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Effects of Simulated Clinical Experiences on Empathy, Self-confidence, and Satisfaction in Nursing Students

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Walden University
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Abstract

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by

Dawn L. Riess

MSN, Grand Canyon University, 2011

BSN, University of Mary-Hardin Baylor, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Nursing Education

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Abstract

Empathetic communication enhances the nurse-patient relationship and improves patient outcomes and needs to be taught and evaluated during simulated clinical experiences. Experience in healthcare education has shown students' empathy levels decrease over time. The purpose of this quasi-experimental pretest posttest, study was to compare nursing students' empathy levels, self-confidence, and satisfaction with simulation between the use of the high-fidelity manikin simulator (HFMS) and a standardized patient (SP) used during their simulated clinical experience. Kolb's experiential learning theory was used to guide the study through the four phases specific to simulation and learning. Convenience sampling was used to recruit 135 nursing students in the pre-simulation survey; 123 participants completed the post-simulation survey with 64 in the control group (HFMS) and 59 in the experimental group (SP). Data were analyzed using an independent *t*-test to determine if there were any mean differences between the HFMS and SP groups in terms of empathy, satisfaction, and self-confidence. Empathy was measured using the Jefferson Scale of Empathy-Health Professions Student and the NLN's Satisfaction and Self-Confidence Scales. Results revealed there were no significant difference in students' empathy levels, self-confidence, and satisfaction. Positive social change through prioritizing nursing students' empathetic communication in patient care may be enhanced in the simulated clinical environment with various approaches. Recommendations for future research are to determine what interventions best develop nursing students' empathy, satisfaction, and self-confidence in patient care

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Dedication

I would like to dedicate my dissertation to the love shown to me by God sending his son to die for me and my salvation by grace. My unwavering faith has provided me the endurance to see this through to completion. I would also like to dedicate this to my husband and son. Josh, you have been the rock that I lean on and you picked up everything I had to lay down along this journey; I could not have overcome the hurdles without your love. Nicholas, you are the reason I started this journey, not only to help provide for your future, but to demonstrate hard work does have a reward. My blessings are abundant in my boys!

Kudos also to my wonderful mother Chris and mother-in-law Judy. Throughout the entire process, you both were there whenever I needed help and a shoulder to cry on. I thank God for the blessings you both give me. Thank you for your ongoing love and support; I really could not have completed this without you. Thank you to both my dads, Donald and Richard, for encouraging your lovely ladies to assist me without much notice and the constant encouragement.

Credit also goes to my supportive and understanding friends who granted me the space and time to complete my mission. Credit also goes to Karen and Cara, you were my "people". You listened to my rants, built me up when needed, and told me to snap out of it when required; the ones I would always turn to, and your support was unwavering. Accolades to all my friends who allowed me to miss numerous social events and are still with me celebrating the completion of my dream. Thank you all!

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My gratitude and appreciation to my committee is without limits. Dr. Leslie Hussey: you have been an extraordinary chairperson and I cannot thank you enough. Your ongoing support, willingness to hear my concerns, and your guidance have been unparalleled. I found a role model in you, and I hope to provide your level of professionalism and support to my students.

Dr. Janice Long, you told me to "get on with it" during a residency session. Your advice motivated me to write the dreaded chapter two. Thank you for being my committee member and supporting me to the completion of my dissertation. I've had a wonderful experience at Walden because of my dissertation committee's advice, guidance, and knowledge. Thank you!

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

Empathy is a necessary component of the nurse-patient relationship for effective patient care. Entry-level nurses are required to provide patient-centered care for an accurate assessment of their patients' physical, psychological, and spiritual needs. The ability to listen and provide empathetic communication effectively leads to appropriate patient care and increased patient satisfaction (Bauchat, Seropian, & Jeffries, 2016; Doherty & Thompson, 2014). Limited and inaccurate communication between patients and their healthcare providers increases patients' risk of an adverse event occurring with their healthcare (Frankel, Haraden, Federico, & Lenoci-Edwards, 2017). Empathetic communication needs to be taught and practiced by nurses for appropriate patient care. Empathy is a core component of nursing care for accurate communication between patients and the healthcare team which facilitates positive patient outcomes (Doherty & Thompson, 2014; Mennenga, Bassett, & Pasquariello, 2016). Empathetic communication is a combination of the art and science of nursing care that entry-level nurses are required to provide.

Nursing education may replace the traditional clinical setting with simulation experiences to provide consistent content and allow nursing students to participate in experiential learning opportunities in a safe environment (Brown, 2015; Lee & Oh, 2015). The goal of these simulated clinical situations is to promote the appropriate tools for critical thinking; in addition, they need to support application of necessary skills. Nursing education needs to facilitate the practice of empathetic care, which serves to

establish strong communications between the nurse and patient (Bauchat et al., 2016). Positive social change is made possible with each empathetic and patient-centered interaction provided by nurses at the bedside to improve patient outcomes. Teaching, reinforcing, and practicing empathy in nursing students leads to positive social change through patient-specific care. This chapter will discuss the background, problem statement, and purpose for research on empathy and experiential simulation education in nursing instruction. In addition, the discussion will include the research questions driving this research initiative, the theoretical framework, the nature of the study, relevant definitions, and assumptions. The scope and delimitations, limitations, and significance of this research study are also included.

Background

Empathy is the ability to understand the world from another person's perspective and capacity to communicate this understanding to that person (Price & Archbold, 1997; Ward, Cody, Schaal, & Hojat, 2012). Research has shown improvement in students' empathy levels and the educators' ability to teach cognitive empathy (Teding van Berkhout, & Malouff, 2016) which supports ongoing efforts to reinforce and teach empathy to nursing students. Based on research that evaluated nursing students' empathy levels at the beginning and end of their school tenure a decline in empathy was noted (Ward, 2016; Ward et al., 2012). Nurse educators must be aware of this decline and strive to integrate learning opportunities that allow students to practice the application of empathy with patient care; the simulated clinical environment is an ideal setting for this practice.

