hypotheses aligned with research question number two. The relative intensities of baccalaureate nurse educators' concerns about using simulation as clinical experience in relation to the other concern stages were calculated and presented (see Figure 1). The findings indicate that the intensity of nurse educators' concern is highest in stage 0 unrelated, meaning they have more concern about other innovations than using simulation as clinical experience.

Descriptive and inferential statistical analysis provided the information necessary to answer research question 2. One-way between-subjects ANOVAs were conducted to compare each stage of concern on each of the ten independent variables. Between-group comparison of stages of concern for four of the ten independent variables led to the acceptance of the alternative hypothesis. The alternative hypothesis, which is that there is a significant difference in the baccalaureate nurse educators' stage of concern, is supported for the highest level of education, the number of years the nurse educator has used simulation, years of BSN teaching experience, and the average number of students the nurse educator has in a simulated clinical experience.

Whereas between-group comparison of stages of concern for six of the ten independent variables led to the acceptance of the null hypothesis, which is that there is no significant difference in the baccalaureate nurse educators' stage of concern by age, faculty rank, amount of time the BSN program has been engaged in simulation activities, present of clinical course taught using simulated clinical experience, time spent conducting one simulated clinical experience, and the total number of students in the BSN program.

One-way between-subjects ANOVAs compared each stage of concern with the categories associated with each of the ten independent variables. Multiple regressions were conducted to answer research question 3. Two models, stage 1 informational and stage 2 personal, significantly predicted nurse educators' intensity of concern. Of these two models, the independent variables have more capacity to predict the stage of concern being stage 1 informational than stage 2 personal. A discussion of the findings as they related to previous findings is in chapter 5.

Chapter 5: Discussion and Conclusion

The purpose of this study was to understand the intensity of nurse educators' stages of concern about using simulation as clinical instruction, determine if there are differences in nurse educators' stages of concern by their demographics, and examine whether nurse educators' demographic factors predict their intensity of concern in each stage of concern dimension. The intent was to understand the nurse educators' concerns about using simulation to meet the mandates of increasing baccalaureate (BSN) prepared RNs in the workforce. This chapter discusses this study's results about nurse educators' concerns in using simulation and the practical and theoretical implications of this study related to the diffusion of innovation. Conclusions and suggestions for future research follow the discussion.

Discussion

Nurse Educators' Stages of Concern about the Use of Simulation

Findings in the present study, together with the unique situation created in education due to the global COVID-19 pandemic, reveal parallel concerns. Nearly half of the nurse educators' responses indicated that they were unconcerned (stage 0) about using simulation as clinical experience. This finding, coupled with the intensity of responses being highest in stage 0 unconcerned, may indicate that the nurse educators have used simulation long enough not to be concerned about using simulation as clinical experience. If so, their knowledge of the use of simulation may enable them to have a high comfort level about the time, space, and resources necessary to use simulation as clinical experience. They may also know a considerable amount about the day-to-day operations of using simulation and how to create authentic teaching examples that enable students to learn the necessary skills to care for patients. opposite

In contrast, the immediate and urgent need to take face-to-face instruction online to stay safe from COVID-19 may have created the necessity rather than the option of simulation as clinical experience. During the weeks that this study's survey was open, educators moved quickly to convert their face-to-face course content to digital materials and online learning activities. This crisis likely caused nurse educators to think less about simulation as innovation and more about transforming all nursing education, in general, to maintain high-quality instruction given the shift in education caused by the novel coronavirus. It also caused an abrupt shift from engaging in traditional clinical experiences to using simulation as clinical experience.

The Intensity of the Nurse Educators' Stages of Concerns

Overall, nearly half of the respondents scored the items associated with the stage 0 unrelated concerns as statements that best represented their concern or lack of concern about using simulation as a clinical experience when they responded to the SoCQ (George et al., 2006). The raw mean of the scores for each stage of concern are lowest for stage 0 unrelated concern compared to the other six stages of concern; yet, the relative intensity of concern among the seven stages is highest for stage 0 unrelated concerns in relation to the other six stages of concern. This finding indicates that when the SoCQ was completed other activities or innovations were of more concern to nursing educators than was any concern about using simulation as clinical experience.

Findings indicate that stages 1, 2, 3, and 5 had similar relative intensity scores ranging from 43% - 54%. Information concerns center around wanting to learn more about the innovation. Personal concerns focus on how the individual will be affected by using the innovation. Collaboration concerns converge on wanting to know how their colleagues are using innovation. The distribution of stages of concern scores for participants by stage (see Table 4) for stage 1 informational (31/231, 13.4%), stage 2 personal (26/231, 11.3%), and stage 5 collaboration (40/231, 17.3%) revealed a relatively equal number of responses. The relative intensity (see Figure 1) of these three stages of concern as calculated in the sedl.org secure system were all in the medium intensity range: stage 1 informational (54%); stage 2 personal (52%); and stage 5 (48%). Although not equal in the number of responses, the relative intensity of stage 3 management concerns (10/231, 4.3%) is also of medium intensity (43%).

Faculty concerns related to the relative medium intensity of stage 1 informational scores (54%) are about the time commitment for simulation and the nonacademic tasks associated with the innovation. Nurse educators may want to use simulation as clinical experience but feel like they have limited knowledge about using simulation as clinical. When pairing the stages and attributes of innovation diffusion with the stages of concern (see Table 1), stage 1 informational concerns pair with trialability, which allows the educator to experiment with the innovation. The relative intensity of stage 1 informational scores indicated that nurse educators want information. They want to know the requirements related to using simulation as clinical experience, what resources are available, and how simulation as clinical experience is better than other modalities used to teach clinical experience.