The American Association of College of Nursing (AACN, 2017) reported a lack of clinical space has been an ongoing issue for many schools of nursing. Research into alternate clinical placement areas was initiated by the National Council of State Boards of Nursing (NCSBN) to evaluate clinical placement in the simulation setting. The NCSBN have approved nursing programs to use up to 50% of all clinical hours in the simulated clinical setting based on the longitudinal, multi-site research study conducted by Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries (2014). The increase of clinical time counted in the simulated environment requires nurse educators to choose the appropriate type of fidelity for these clinical simulation experiences. Fidelity is the degree in which the situation, manikin, or environment mimics real life, specifically the fidelity of the simulated patient during simulation experiences (Lopreiato, et al., 2016). There are different types of fidelity available for nurse educators to choose from to portray the patient in the simulated clinical setting. High-fidelity manikin simulators (HFMS) are manikins with physiological responses and the ability to communicate with nursing students during simulation experiences. A standardized patient (SP) actor is a trained actor with whom the students assess and interact with during the simulation experiences (International Association of Clinical Simulation in Learning [INACSL], 2016). HFMS and SPs used during simulation experiences with healthcare students have been effective in teaching critical thinking, enhance self-confidence, improve clinical competence, and increase satisfaction in learning (Abdool, Nirula, Bonato, Rajji, & Silver, 2017; Cant & Cooper, 2017; Davison, Mackay, & McGivern, 2017; Hall, 2017; Shin, Park, & Kim, 2013;), but there is limited evidence to determine if HFMS or SPs used during simulation

experiences are more effective in supporting empathy in students during simulation experiences. Additional research needs to be conducted to evaluate whether HFMS or SPs are better suited for the application and practice of empathy with patient care in the simulated setting.

Problem Statement

HFMS increases nursing students' critical thinking abilities, confidence in providing patient care, and psychomotor learning, and reduces anxiety with patient care (Brown, 2015; Foronda, Liu, & Bauman, 2013; Lee & Oh, 2015), whereas SPs increases students' cognitive learning, interpersonal communication skills, affective learning, psychomotor learning, empathy levels, and self-efficacy levels in patient care (Kerr, Stahnke, & Behnen, 2015; Lin, Chen, Chao, & Chen, 2013; Martin & Chanda, 2016; Slater, Bryant, & Ng, 2016). Nursing students have reported difficulty applying empathetic care to HFMS in the simulated clinical environment as it lacks the nonverbal cues a live person provides (Dean, Williams, & Balnaves, 2015). The use of simulation in nursing education is supported (Aydin Er et al., 2017; Chaffin & Adams, 2013; Dearing & Steadman, 2008; Fossen & Stoeckel, 2016; Mawson, 2014; Orr, Kellehear, Armari, Pearson, & Holmes, 2013; Wieland, Levine, & Smith, 2014), but whether the use of an SP or HFMS enhances or detracts from nursing students' empathy in patient care is unclear.

Empathy is a core component of nursing care; simulation education has improved empathy levels in nursing students, as well as students in other healthcare fields (Mawson, 2014; Sideras, McKenzie, Noone, Dieckmann, & Allen, 2015; Weekes &

Phillips, 2015; Williams et al., 2015). However, over time, empathy levels decline during nursing and healthcare student training (Hardy, 2017; Markin et al., 2015; Ward, 2016). Concerning the effectiveness of simulation in nursing education, it needs to be evaluated whether the type of patient-fidelity used in simulation impacts the decline of empathy in nursing students. Nursing students' reliance on technology has increased in the clinical healthcare setting and in the clinical simulation setting which may influence nursing care to be more task orientated, rather than the needed holistic empathetic approach required for appropriate patient care (Dean, Williams, & Balnaves, 2017). The simulated clinical environment may be disconcerting for nursing students while interacting with a manikin that mimics reality but is still a plastic man. Students' ability to relate to the HFMS has been found to be difficult (Dean et al., 2015; Ireland, 2017). There is a gap in the research concerning whether the type of fidelity used during simulation experiences has an impact on nursing students' empathy levels, self-confidence, and satisfaction with the kind of patient-fidelity used.

Purpose of the Study

Empathetic communication enhances the nurse-patient relationship and improves patient outcomes, but healthcare students' empathy levels have been shown to decrease over time (Ahrweiler, Neumann, Goldblatt, Hahn, & Scheffer, 2014; Williams et al., 2015). Nurse educators need to determine whether the teaching methods used in the simulated clinical environment enhance or detract from students applying empathetic patient care. The purpose of this quantitative study was to determine if the type of fidelity chosen for simulated experiences had an impact on nursing students' empathy

level and their satisfaction and self-confidence during simulation experiences. The intent of this study was to compare nursing students' empathy levels, self-confidence, and satisfaction with HFMS and SPs used during their simulated clinical experience. Empathy was measured with the Jefferson Scale of Empathy-Healthcare Professions Student (JSE-HPS) scale and students' self-confidence and satisfaction was measured by the National League for Nursing's self-confidence and satisfaction (NLN-SCLS) scale.

Research Questions and Hypotheses

RQ1: What effect does experiential training with HFMS vs. simulation with an SP actor have on the development of empathy levels in nursing students during simulated experiences?

$H_0 1$: There will be no difference in the development of empathy levels in nursing students who have experiential training with HFMS versus training with an SP actor during simulated experiences.

$H_a 1$: There will be a difference in the development of empathy levels in nursing students who have experiential training with HFMS versus training with an SP actor during simulated experiences.