Related to the relative medium intensity of stage 2 personal scores (52%), nurse educators may feel inadequate to meet the demands associated with simulation instruction. Table 1 indicates that stage 2 personal concern pair with observability of the innovation. Observability explains the ease of learning and use of innovation. The relative intensity of stage 2 personal concern may indicate that nurse educators may not feel that the demands of using simulation are justified in the reward structure of the program and institution. The educators may lack adequate resources to learn and use simulation as clinical experience, including workload adjustments and ancillary support such as lab assistants or technicians to conduct simulated clinical experiences. Learning to use simulation as a clinical experience requires a financial investment and time commitment to obtain the proper training to become confident and competent in using simulation. The relative medium intensity of stage 3 management scores (43%) relates to concern about learning to use the innovation and the resources available to support learning. Table 1 displays the paring of stage 3 management concern with knowing and working through the innovation's complexity concurrent to managing the time demands of other academic and non-academic responsibilities associated with being a nurse educator.

Related to the relative medium intensity of stage 5 collaboration scores (48%), perhaps the concerns relate to learning through collaboration to streamline their processes and reduce workload. As shown in Table 1, the category of stage 5 collaboration concern pairs with understanding the innovation's relative advantage and compatibilities. Nurse educators may desire to coordinate and cooperate with other nurse educators who share responsibilities in the simulation teaching environment. However, the nurse educator may not know whom to collaborate with about using simulation as a clinical teaching modality. The selection of responses associated with stage 5 collaboration also may be a result of reluctance to establish teaching partnerships with other educators who have limited simulation experience. Together, these stages of concern may indicate that the respondents want to know more about using and managing simulation as clinical experience and learning strategies for using simulation as clinical experience from other educators. At the same time, they are uncertain about the associated demands that using simulation as clinical experience may have on their workload. Overall, nurse educators want additional information that could enable them to develop an increased comfort level, increasing their efficiency using simulation as a clinical experience teaching modality. Nurses often collaborate and share experiences and ideas. Thus, sharing information and collaborative efforts could provide additional perspectives, ideas and resources to help develop simulations and negate the need to start from square one.

Differences in Stages of Concern by Demographics

Findings indicate that six demographic factors were not statistically significant: age; faculty rank; number of years the BSN program has engaged in simulation; percent of total clinical course time taught using simulation as clinical experience; the number of hours that the nurse educator spends conducting a simulated clinical experience; and the total number of students in a BSN program. However, four of the ten demographic variables were statistically significant: the highest level of education, the number of years the nurse educator has used simulation, the years of BSN teaching experience, and the average number of students in one simulated clinical experience.

Education Level. The independent t-test was statistically significant for the highest education level and stage 0 unrelated stage of concern $p = .006$. Specifically, doctorate prepared nurse educators ($M = 2.65$, $SD = 1.7$) selected higher intensity of stage 0 unrelated concerns than did master's prepared nurse educators ($M = 2.25$, $SD = 1.03$). The selection of higher intensity scores by doctorally prepared nurse educators may indicate that they already have expertise in using simulation as a teaching modality and that other goals supersede their concerns about using simulation. Typically, doctorally prepared nurse educators seek promotional advances in rank or tenure. These promotional advances increase nurse educators' time commitments outside the typical classroom and clinical environment leaving little time to focus on simulation. Compared to other educational levels, it may be worth investigating how much of the doctoral prepared faculty members' workload comprises simulation compared to non-doctorally prepared nurse educators' workload.

Although the independent samples t-test was not statistically significant at $p < .05$, it was very close to being statistically significant for the stage 3 management stage of concern p =.051. The responses indicated that doctorally prepared nurse educators ($M = 2.51$, $SD = 1.43$) selected higher numbers on the 0 – 7 scale in response statements related to management concerns than what master's prepared nurse educators selected ($M = 2.14$, $SD = 1.38$). The selection by participants of higher intensity scores in stage 3 management by doctorally prepared nurse educators may indicate that the concerns associated with using simulation conflicts with their time commitment needed for other academic responsibilities. Simulation has many roles, including pre-briefing, running the simulator's technical aspects, making decisions regarding student responses, debriefing and set-up and takedown time. There are differences in how educational institutions handle the role responsibilities associated with using simulation. In some institutions, one person may cover all the roles. In other institutions, the roles may be divided with faculty pre-briefing and debriefing and making decisions regarding student responses and the rest of the simulation managed by a coordinator or technical assistant. The distribution of this workload may greatly impact how respondents answered statements related to stage 3 management concerns.

Table 1 supports that stage 3 management concern pairs with knowledge about innovation and understanding its complexity. The choice of higher scale scores related to stage 0 unrelated selected by doctorate prepared nurse educators indicate that they agree with the statements related to not having concern about using simulation as clinical experience; instead, their focus is on other priorities. The choice of higher scale scores related to stage 3 management concern indicate that nurse educators are concerned about time and energy. They are concerned about not having enough time to focus on simulation as clinical experience and managing the demands of simulation concurrent with the demand of their time in leadership activities typically associated with holding a doctorate, such as a committee involvement and the pursuit of tenure and promotion. Moreover, the coupling of higher stage 0 unrelated and stage 3 management scores supports pairing management concerns with knowing and understanding the complexity of using simulation as clinical experience.

Years Using Simulation and BSN Teaching Experience. One-way between-subjects ANOVAs indicate that the number of years the nurse educator has used simulation (p = .024) and the number of years of BSN teaching experience (p = .036) was significant for stage 1 informational. Findings indicate those nurse educators who have used simulation for 1 – 5 years (M = 2.99, SD = 1.89) and 6 – 10 years (M = 2.37, SD = 1.75) had higher intensity informational needs. Educators with ten years or less simulation experience are likely less comfortable using simulation as a teaching modality. In contrast, educators with more than ten years of experience using simulation (M = 2.10, SD = 1.68) may have more expertise and thus be more comfortable using simulation. This finding has implications for workload and ongoing faculty development to support faculty members continued professional development. Too often, when faced with innovations like simulation in education, educators are pressed to move forward without foundational support such as educational preparation and training and the fiscal resources related to personnel and finances required to do the job appropriately. The lack of these types of foundational support is an ongoing challenge. This finding suggests an initial need for education and resources and a sustainable plan to maintain quality.