RQ2: What effect does experiential training with HFMS vs. simulation with an SP actor have on nursing students' satisfaction and self-confidence in learning?

$H_0 2$: There will be no difference in satisfaction and self-confidence in learning actor for nursing students who have experiential training with HFMS versus training with an SP during simulated experiences.

H_a2: There will be a difference in satisfaction and self-confidence in learning for nursing students who have experiential training with HFMS versus training with an SP actor during simulated experiences.

Theoretical Base

The theoretical framework used as the foundation of this study was David Kolb's experiential learning theory (ELT) which builds upon the work of John Dewey, Kurt Lewin, and Jean Piaget. Kolb proposed a four-phased experiential learning cycle in which is a continuous process for the learner (Kolb, 1984). The cycle begins with the trepidation of experiencing a new event; per Kolb (1984), this is the concrete experience phase. The reflective observation phase allows the adult learner to contemplate the experience and evaluate how they perform (Kolb, 1984). During abstract conceptualization, the students' comprehension of the concepts is integrated into their knowledge base, which leads into the final phase of active experimentation (Kolb, 1984). Active experimentation allows the adult learner to convey this new knowledge to new situations (Kolb, 1984; Lisko, & O'Dell, 2010).

Kolb's ELT supports students' learning through the experiences they encounter in the simulated setting that enhances the students' knowledge and confidence in patient care which improves critical reasoning that improves the future nursing care they provide. Brannan, White, and Long (2016) and Lisko and O'Dell (2010) used Kolb's ELT while conducting research in simulation training which assisted learners to incorporate appropriate clinical decision making in patient care. ELT guided this research study to determine whether simulation with different patient-fidelities impacted

nursing students' empathy levels. Simulation is an immersive instructional technique supported by the principles of ELT and was the framework of this research study. The constructs of ELT will be discussed in more detail in Chapter 2.

Nature of the Study

The study used a quasiexperimental quantitative approach. This study evaluated if HFMS and SP actors influence empathy in nursing students, as well as their self-confidence and satisfaction with each method. A quasiexperimental nonequivalent pretest posttest control group design was used. A convenience sample of baccalaureate nursing students were randomly assigned to a control or experimental group. All students had a pretest and posttest, but only the experimental group had an SP for their simulation experience. The control group had the HFMS alone. The independent variables are the types of training (HFMS vs. SP actors). The dependent variables are nursing students' empathy levels, self-confidence, and satisfaction based on the simulation experience.

Operational Definitions

The following terms are used extensively in this research study. The definition of how the terms are defined are listed below.

Empathy: The ability to understand the world from another person's experiences, concerns, and perspectives with the capacity to communicate this understanding to that person (Jeon & Cho, 2015; Price & Archbold, 1997; Ward, Cody, Schaal, & Hojat, 2012).

Experiential training: A continuous and immersive educational learning experience with four phases (abstract conceptualization, active experimentation, concrete

experience, and reflective observation), for nursing students' awareness of the phases with the nursing students' application of knowledge during the different phases, and then the nursing student transforming this experience into knowledge to draw from for future experiences in practice (Chmil et al., 2015; Lisko & O'Dell, 2010).

Fidelity: The degree to which the situation, manikin, or environment mimics real life (Lopreiato, et. al., 2016).

High-fidelity manikin simulator (HFMS): A life-size manikin that mimics the physiological functioning of a human body (Lopreiato et. al., 2016).

Nursing student: An individual enrolled in a registered nurse program with curricular requirements compliant with the regulatory standards of professional nursing practice (Lubbers & Rossman, 2017; Omer, 2016).

Patient-fidelity: The degree to which the manikin mimics real life to include HFMS and SP (Lopreiato, et. al., 2016).

Satisfaction: Nursing students' perception of the overall suitability of simulation experiences (Franklin et al., 2014).

Self-confidence: Nursing students' confidence in their ability to meet the objectives of the simulation expectations (Franklin et al., 2014).

Self-confidence in learning: Students' self-confidence regarding specific content, content necessary to complete the simulation, skills development, available resources, and knowledge to address issues that arise in the simulated environment (Franklin et al., 2014).

Standardized patient (SP) actor: An individual trained to portray a patient or family member to act as a real patient with a preset symptom or problem for nursing education (IACSL, 2016; Lopreiato et. al., 2016).

Simulated clinical setting: Simulation experience in which nursing students are in a situation or setting that mimics what they would be exposed to if they were in the real world (IACSL, 2016).

Assumptions

There were two assumptions in this research study. One assumption was that all participants answered the questions on the JSE-HPS and the NLN-SCLS with honesty. The second assumption of this study was that nursing students desired to feel self-confident and satisfied with simulation training experienced during their nursing curriculum.

Scope and Delimitations

The purpose of this study was to test the hypothesized relationship regarding HFMS or SPs during simulation experiences and nursing students' empathy levels, self-confidence, and satisfaction after the simulation. The population under study was a cohort of nursing students in their first clinical semester and a cohort in their final nursing semester. Entry level nursing students have higher levels of empathy than other students enrolled in healthcare professions (Mennenga et al., 2016), but empathy levels decrease while they progress through nursing school (Ireland, 2017; Ward, 2016; Ward et al., 2012). The two groups were tested on different days and times throughout the semester. The students were randomly assigned to the control group involving simulation with an

HFMS, or the experimental group involving simulation with an SP. The objectives remained consistent between the groups, as well as the preparation and operation of the simulation experiences. The simulation experience for this study has been a standard part of the university's curriculum, and all students are required to participate in the simulation

Limitations

The method of convenience sampling increases the risk of bias because random sampling is not possible. The ability to generalize from a convenience sample is limited as the sample may not be a true representation of all nursing students in different settings and different circumstances (Creswell, 2009). Variables such as the university's procedures for simulation experiences, location, how the content for the topic of the simulation was provided, and students' preparation for the simulation experience cannot be controlled for and may influence the outcomes during the simulation experience. However, random assignment to either the control or experimental group minimized the chance for bias with the students in the entire group are at differing levels and comfort with simulation in the nursing program. The use of the entire cohort helped to minimize the risk of statistical regression, as the students varied in knowledge, skill, and confidence level with nursing care for both cohorts of students. The university's faculty running the simulation were all educated uniformly regarding best practices for simulation and overseen by the university's simulation director. A pre-determined algorithm was used by each faculty instructor for consistency between the simulation groups.

To decrease possible bias, the participants had never met me before the research period and I have no affiliation with the university beyond being an alumnus and the primary researcher for the research study. The students were provided information regarding the research project and voluntary participation in the study was reinforced without retribution if they did not wish to participate in the study. Beyond the introductory school information, professional background information of the primary researcher was not provided. Non-coercive measures for participation helped to decrease bias in student reporting and increase the study's construct validity. The use of the JSE-HPS and NLN-SCLS supports the constructs required to measure empathy and satisfaction and self-confidence with simulation by the frequent testing performed in the research literature as described in chapter 2.

Significance of the Study

The objective of this research study was to establish evidence for simulation practices that enhance nursing students using empathy for patient-centered care. The increase in simulated clinical hours requires research nurse educators to provide simulations for nursing students to implement empathy in their nursing care. Empathy can be taught to nursing students (Bry et al., 2016; Pehrson et al., 2016; Richardson, Percy, & Hughes, 2015), but there is limited research that has explored if the type of fidelity, HFMS or SPs, enables nursing students to apply empathy most effectively.

Nursing pedagogy impacts nursing students' views on patient care. An environment that focuses heavily on technology with a simulator that mimics reality may interfere with students' capacity to prioritize forming human connections required for the

nurse-patient relationship (Ireland, 2017). Nurse educators need to be aware of nursing students' need to prioritize empathy as part of simulated patient care experiences, and the design of simulation experiences may help or hinder nursing students' ability to practice empathy with patient care.

The disconnect in patient-centered care and poor communication between patients and the healthcare team leads to poor patient care and sentinel events (Agency for Healthcare Research and Quality [AHRQ], 2016; The Joint Commission [TJC], 2016). It behooves nurse educators to reinforce empathetic care with the simulated patient in the simulated clinical setting, stressing the importance of patient-centered care which help improve patient outcomes which leads to positive social change. New pedagogical approaches with the advent of simulation, the use of sound theoretical foundations, and explicit objectives for empathetic nursing care need to be part of simulated clinical experiences. It is imperative to develop nurses' empathy for appropriate care and treatment of patients in the United States healthcare system.

Summary and Transition

The NCSBN's approval of 50% of all clinical time for nursing students in the simulated clinical setting versus the traditional clinical setting requires nurse educators to evaluate simulation pedagogy. Chapter 1 provided supporting information for nurse educators to prioritize empathy in the simulated clinical site for empathetic patient care to help improve patient outcomes. Additional research on the type of fidelity used during simulation experiences that enhances nursing students' application of empathy is needed.

Chapter 2 provides a solid foundation of the literature available on empathy and simulation in nursing and healthcare education, both current and relevant historical literature are included. A review of research on the use of the HFMS and SP actors with simulation will be explicated in more detail. A comprehensive literature search on the use of Kolb's ELT will also be included, along with the use of the JSE-HPS and the NLN-SCLS tools. The key search terms and a description of the literature review will be elucidated fully in Chapter 2.

Chapter 2: Literature Review

Introduction

The use of HFMS increases nursing students' critical thinking abilities, confidence in providing patient care, and psychomotor learning, and reduces anxiety with patient care (Brown, 2015; Foronda et al., 2013; Lee & Oh, 2015), while the use of (SP) actors increases students' cognitive learning, interpersonal communication skills, affective learning, psychomotor learning, empathy levels, and self-efficacy levels in patient care (Kerr et al., 2015; Lin et al., 2013; Martin & Chanda, 2016a; Slater et al., 2016). Nursing students have reported difficulty applying empathetic care to HFMS in the simulated clinical environment as they lack the nonverbal cues a live person provides (Dean et al., 2015; Ireland, 2017).

The purpose of this quasiexperimental quantitative study was to determine whether the type of patient-fidelity chosen for simulated experiences has an impact on nursing students' empathy levels and their satisfaction and self-confidence during simulation experiences. This study intended to compare nursing students' empathy levels, self-confidence, and satisfaction regarding the use of the HFMS and SPs during their simulated clinical experiences. There is a gap in the literature regarding the type of patient-fidelity used during simulated clinical experiences that support empathetic communication skills for nursing students. With this research, I intended to address this gap to support best practices with empathy and nursing care in the simulated clinical environment.

In this chapter, I provide details on the literature search strategies for peer-reviewed articles used for the study, discuss Kolb's ELT and examine its application to simulation and empathy. Empathy is defined and its application in simulation training for nursing students is assessed. An analysis of HFMS and SP training with nursing students is discussed in detail, along with nursing students' satisfaction and self-confidence in the simulated clinical environment.