Similarly, nurse educators with less than five years of BSN teaching experience had more intense (*M* = 2.96, *SD* = 1.89) stage 1 informational concern than nurse educators who had more than six years of BSN teaching experience. Moreover, nurse educators with 11 – 36 years of BSN teaching experience indicated less intense (*M* = 2.19, *SD* = 1.76) stage 1 informational concern than nurse educators with 6 – 10 years (*M* = 2.55, *SD* = 1.73) of BSN teaching experience. Again, the experiential factor associated with teaching years indicates a need for a sustainable plan to support faculty development including education and resources.

Nurse educators with less teaching experience and less experience with simulation are not concerned about "nitty-gritty details. Rather, they want fundamental information about the innovation, what it will do, and what its use will involve" (George et al., 2006, p. 33). In contrast, nurse educators with more teaching experience may feel comfortable about the innovation, what it will do, and incorporating simulation as clinical experience. The diffusion of innovation attributes of trialability, categorized in the persuasion and decision-making stages, addresses the opportunity to experiment with the innovation and learn how it works in the intended environment and supports these findings (see Table 1).

Average Number of Students in One Simulation Experience. One-way between-subjects ANOVAs indicate a significant difference in the average number of students in one simulated clinical experience in stage 1 informational ($p = .029$) and stage 2 personal ($p = .009$) concerns. Nurse educators with an average of 3 – 5 students in one simulated clinical experience (M = 2.094, SD = 1.690) was significantly lower than both the group of nurse educators with an average of 6 – 10 students (M = 2.871, SD = 1.832) and the group of nurse educators with more than ten students (M = 2.589, SD = 1.971) in one simulated clinical experience. The intensity of stage 2 personal concerns for the group of nurse educators with an average of 3 – 5 students in one simulated clinical experience (M = 2.258, SD = 1.677) was also significantly lower than the group of nurse educators with an average of 6 – 10 students in one simulated clinical experience (M = 2.948, SD = 1.749) and the group of nurse educators with more than ten students in one simulated clinical experience (M = 3.185, SD = 1.734).

Overall, the number of students in one simulated experience was significant for stages 1 and 2. Although not statistically significant, stage 3 management was close to being significant (p = .060). Nurse educators with larger groups of students in a simulation experience have a greater intensity for informational needs and personal needs. Understandably, stage 1 informational needs are likely to intensify for educators since once the group expands past five, the logistics of the experience becomes much more complicated. Stage 2 personal concerns may reflect the increased time commitment required for the larger groups. Stage 3 management also indicates a possible concern for managing the time demands of coordinating and arranging simulation for larger groups. In the larger group, the setup and takedown are likely to be more involved. Also, providing adequate supplies can be challenging. Without additional technical assistance or coordination support, the task may become overwhelming when managing more than five students in one simulation experience. Nurse educators having 3 – 5 students in a group were less concerned than those with 6 – 10. The lack of differences between the 6 – 10 and >10 students per group can be explained. For example, confined lab space and roles to be played limits the number of participants for most simulations. All the students are not actively engaged in the simulation when faculty have larger groups of students in one simulation experience. Additional examination of simulation with large groups may help determine if the ability to meet learning outcomes is any different from smaller groups.

Nurse educators using simulation as clinical experience when working with small numbers of students may be more relaxed and have a higher comfort level while engaging in simulation and feeling prepared to meet the demands of the instructional tasks. Typically, fewer students are much easier to control within the defined space of simulation, and when few students are in one simulated experience, students have more opportunities for engagement. This finding poses a question related to the quality of experiences and degree of outcome achievement with smaller versus larger groups of students engaging in a clinical simulation activity at a given time.

Prediction of Stages of Concern by Demographics

Multiple regression analysis was used to study the relationship of each of the ten independent variables on each stage of concern to determine which variable(s) best predict nurse educators' stage of concern about using simulation as clinical experience. The demographic of the number of years of BSN teaching experience predicts the most stages of concern: stage 0 unrelated, stage 1 informational, stage 3 management, and stage 6 refocusing. Stage 0 unrelated concern indicates that nurse educators with more BSN teaching experience are less concerned about using simulation as clinical experience and more concerned about other priorities. Stage 1 informational concern indicates that nurse educators with fewer years of BSN teaching experience want to know more about requirements, available resources to support their use of simulation, and how clinical experiences delivered through simulation are better than traditional live-patient clinical experiences. Stage 3 management concern indicates that nurse educators, in general, regardless of the number of years of BSN teaching experience, are concerned about not having enough time to manage using simulation as clinical experience while managing the other responsibilities inherent in being a nurse educator. Stage 6 refocusing concern indicates that nurse educators, regardless of their years of BSN teaching experience, would like to determine how to modify, supplement, enhance, or replace simulation as clinical experience. Collectively, the number of nurse educator respondents with six or more years of teaching experience (*n* = 154) is twice the number of respondents with five or fewer years (*n* = 54) of BSN teaching experience. The indication that the number of years of teaching experience predicts the combination of stages 0, 1, 3, and 6 concerns aligns with the research that led to the development of the concerns-based adoption model (CBAM). Specifically, the stages of concern (SoC) dimension (George et al., 2006) of the CBAM, that nurse educators, too, experience an uncertainty about the demands the innovation of using simulation as clinical experience may place on them.

Years Using Simulation and BSN Teaching Experience. The number of years a nurse educator has used simulation as a teaching modality significantly predicts the stage 1 informational, stage 2 personal, and stage 3 management concerns. The number of years of BSN teaching experience, the number of years a nurse educator has used simulation may impact the educators' stages of concern. Stage 1 informational concern indicates that nurse educators with less experience using simulation as clinical experience want to know more about the simulation requirements and the resources available to support their simulation use. Stage 2 personal concern indicates that nurse educators want to know the time and energy commitments associate with using simulation as clinical experience. Stage 3 management concern indicates that nurse educators are concerned about not having enough time to manage using simulation as clinical experience and manage the other responsibilities inherent in being a nurse educator. The combination of stage 1, stage 2, and stage 3 management concerns may indicate that nurse educators want to know more about using simulation as clinical experience. However, they are very busy managing the innovation of using simulation as clinical experience while also managing other job demands.