Literature Search Strategy

The literature search strategies used for this research study were varied and extensive while focusing on peer-reviewed research. Keywords were used within the Walden University library database, Google Scholar, and Thoreau. The databases searched for this research study included: ProQuest Central, CINAHL, MEDLINE, OVID, EBSCOHost, ProQuest Nursing, and Allied Health Database. The keywords used in the search included: *Simulation*, *nursing simulation*, *empathy*, *high-fidelity manikin*, *standardized patient actor*, *Kolb's experiential learning theory*, *experiential learning theory*, *nursing education*, *nursing*, *satisfaction*, and *self-confidence*. The search focused on peer-reviewed articles within the past 5 years but did include seminal articles and books relevant to the study. A review of dissertations in the Walden University library via ProQuest was also performed.

Theoretical Foundation

The ability of students to take theoretical knowledge, apply it during a simulation experience, reflect on what happened, integrate new knowledge into their knowledge base, and then apply the knowledge in future endeavors is the basis for simulation

education (Jeffries, 2016). The theoretical foundation for this research study is Kolb's ELT which supports the active learning, or learning through hands-on experiences, that simulation provides to nursing students.

Origin of Kolb's ELT

Kolb's ELT cycle draws from the works of John Dewey, Kurt Lewin, and Jean Piaget. John Dewey's conceptualization of learning through action and reflection is at the heart of Kolb's ELT theory. Dewey supported the apprenticeship style of learning which involved watching, learning, modeling, and applying information learned which supports the use of simulation experiences in nursing education. Dewey also supported reflectively thinking about what one learned which he valued over formal education that may not be applicable to real world needs (Kolb, 1984; Shin, 2013). Dewey suggested that learning is based on experience, such as simulation, and reflection on the experience is where the learning takes place. The act of learning is not static, but rather involves the ongoing reflection of what is learned. John Dewey's influence is present in current educational systems at all levels of the educational continuum today and is relevant to nursing education through simulation. Dewey said learning is a dialectical process integrating experience and concepts, observations and actions that apply to the principles of simulation education (Kolb, 1984; Žorga, 2002).

Lewin's social psychology theory explores how social interactions influence a person's growth. The influences of upbringing and interaction have a direct impact on an individual's perceptions about life and how he or she grows, learns, responds, and interacts with others (Lewin, 1997). Lewin studied how people learn in groups and how

their subjective interpretation of an experience through experiential learning influences humanistic values and assist with group decision-making (Kolb, 1984; Kristiansen & Bloch-Poulsen, 2017). Lewin builds on Dewey's principles of learning through action and reflection. Lewin proposed a four-stage model of learning, first engaging in a concrete experience that then leads to observations and reflection which helps form abstract concepts and generalizations that culminate in testing the concept in new situations (Kolb, 1984; Shin, 2013; Žorga, 2002). Lewin took this idea further by describing how individuals learn through group work based on actions and evaluation of the outcomes of these actions. Learning from experience is effective when the participants have support from the organization, are provided with valid information, and an internal commitment is present (Kristiansen & Bloch-Poulsen, 2017). Problem solving by using simulated experiences provides individuals and groups with a frame of reference to draw from in future situations. These simulated experiences spark individual knowledge and personal initiative to learn more (Kolb, 1984). Dewey's and Lewin's principles are part of Kolb's ELT cycle, but Piaget's work is also an important component.

Piaget's work focuses on the cognitive development processes regarding how intelligence is shaped by experience. Piaget's goal was to determine how knowledge is created (Valsiner, 2005). Piaget's was interested in how children arrived at answers, and not if the answer was wrong or right. He determined children have age-related reasoning processes and their intelligence was shaped by their experiences (Kolb, 1984; Valsiner, 2005). Piaget described the cognitive process as a dialectical process of assimilation of

experiences (Žorga, 2002). Piaget's theory emphasizes that there are different factors which contribute to learning, such as age, environment, and integration of all experiences. The interaction between oneself and the environment and the cognitive processes of assimilating this information into knowledge is individualistic. Piaget's phases of childhood development range from concrete to abstract thinking, based on accommodation and assimilation of new experiences through reflection on the experiences (Valsiner, 2005; Žorga, 2002). These principles are part of Kolb's ELT cycle and support simulation learning as described below.

Major Theoretical Propositions

Kolb draws from the principles of Dewey, Lewin, and Piaget for the ELT cycle. Learning takes place with an experience a person has; they then filter the experience through what they already know. The new knowledge is then assimilated or accommodated through reflection; this then increases their knowledge for future application. All learning requires the learner to process new information through their current beliefs and ideas and then integrate these with new ideas that are more advanced (Poore, Cullen, & Schaar, 2014). The learner moves from a concrete experience, to abstract conceptualization, to application of new knowledge, then onto new situations. Learning is a holistic, life-long, continuous process, and is present in all aspects of an individual's life. All new experiences a person faces are filtered through what is already known and adapted by new information gathered (Kolb, 1984). ELT looks at the continuum between apprehension and comprehension as the core of knowledge creation and how an individual interprets knowledge along this continuum. A limited frame-of-

reference to a problem creates apprehension for a person, and it is by attempting to respond to the problem based on previous experiences that a person may comprehend a solution to the problem (Atkinson & Murrell, 1988; Kolb, 1984).

Kolb's four-stage learning cycle consists of a fluid cycle within which an individual may move. There are four components of the ELT cycle: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). The stages of the ELT are on a continuum of cognitive growth and learning with the concrete-abstract and the reflective-active learning areas (Atkinson et al., 1988). The concrete experience (CE) is defined as when a learner actively experiences an activity, such as a simulation experience. Reflective observation (RO) occurs when the learner actively reflects on what happened during the CE. Abstract conceptualization (AC) means adding to existing knowledge by making conclusions and learning from the experience; this may require referencing back to textbooks and previous knowledge, then modifying the knowledge. Active experimentation (AE) means applying the knowledge to new situations. Application of knowledge learned during simulation to bed-side patient care, see figure 1. ELT is a dialectic process in which the learner flows between the different modes of reflection, action, feeling and thinking.