Age. The nurse educator's age is also a significant predictor for stage 2 personal and stage 3 management concerns. The mean age of nurse educators responding to this study is 50.49 years. This age is consistent with that of doctoral-prepared and masters-prepared nurse faculty (American Association of Colleges of Nursing, 2019c). More than half (118/231) respondents reported their age as 50 years or less, with a near equal split between ages 27-40 (57/118) and 41-50 (61/118). Stage 2 personal concern indicates that nurse educators want to know the time and energy commitments associated with using simulation as clinical experience. Stage 3 management concern indicates that nurse educators are concerned about not having enough time to manage using simulation as clinical experience and manage the other responsibilities inherent in being a nurse educator. These findings reiterate the faculty’s desire to want to know more about using simulation as a clinical experience while balancing the demands associated with the responsibilities of being a nurse educator. Again, years of experience teaching and years of using simulation show higher levels of concern for the necessary energy and time commitment associated with using simulation as clinical experience.

Percent of Clinical Time Using Simulation. The percentage of clinical time per semester that educators use simulation as clinical experience also significantly predicts stage 2 personal concern. The National Council of State Boards of Nursing (NCSBN) conducted a study using a ratio of 1:1 to determine whether using simulated clinical experience in place of traditional clinical experience affected student or program outcomes (Hayden et al., 2014). The study concluded that using simulation to meet 50% of the required clinical hours did not affect student or program outcomes. The study results prompted the NCSBN to develop national guidelines for nursing programs to use simulation as a clinical experience for up to 50% of the required clinical time (Alexander et al., 2015). Nurse educators' responses to this present study indicate that the average percent of clinical experience facilitated using simulation is 16%. This number is much lower than the 50% allotted by NCSBN to use simulation as clinical experience. According to Rogers (2003), an essential element of adoption of innovation is time, which he outlines in three instances: 1) time involved in the decision-making process to adopt or reject an innovation; 2) relative earliness or lateness of adoption, and 3) the time it takes for adoption by the members of a system in a given time. Rogers' theory may help to explain stage 2 personal concern about time associated with using simulation as clinical experience.

Stage 2 personal concern indicates that nurse educators want to know the time and energy commitments associated with using simulation as clinical experience. Knowing the time and energy commitments associated with using simulation as clinical experience is essential to determining the amount of time the nurse educator uses simulation per semester. Using simulation as clinical experience causes faculty commitment of time and energy to go beyond 1:1 hour the student spends in a live-patient hospital setting. The workload difference is because patients in hospital settings already have diagnoses and a preexisting plan of care. Unlike working with hospitalized patients, the educator must plan a simulated experience including the patient's diagnosis, the patient's pre-existing conditions, medication prompts that resemble the actual medication, and the patient setting all before interacting with the students. Then, after the simulated experience, the educator is responsible for ensuring that the equipment and environment are cleaned and returned to the original order. Thus, it is understandable that personal concerns influence the use of simulation as clinical experience.

In summary, multiple regression analysis reveals that some demographic variable predicts nurse educators' stage of concern about using simulation as clinical experience. The demographic of the number of years of BSN teaching experience predicts the most stages of concern that are stage 0 unrelated, stage 1 informational, stage 3 management, and stage 6 refocusing. The number of years nurse educators have used simulation as a teaching modality significantly predict the stage 1 informational, stage 2 personal, and stage 3 management concerns. The nurse educator's age is also a significant predictor for stage 2 personal and stage 3 management concerns. The percentage of clinical time per semester that educators use simulation as clinical experience also significantly predicts stage 2 personal concern. The between-group comparison of stages of concern by the total number of students in the BSN program did not reveal statistical significance. However, using multiple regression analysis, the nursing program's total number and the educators' highest degree significantly predict stage 0 unrelated concern.

Interpretation

Of the three demographic variables that predict stage 0 concern, the number of years of experience of BSN teaching experience was a more influential predictor of stage 0 unrelated concern than was the number of students in the program and the highest level of education. The findings related to prediction stage 0 unrelated concern may indicate that the nurse educator with higher education and more teaching experience, regardless of the number of students in the program, have more concerns about other teaching innovations than using simulation as clinical experience. The demographic variable that predicts stage 1 informational concern is the number of years of teaching experience and the number of years the educator has used simulation. These findings indicate that less experienced nurse educators focus on knowing the necessary information about using simulation as clinical experience. Three demographic variables, age, number of years of using simulation, and amount simulation used to fulfill clinical time, predict stage 2 personal concern. Thus, these demographic factors may influence the nurse educator's concern about the person's lack of reward status when using simulation as clinical experience.

Similarly, age, number of years of using simulation, and BSN teaching experience predict stage 3 management concern. This stage expresses concern about the time and logistics of using simulation as clinical experience while at the same time managing other duties inherent of experienced nurse educators. Years of BSN teaching experience is also a predictor of stage 6 refocusing concern. Stage 6 refocusing may indicate that educators with more teaching experience desire to realize more universal benefits associated with using simulation as clinical experience or ways to use simulation more efficiently and effectively as a modality for teaching clinical experience.

This discussion points to the importance of the nurse educator demographics in understanding the nurse educators' concerns about using simulation as clinical experience. Given the IOM's mandate to increase the number of BSN prepared RNs in the workforce, it appears that simulation may be a viable means to provide clinical experiences necessary to enable more students to become members of the workforce. The findings may indicate that although nurse educators accept simulation as a highly valued technology in nursing education, there is a need for sufficient preparation of faculty, ongoing support, resources, and an honest look at the workload.

Implications for Practice

The use of simulation in nursing education is a relatively new technology in healthcare education. Simulation technology provides an opportunity for new research-based understandings of adopting advanced technological innovation (Jeffries, 2005; Jeffries et al., 2015). Switching the clinical teaching pedagogy from live patient experiences to simulated clinical experiences creates change, which leads to concern about adoption and diffusion of innovation.

Central to the Concerns-Based Adoption Model (CBAM) is Everett Rogers' (2003) theory of diffusion that explains how, why, and at what rate new ideas and technology spread and explain innovation's consequences. Rogers defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). This definition depicts vital elements of the diffusion process: innovation, communication channels, time, and social system. He describes the diffusion of innovation as a dynamic information behavior process through which individuals or groups move when adopting something new. He stresses that "the diffusion of an innovation is an uncertainty reduction process" (Rogers, 2003, p. 232). Understanding this dynamic process is essential because it predicts innovation diffusion in a social system such as nursing education.

The finding in this study using the CBAM model, which was designed for use by facilitators of educational change to identify and address individuals' personal needs in the change process, address simulation as an innovation. The researcher's purpose for this study was not to promote the adoption of technology innovation as a good thing or to promote simulation as a recommended approach in BSN nursing students' clinical experiences. Instead, it was to investigate nurse educators' concerns using simulation to know whether using simulation is a practical approach given the demands and challenges facing nursing education.

It appears that nurse educator respondents in this study may perceive simulation to have a relative advantage over approaches to clinical experience that superseded it. Simulation in clinical experience may be compatible with existing nurse educator values, past experiences, and some adopters' immediate needs. In this study, respondents, while in many different geographic locations, may share a culture of acceptance of new computer technologies. They also may be operating in local education environments with necessary communication channels to guide, support, and share mutual understandings of hardware and software used as an alternative to humans as patients. If so, for nursing educators using simulation in clinical experience, simulation complexity is likely not too difficult for them to understand. The hardware and software may provide instrumental action that reduces uncertainty in the cause-effect relationships among humans who, without computer technology, are charged to achieve desired student learning outcomes during clinical experiences. According to Rogers (2003), this uncertainty reduction level is necessary for adopting new technology and is likely to occur once information-seeking activities have reduced adopters' uncertainty about the innovation's expected consequences.

Missing from Rogers' diffusion of innovation concept of time is the rare, yet predictable, instance of time leading to and through "declaration of a pandemic" (Doshi, 2011, p. 532), which is likely to impact the time element of diffusion of innovation. This declaration of a pandemic instance of time became hyper-visible during the months (2020) this study was conducted. The global need to avoid exposure to the novel coronavirus led higher-education institutions to move from face-to-face learning environments to remote learning environments mid-semester spring 2020. Thus, nursing education focused on maintaining and meeting the expectations and outcomes required of BSN education amidst the trepidation of sweeping societal, technological, political, and economic changes. The adoption of new technologies became conflicted due to the simultaneous nature of *surging forward* and *screeching to a halt* energy flow that occurred in real-time. This new element of time gives new meaning to Roger's theory. Further, many questions beyond the six stages of concern about an innovation emerged. The questions are yet to be answered about the future of simulation as an innovation in nursing education experiences.

Conclusion

Library and information science researchers have used Rogers' (2003) diffusion of innovations theory to address the adoption of technological innovations in libraries, including the use of Facebook, online databases, e-journal publishing, Apple technology, e-books, digital rights management, and Creative Commons, open-access repositories, search engines, and open-education resource. This present study contributes to LIS research by exploring the adoption of simulation as an advanced computer technology utilized as a teaching innovation in the highly technical field of nursing education. LIS professionals have historically been quick to see new possibilities for using technology to solve practical problems. As accomplished in this study, attending to educator concerns is essential to implementing educational innovations. Based on the patterns of concern of 231 nurse educators in this study, change facilitators in education and other information agencies will be better able to act appropriately on the specific needs of individuals involved in adopting new advanced technologies.

It will be worthwhile in nurse educator programming when initiating simulation in clinical experiences to be cautious about over-enrollment in scheduled clinical experience courses. It will be necessary to position nurse educators with more years of teaching experience and experience in using simulation in leadership roles to instruct and support professional development before, during, and following the implementation process. They should be prepared to develop, focus, and support less experienced educators with essential information about the innovation, what it will do, and what its use will involve.

Nurse educators should also know about the reward for their participation in adopting simulation in clinical experience requirements. Moreover, attending to nurse educator concerns should include opportunities for individuals to coordinate and cooperate with other educators regarding simulation. When deciding whether to adopt simulation as the best course of action or reject the innovation, Rogers (2003) explains that a trial or probationary adoption may help with the decision stage. He suggests that trying an innovation may allow individuals to experience the innovation, in this case, simulation, which may influence the decision-making process. To Rogers' theoretical explanation about the decision stage of adopting innovation, this study adds to his explanation of the importance of expertise and experience of the people who are using the innovation. This study shows that the willingness to use innovation may become easier for individuals with a cognitive capacity based on expertise and experience. Addressing nurse educators' concerns regarding using simulation as clinical experience may reduce their uncertainty about using simulation. In turn, the use of full-scale simulation may increase as technological innovation to bridge the gap between needed student clinical experience and the availability of real-life clinical experiences.

In addition to expanding the number of participants and the types of data collected, future research should be conducted to learn more about educators' concerns about simulation in nursing education clinical experiences revealed in the analysis of demographic variables. What technology skills are necessary for nurse educators to use simulation as a clinical experience? How do faculty rank and teaching experience affect nurse educators' workload assignments associated with using simulation? How is the use of simulation as clinical experience calculated in teaching load? What additional demands does simulation create for teaching load? Is simulation perceived as a relevant teaching modality within the social system comprised of nurse educators? How can colleges and universities budget for the use of simulation as clinical experience? To what extent can nursing programs use simulation as a recruitment strategy and increase student enrollment? These questions address issues raised by educators who have concerns about workload, financial resources, and the gap between the needed and available clinical experiences (Al-Ghareeb & Cooper, 2016; Gore & Thomson, 2016; Hayden et al., 2014; Jeffries, 2005; Jeffries et al., 2015).