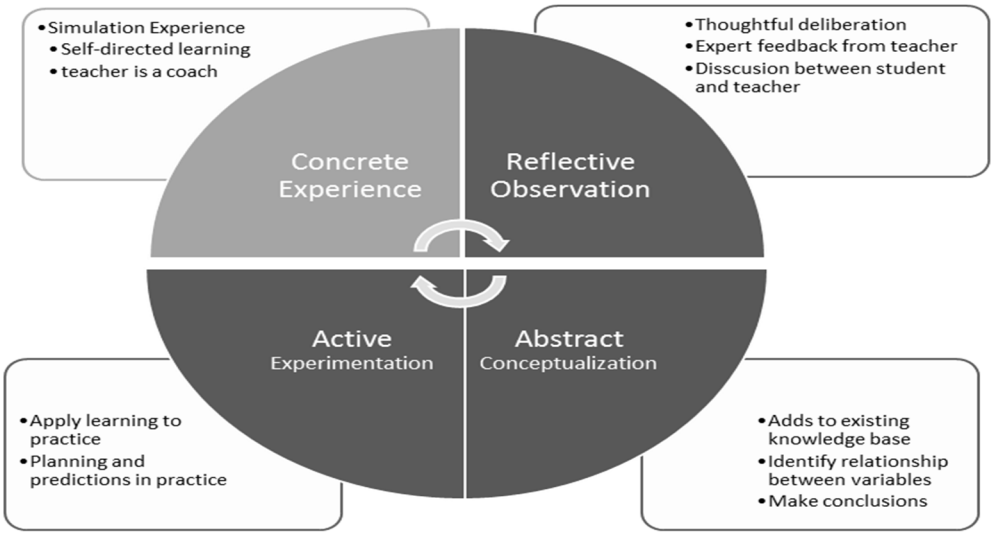

Figure 1. Conceptual Model of Kolb's experiential learning cycle into simulation and empathy component for Walden University School of Nursing Education Program (Kolb, 1984).

Kolb's theory does go further to discuss the uniqueness of a person's learning style and the impact on how a person learns. The need to be aware of learning styles is prevalent in the research and of value to education (Shin, 2013; Shinnick & Woo, 2015). The types of learning styles Kolb delineate are of importance but were not be examined for this research study. The focus will remain on Kolb's ELT cycle that is specific to simulation education.

Application of ELT to Simulation Research

Kolb's experiential learning theory has been used in an array of studies across different disciplines with varying gender, ages, and topics. Discussion of all areas in which ELT has been used is beyond the constructs of this research study. Therefore, the studies included in this review are restricted to studies that used ELT for simulation

learning, with similar methodology, and common variables consistent with the present research study.

Simulation research guided by Kolb's ELT has been used with midwifery education to actively apply content and skills (Lendahls & Oscarsson, 2017; Yuill, 2017), with pharmacy students in the application of skills and knowledge (Branch, 2013; Vyas, Bray, & Wilson, 2013; Vyas, Wombwell, Russell, & Caligiuri, 2010), with dietetic students to improve communication and behavior change skills (Schwartz, Rothpletz-Puglia, Denmark, & Byham-Gray, 2015), and as a catalyst to initiate change for a baccalaureate school of nursing to integrate Kolb's ELT principles throughout the curriculum (Lisko & O'Dell, 2010).

Physical therapy students have used simulation research to improve skill development and competency through the stages of the ELT cycle (Sabus & Macauley, 2016). Dental hygiene students have used simulation guided by ELT to increase dental charting skill competency (Lemaster, Flores, & Blacketer, 2016), while nurse anesthesia students have used simulation to achieve higher order thinking (Turcato, Roberson & Covert, 2008). ELT has guided research using virtual simulation in nursing education for integration into social justice and with students studying health policy and teaching concepts (Breen & Jones, 2015). ELT has also been used in virtual computer laboratories to facilitate student learning regarding information security education (Konak, Clark, & Nasereddin, 2014). The interactive, student-led activities supported by Kolb's ELT theory are varied and applicable to a wide range of disciplines. The specifics of ELT

applied to nursing education, simulation, and empathy, and the types of fidelity used in simulation regarding empathy will be discussed further.

Nursing Simulation Education and ELT

ELT allows students to work on all phases of the ELT cycle toward the transformation of an experience into knowledge (Lisko & O'Dell, 2010). Learning is a process of creating knowledge through the interactions between a person and the environment (Poore et al., 2014). The ELT cycle guides research in many ways. The concrete experience of the simulation is an integral part of the ELT cycle but not the only phase. Students need to work in all four phases of the ELT cycle, but the time spent in each phase is dependent upon the student and their learning styles (Lisko & O'Dell, 2010). The different research studies focused on the concrete phase is strong, but all phases are important and will be discussed individually with support from research.

Concrete Experience. The concrete phase of the ELT cycle is important because simulation affords the application of skills that may be reflected on conceptualized and used in future simulations or practice (Stocker, Burmester, & Allen, 2014). The employment of simulation for communication between the disciplines through interprofessional education (IPE) is frequently cited in the literature (Kayes, Kayes, & Kolb, 2005; Poore et al., 2014), as well as collaboration (Krueger, Ernstmeyer, & Kirking, 2017; Rossler & Kimble, 2016), and improved patient safety and decreasing diagnosis errors with IPE (Brown & Bostic, 2016). Poore et al. (2014) emphasized the need to address all phases of the ELT cycle with IPE and the congruency between the cycles and practical application of the theory. Learning through a pediatric mass-casualty

simulation experience and collaborating with healthcare students and community disaster educators was found to be effective. Austin et al. (2014) collaborated with 250 people from two university campuses, one middle school, one high school, and the Maryland Defense Force who used IPE for the care of pediatric patients. The nursing students participating had a pre-test, post-test, paired sample t-test design to evaluate the educational outcomes. The findings showed a significant increase in the nursing students assessment of a child with a closed head injury (t= -6.753, df=25, p = .01). The proposed research project will provide students' the opportunity to apply care of an HFMS or an SP in practice.