Moreover, the SoCQ tool, when used in conjunction with open-ended response questions, will likely reveal more information about nurse educators' concerns about using simulation as clinical experience. Some qualitative questions may also include: 1) How has the Covid-19 pandemic affected nurse educators' thoughts about using simulation as clinical experience?; 2) What concerns do nursing faculty and students have about proximity to each other while in a simulation?; and 3) What do nurse educators need to help them feel comfortable and confident using simulation as clinical experience? Another question that may be of interest to nurse educators is how do stages of concern and diffusion of innovation align with the theory of "novice to expert" (Benner, 2001)? Also, evidence from an expanded study similar to this may lend better evidence toward the best way to achieve the goal of increasing the number of BSN-level nurse graduates from accredited nursing programs prepared to enter and improve the nation's healthcare workforce.

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Appendices

Appendix A: Stages of Concern about an Innovation

Category	Numerical	Descriptive word	Expression of Concern
Impact	6	Refocusing	The focus is on exploring more benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individuals have definite ideas about alternatives to the proposed or existing form of the innovation.
Impact	5	Collaboration	The focus is on coordination and cooperation with others regarding use of the innovation.
Impact	4	Consequences	Attention is focused on the impact of the innovation on “clients” in the immediate sphere of influence.
Task	3	Management	The individual focuses on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, and scheduling dominate.
Self	2	Personal	Uncertain about the innovation's demands, their adequacy to meet those demands, and their roles with the innovation. This stage includes an analysis of their role related to the reward structure of the organization, decision making, and considering potential conflicts with existing structures or personal commitment. Concerns also might involve the financial or status implications of the program for the individual and his or her colleagues.
Self	1	Informational	General awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself concerning the innovation. Any interest is in impersonal, substantive aspects of the innovation, such as its general characteristics, effects, and requirements.
Unrelated	0	Unrelated	There is little concern about or involvement with the innovation. The concern is about other things.

George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The Stages of Concern Questionnaire.* Austin, TX: SEDL. Stages of Concern Questionnaire reprinted with permission from SEDL

Appendix B: Stages of Concern Questionnaire

What state is the baccalaureate nursing program in which you teach located?

- Missouri
- Minnesota
- Kansas
- Iowa
- Nebraska
- North Dakota
- South Dakota

Have you ever used simulation for clinical experience?

- Yes
- No

Are you currently using simulation as clinical experience?

- Yes
- No

If you are not currently using simulation as clinical experience, are you planning to use simulation in the future?

- Yes
- No

Is the baccalaureate nursing program in which you teach affiliated with a private or public university?

- Private
- Public

What is your gender?

- Female
- Male
- Other

What is your ethnicity?

- Hispanic or Latino
- Not Hispanic or Latino
- Other

What is your race?

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander (NHOPI)
- White

- Other

How many years has the BSN program, with which you are associated, engaged in simulation activities? _____

If you have been using simulation as a teaching modality, how many years have you been using it? (Please write either the number of years or write not using)

How many years of BSN teaching experience do you have? ______

What is your current age? _____

What is your highest level of education? _____

What is your academic rank?
- Instructor
- Assistant Professor
- Associate Professor
- Professor

What is the approximate Percent of clinical time during one semester that your clinical course is taught using simulated clinical experience? _____

What is the estimated average amount of time spent conducting (preparing, teaching, debriefing, and cleaning-up) one simulated clinical experience? _____

What is the estimated average number of students you have at one time in one simulated clinical experience during one semester? _____

What is the estimated total number of students currently in the baccalaureate nursing program with which you are associated? _____

This questionnaire aims to determine what people are thinking about when using various programs or practices. The items were developed from school and college teachers' typical responses who ranged from no knowledge at all about various programs to many years' experience using them. Therefore, items on this questionnaire may appear to be of little relevance or irrelevant to you. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have in varying degrees of intensity and should be marked higher on the scale.

For example, the fictional survey items below demonstrate how responses might be filled in by a person who loves to eat pizza but does not like pepperoni. The person has never left the United States before, and the person does not enjoy eating the same meal two days in a row. In this case, the concern being asked about is "EATING PIZZA," and it is highlighted in each question.

	Irrelevant	Not true of me now	Somewhat true of me now			Very true of me now		
	0	1	2	3	4	5	6	7
I enjoy Eating Pizza.	o	o	o	o	o	o	o	x
I enjoy Eating Pizza four or five days per week.	o	o	o	o	x	o	o	o
I enjoy Eating Pizza with pepperoni.	------------o	x	o	o	o	o	o	o
I enjoy Eating Pizza when traveling to foreign countries.	X	o	o	o	o	o	o	o

Please respond to the following items in terms of your present concerns about using simulation as clinical experience. For this study, 'simulation as clinical experience' is defined as the following: Simulation means utilizing a computerized full-body mannequin that can be programmed to provide physiologic responses to a practitioner's actions. Clinical experience means students' opportunity to provide patient care, including assessment, intervention, and evaluation, and demonstration of the essential knowledge, skills, and attitudes to be a professional nurse. Please think of simulation as clinical experience in terms of your own perceptions of what it involves. Phrases such as "this approach" and "the new system" and "the innovation" all refer to simulated clinical experiences. Remember to respond to each item in terms of your present concerns about using simulation as clinical experience.

		Irrel-evant	Not true of me now	Some-what true of me now			Very true of me now		
#	Statement	0	1	2	3	4	5	6	7
1	I am concerned about students' attitudes toward using simulation as clinical experience.								
2	I now know of some other approaches that might work better than using simulation as clinical experience.								
3	I am more concerned about another innovation.								
4	I am concerned about not having enough time to organize myself each day (in relation to using simulation as a clinical experience).								
5	I would like to help other faculty in their use of simulation as clinical experience.								
6	I have very limited knowledge about using simulation as clinical experience.								