Reflective Observation. Reflective observation enables learners to perceive the concrete experience from multiple points-of-view, both as an individual processing what happened and from the perspective of the collective group (Kolb**,** 1984; Lisko & O'Dell, 2010; Poore, Cullen, & Schaar, 2014). Reflective observation occurs both during and after the simulation debriefing phase (Poore et al., 2014). At debriefing the students can lead the conversation and the instructor asks questions to allow students to reflect on what they have done well, think of alternative treatment options, fill in knowledge gaps of the disease process, and learn through discussion with their peers (Cook et al., 2013; Hayden, Smiley, Alexander, Kardong-Edgren & Jeffries, 2014; Jeffries, 2016; Jeffries & Rizzolo, 2006). Reflection should be ongoing after the simulation and allow the student to reflect upon the experience when encountering a different but similar experience in practice. Debriefing is identified as a key component of simulation and underscored by ELT cycle. Research has shown that self-reflection and insight has a positive and

significant (ß = 0.16, $p < 0.05$) effect on nursing students' anxiety levels over time (Pai, 2016). Nursing students who were given the opportunity to learn the regulatory scope of practice through a mock board meeting showed they learned most cohesively after the mock trial during contemplation. The decision to not make a final ruling was determined (Jordan & Collins-Yoder, 2014). It was the reflection and support of their decision, along with ongoing discussion that solidified the learning. Different activities such as wearing an ostomy for 24 hours (Maruca, Díaz, Kuhnly, & Jeffries, 2015), a poverty simulation (Yang, Woomer, Agbemenu, & Williams, 2014), dignity (Kyle et al., 2017), and experiential learning activities (Bas-Sarmiento, Fernández-Gutiérrez, Baena-Baños, & Romero-Sánchez, 2017) have demonstrated an increase in nursing students' empathy levels statistically, but more importantly also from students' reflection.

A national study was conducted of nursing education programs in the United States to determine whether best practices with debriefing were being used by instructors trained in theory-based debriefing and evaluation methods by the instructor facilitating the debriefing process. The results showed 47.5% of instructors conducting simulation debriefing had training in theory-based debrief, with only 19% being evaluated during debriefing sessions. Those trained in debriefing were 1.8 times more likely to use a theory-based debriefing method and programs that assessed their debriefers were 4.2 times more likely to use theory-based debriefing methods. The urgency for theory-based debriefing methods is an integral part of simulation theory and is a component of this study. ELT is the guiding framework for this study and will be tested throughout the study.

Abstract Conceptualization. Abstract conceptualization allows the learner to understand the relevance of the simulated experience by understanding the problem, followed by evaluation of whether changes need to be made for the provision of current and future care (Lisko & O'Dell, 2010; Poore et al., 2014). Simulation experiences are incorporated into nursing education so that students can think critically, not just focus on tasks but rather higher order thinking. Critical thinking (Chiang & Chan, 2014; Lavoie, Pepin, & Cossette, 2015; H. Shin, Sok, Hyun, & Kim, 2015; Weatherspoon, Phillips, & Wyatt, 2015), nursing competence (Merriman, Stayt, & Ricketts, 2014; Pai, 2016), and knowledge acquisition, or knowledge retention (Bultas, Hassler, Ercole, & Rea, 2014; Dearmon et al., 2012; Howard, Englert, Kameg, & Perozzi, 2011; Kameg, Englert, Howard, & Perozzi, 2013), have been applied to multiple simulation research studies. The ability to not only perform tasks, but to also have the ability to adapt based on the patient's need, is the core of nurse education and is applied through simulation education.

Active Experimentation. Active experimentation (AE) through simulation experiences allows students to test theories learned from previous experiences in new situations (Kolb, 1984; Lisko & O'Dell, 2010; Poore et al., 2014). The student population under study for this research study features two student groups. The junior level students have not entered the clinical site, and this simulation will provide them with the first three phases of the ELT cycle for them to apply active experimentation into clinical practice. The second group has both been to the clinical site and has had simulations affording them the opportunity to apply the concepts of AE efficiently.

Research supports simulation before entry to the clinical setting to give students the opportunity to practice skills development and to problem-solve (Nwankwo & Hayes, 2016), and to help decrease anxiety before entering the clinical site (Kameg et al., 2013; Kameg, Szpak, Cline, & Mcdermott, 2014). Chmil et al., (2015) ran a simulation to assess nursing students critical thinking prior to entry into the clinical site with a pre-test and post-test, experimental and control group research design with a mean increase in critical thinking (t= -9.57, p = .001) with an effect size of 0.63 and power of 0.95 using Cohen's d. The current study will be replicating a similar research design with different variables. Increase in self-confidence (Bobianski, Aselton, & Cho, 2016; Doolean, Giddings, Johnson, de Nathan, & Badia, 2014; GOH, Selvarajan, Chng, Tan, & Yobas, 2016; Lucas, 2014) is beneficial to all the students in the current research study and is supported by simulation research.

ELT Rationale

The current research study is using a quasi-experimental design to examine the relationship between the dependent variables of empathy level, self-confidence, and satisfaction and the independent variables of SP or HFMS. The current study will allow the nursing students to work through all the phases of the ELT cycle that were explained above. All phases of the ELT cycle need to be utilized by the nursing students with active engagement in a safe environment that enables students to acquire knowledge through the transformation of the simulation experience (Lisko & O'Dell, 2010).