7	I would like to know the effect of reorganization on my professional status.								
8	I am concerned about conflict between my interests and my responsibilities.								
9	I am concerned about revising my use of using simulation as clinical experience.								
10	I would like to develop working relationships with both our faculty and outside faculty using simulation as clinical experience.								
11	I am concerned about how using simulation as clinical experience affects my students.								
12	I am not concerned about using simulation as clinical experience at this time.								
13	I would like to know who will make the decisions in the new system.								
14	I would like to discuss the possibility of using simulation as clinical experience.								
15	I would like to know what resources are available if we decide to adopt using simulation as clinical experience.								
16	I am concerned about my inability to manage all that using simulation as clinical experience requires.								
17	I would like to know how my teaching or administration is supposed to change.								
18	I would like to familiarize other departments or persons with the progress of this new approach.								
19	I am concerned about evaluating my impact on students (in relation to using simulation as clinical experience).								
20	I would like to revise using simulation as clinical experience approach.								
21	I am completely occupied with things other than using simulation as clinical experience.								
22	I would like to modify our use of using simulation as a clinical experience based on the experiences of our students.								
23	I spend little time thinking about using simulation as clinical experience.								
24	I would like to excite my students about their part in this approach.								

25	I am concerned about time spent working with nonacademic problems related to using simulation as clinical experience.								
26	I would like to know what the use of using simulation as clinical experience will require in the immediate future.								
27	I would like to coordinate my efforts with others to maximize the effects of using simulation as clinical experience.								
28	I would like to have more information on time and energy commitments required by using simulation as clinical experience.								
29	I would like to know what other faculty are doing in this area.								
30	Currently, other priorities prevent me from focusing my time on using simulation as clinical experience.								
31	I would like to determine how to supplement, enhance, or replace using simulation as clinical experience.								
32	I would like to use feedback from students to change the program.								
33	I would like to know how my role will change when I am using simulation as clinical experience.								
34	Coordination of tasks and people (in relation to using simulation as clinical experience) is taking too much of my time.								
35	I would like to know how using simulation as clinical experience is better than what we have now.								

Thank you for taking the time to complete this survey and adding to the scholarship of Library and Information Science, particularly that of examining baccalaureate nurse educators' concerns about using simulation as clinical experience.

Submit Survey Responses

George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The stages of concern questionnaire*. SEDL, Austin, TX. Stages of Concern Questionnaire reprinted with permission from SEDL.

Appendix C: Permission to Republish the Stages of Concern (SoCQ)

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Appendix D: Invitation to Participate/Informed Consent

Please carefully read and answer the following questions.

Do you teach full-time in a traditional baccalaureate nursing program accredited by CCNE? If no, discontinue.

Do you teach in a clinical course? If no, discontinue.

I appreciate the time you have taken to read this introduction.

Hello, I am a nurse educator like you, and your completion of this survey will be greatly appreciated. My name is Lynnette Schreiner. I am a nurse educator in the Department of Nursing at Emporia State University (ESU) in Emporia, KS, and a Ph.D. student at the ESU School of Library and Information Management.

The purpose of this study is to examine nurse educators' concerns about using simulation as clinical experience. The study uses the survey tool Stages of Concern Questionnaire. The survey is estimated to take about 10 minutes to complete.

If you agree to participate, you are free to withdraw at any time. If you choose not to participate or if you want to stop at any time, you will not be subjected to reprimand or any other form of reproach. There is no compensation for participating in the study. Your participation will be anonymous. There will be no direct link to individual responses of participants or participants' locations. The results of this study will be published electronically. If you have any questions, please contact me: Lynnette Schreiner (lschrein@emporia.edu).

Confirmation of informed consent: I have read the above statement and have been fully advised of the procedures used in this project. I have been given sufficient opportunity to ask any questions. My participation is voluntary. I likewise understand that I can withdraw from the study at any time without being subjected to reproach.

Clicking on ‘survey’ will signify informed consent and provide direct access to the survey. Thank you for your time and consideration. I appreciate your support!

survey

Appendix E: B. Litke – Personal Communication

From: Litke, Brian <blitke@air.org>
Sent: Friday, December 20, 2019 2:26 PM
To: Lynnette Schreiner <lschrein@emporia.edu>
Subject: Re: Question about SoCQ tool

Hi Lynette,

Since you are paying for the service, I'd be happy to help import data at some point after the collection is complete.

I don't have an automated process or online form for that, so I'll have to upload the data file for you. I'd prefer to do that just one time, if that is OK, at the end of your data collection.

Brian

Brian Litke

Senior Web Development Specialist
Technology Solutions
American Institutes for Research
4700 Mueller Blvd.
Austin, TX 78723
512-391-6529
www.air.org

From: Lynnette Schreiner <lschrein@emporia.edu>
Date: Friday, December 20, 2019 at 2:03 PM
To: "Litke, Brian" <blitke@air.org>
Subject: Re: Question about SoCQ tool

External email alert: Be wary of links & attachments.
Brian,
Thank you for your quick response.
Another question, in response to your question:
Would you need to import the data into the online SoCQ on https://clicktime.symantec.com/3NTypdCFpKqBeYExJ9tVLqK7Vc?u=www.sedl.org at some point?

Can we import the data from Survey Monkey into the online SoCQ? If so, that would be great so that I could be the profile graphs, etc.

Lynnette Schreiner
Associate Professor
Emporia State University
Department of Nursing

1127 Chestnut
Emporia, KS 66801
620-341-4450
lschrein@emporia.edu

From: Litke, Brian <blitke@air.org>
Sent: Friday, December 20, 2019 12:24 PM
To: Lynnette Schreiner <lschrein@emporia.edu>
Cc: Rob Gibson <rgibson1@emporia.edu>
Subject: Re: Question about SoCQ tool

Hi Lynette,

From the permissions form, it looks like you're translating to other languages. I assume this is why you want to use SurveyMonkey to collect the data?

Would you need to import the data into the online SoCQ on https://clicktime.symantec.com/3NTypdCFpKqBeYExJ9tVLqK7Vc?u=www.sedl.org at some point?

It seems like your approach would be fine with me, as long as the SurveyMonkey version is limited to use for your project and does not become a competing product sold to other users.

Let me know if I can be of further assistance.

Brian

Brian Litke

Senior Web Development Specialist
Technology Solutions
American Institutes for Research
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Austin, TX 78723
512-391-6529
www.air.org

From: Lynnette Schreiner <lschrein@emporia.edu>
Date: Friday, December 20, 2019 at 12:07 PM
To: "Litke, Brian" <blitke@air.org>
Cc: Rob Gibson <rgibson1@emporia.edu>
Subject: Question about SoCQ tool

External email alert: Be wary of links & attachments.
Brian,
First, as you may have noticed, I am including Rob Gibson, the IT person at Emporia State University, who is helping me set up Survey Monkey in line with my Ph.D.

The question that has been raised is, would I be allowed to extract the SoCQ questions into Survey Monkey, keep track of the number of responses received, and still submit payment to you for them? As you and I discussed, I am happy to begin by paying for 200 responses and then submit payment for all responses above the first 200 responses.

I have received permission to use the SoCQ, and I am attaching it to this communication.

I look forward to hearing back from you. Please respond to all so that Rob Gibson hears from you firsthand.
Thank you for your assistance.
Respectfully,
Lynnette

Lynnette Schreiner
Associate Professor
Emporia State University
Department of Nursing
1127 Chestnut
Emporia, KS 66801
620-341-4450
lschrein@emporia.edu

Appendix F: Stages of Concern Statement/Response Table (231 Participants)

Stage 0: Unrelated			
Question #	Mean	Standard Deviation	Question Text
Q3:	1.67	1.59	I am more concerned about another innovation.
Q12:	3.24	2.42	I am not concerned about simulation as clinical experience at this time.
Q21:	2.22	1.96	I am completely occupied with things other than simulation as clinical experience.
Q23:	2.16	1.73	I spend little time thinking about simulation as clinical experience.
Q30:	2.76	2.21	Currently, other priorities prevent me from focusing my time on simulation as clinical experience.
Stage 1: Informational			
Question #	Mean	Standard Deviation	Question Text
Q6:	1.68	1.24	I have a very limited knowledge about simulation as clinical experience.
Q14:	2.71	2.49	I would like to discuss the possibility of using simulation as clinical experience.
Q15:	3.06	2.68	I would like to know what resources are available if we decide to adopt simulation as clinical experience.
Q26:	3.26	2.31	I would like to know what the use of simulation as clinical experience will require in the immediate future.
Q35:	3.07	2.54	I would like to know how simulation as clinical experience is better than what we have now.
Stage 2: Personal			
Question #	Mean	Standard Deviation	Question Text
Q7:	1.82	1.95	I would like to know the effect of reorganization on my professional status.
Q13:	2.97	2.47	I would like to know who will make the decisions in the new system.
Q17:	2.59	2.35	I would like to know how my teaching or administration is supposed to change.
Q28:	3.23	2.34	I would like to have more information on time and energy commitments required by simulation as clinical experience.
Q33:	2.84	2.39	I would like to know how my role will change when I am using simulation as clinical experience.
Stage 3: Management			
Question #	Mean	Standard Deviation	Question Text
Q4:	2.62	1.90	I am concerned about not having enough time to organize myself each day (in relation to simulation as clinical experience).
Q8:	1.75	1.65	I am concerned about conflict between my interests and my responsibilities.
Q16:	2.24	1.97	I am concerned about my inability to manage all that simulation as clinical experience requires.
Q25:	2.57	2.17	I am concerned about time spent working with nonacademic problems related to simulation as clinical experience.

Q34:	2.31	2.03	Coordination of tasks and people (in relation to simulation as clinical experience) is taking too much of my time.
Stage 4: Consequence			
Question #	Mean	Standard Deviation	Question Text
Q1:	3.32	1.94	I am concerned about students' attitudes toward simulation as clinical experience.
Q11:	3.63	2.20	I am concerned about how simulation as clinical experience affects students.
Q19:	2.99	2.09	I am concerned about evaluating my impact on students (in relation to simulation as clinical experience).
Q24:	4.77	2.11	I would like to excite my students about their part in simulation as clinical experience.
Q32:	4.61	2.01	I would like to use feedback from students to change the program.
Stage 5: Collaboration			
Question #	Mean	Standard Deviation	Question Text
Q5:	3.71	2.24	I would like to help other faculty in their use of simulation as clinical experience.
Q10:	4.21	2.13	I would like to develop working relationships with both our faculty and outside faculty using simulation as clinical experience.
Q18:	3.02	2.32	I would like to familiarize other departments or persons with the progress of this new approach.
Q27:	4.48	2.09	I would like to coordinate my efforts with others to maximize the effects of simulation as clinical experience.
Q29:	4.61	2.18	I would like to know what other faculty are doing in this area.
Stage 6: Refocusing			
Question #	Mean	Standard Deviation	Question Text
Q2:	2.36	1.80	I now know of some other approaches that might work better than simulation as clinical experience.
Q9:	2.24	1.78	I am concerned about revising my use of simulation as clinical experience.
Q20:	2.87	2.13	I would like to revise the simulation as clinical experience approach.
Q22:	3.43	2.10	I would like to modify our use of simulation as clinical experience based on the experiences of our students.
Q31:	3.54	2.26	I would like to determine how to supplement, enhance, or replace simulation as clinical experience.

Permission to Copy Statement

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Lynnette Schreiner
Typed Signature of Author

November 5, 2020
Date

Examining Nurse Educators' Stages of Concern about the Teaching Innovation of Simulation as Clinical Experience
Title of Dissertation