ELT Relates to Empathy and Simulation

Simulation education correlates with the principles of Kolb's experiential learning theory, which shows it is consistently tested with empathy training by the results of a current meta-analysis (Teding van Berkhout & Malouff, 2016). The ELT cycle empowers students to be the guide for their own learning needs while the instructor facilitates their learning and provides an experiential activity for activating the ELT cycle (Vanlaere, Timmermann, Stevens, & Gastmans, 2012). The topic of empathy while caring for either an SP or HFMS will continue to test Kolb's ELT cycle for the application of empathy between the type of fidelity used during simulation experiences and nursing students' satisfaction and self-confidence applying empathy with patient care of a simulated patient. The results from this study will add to the existing science of best practices for simulation education and the type of fidelity that may assist nursing students to provide empathetic patient care.

Literature Review of Key Variables

The key variables under review for this research study will be defined, discussed, and put into perspective based on current research available. The variables of empathy and nursing education, empathy and simulation, and types of simulation fidelity used in simulation education will be discussed in this review. Current literature regarding nursing students' satisfaction and self-confidence with simulation will also be discussed. The chapter will conclude with how the current study will fill gaps in the literature currently available.

Empathy Defined

Empathy is a complex and multifaceted concept that is not easily defined, and there is controversy regarding the type of empathy that is teachable; However, it is consistently seen as an attribute required for healthcare providers today (Jeffrey & Downie, 2016; O'Hagan et al., 2014). Cognitive and affective empathy are two types of empathy seen consistently in the literature (Alligood, 1992; Jeffrey & Downie, 2016; Price & Archbold, 1997; Robinson & Rogers, 2015; Teding van Berkhout & Malouff, 2016; Van Lissa, Hawk, & Meeus, 2017; Williams & Stickley, 2010). Cognitive (thinking) empathy is defined as attempting to see the world or a situation from another person's point-of-view (Jeffrey & Downie, 2016; Rockstuhl, Ang, & Van Dyne, 2011). Affective (feeling) empathy is described as the compensatory feelings or compassion felt for another person's feelings regarding a situation (Jeffrey & Downie, 2016; Rockstuhl et al., 2011; Van Lissa et al., 2017; Williams & Stickley, 2010).

The current study is measuring empathy based on the Jefferson Scale of Empathy-Healthcare Profession Student (JSE-HPS) with three categories to define empathy: (a) compassionate care, (b) perspective-taking, and (c) standing in the patient's shoes (Kiersma, Chen, Yehle, & Plake, 2013; Leombruni et al., 2014; Montanari et al., 2015; Ward et al., 2009). The current research study defines empathy as the ability to understand the world from another person's experiences, concerns, and perspective with the capacity to communicate this understanding to that person (Jeon & Cho, 2015; Price & Archbold, 1997; Ward, Cody, Schaal, & Hojat, 2012). Based on the definitions of

cognitive and affective empathy and the current definition for this study, both affective and cognitive empathy will be evaluated for the empathetic care of a simulated patient.

Empathy and Healthcare Education

Teding van Berkhout and Malouff's (2016) meta-analysis reviewed 18 randomized controlled trials for the efficacy of teaching empathy with an overall medium effect size (g =0.63) adjusted to 0.51 that empathy training is beneficial. Empathy training grounded in neuroscience improved physician empathy levels (difference 2.2; p=0.04) for the intervention group and demonstrated that empathy can be taught (Riess, Kelley, Bailey, Dunn, & Phillips, 2012), while patient-led training concerning the care and treatment of patients with Tourette Syndrome increased physician's empathy scores (Graham, Green, Kurlan, & Pelosi, 2014). Empathy education with residents has been supported by research with end-of-life communication (Markin et al., 2015), communication self-efficacy and empathy (Bosse et al., 2012; Hardy, 2017), and increased patient-satisfaction (Kelm, Womer, Walter, & Feudtner, 2014; Lan & Yan, 2017; Thuraisingham & Nalliah, 2017).

Previous studies have supported educational initiatives to teach empathy but maintaining high empathy levels over time has not been sustained (Neumann et al., 2011; Ward et al., 2012; Yucel & Acar, 2016). The improvement of empathy in short-term studies supports education of the principles and uses of empathy; however, this training needs to be sustained and demonstrated in modeling and curricula for ongoing support and reflective practice (Ahrweiler, Neumann, Goldblatt, Hahn, & Scheffer, 2014). Attitudes toward patients and doctors may influence empathy levels (Schwartz &

Mazouni, 2017). Empathy training is not limited to physicians and residents; all healthcare professionals may benefit from empathy education.

Healthcare professionals, including psychologists, social workers, psychiatrists, and medical nurses trained to care for patients who harm themselves had an increase in empathy and competence for working with patients who harmed themselves (Gair, 2013; Muehlenkamp et al., 2013). Students across twelve medical and health professions participated in a pre-test, post-test study on empathy levels. The students (n = 293) had a two-hour workshop on empathy and measured by the JSE-HPS showed a statistical increase in empathy levels (Williams et al., 2015). After empathy training, pharmacy students reported an increase in empathy toward patients experiencing auditory hallucinations, as well as toward patients experiencing medication adherence issues, thus impacting their empathy levels in their future careers (Darbishire, Plake, Kiersma, & White, 2012; Lor, Truong, Ip, & Barnett, 2015; Skoy, Eukel, Frenzel, Werremeyer, & McDaniel, 2016).

All healthcare professionals can benefit from empathy training to help provide patient-centered care by increasing patient and healthcare professional satisfaction which promotes improved patient outcomes (Lan & Yan, 2017; Petrucci, La Cerra, Aloisio, Montanari, & Lancia, 2016). Females tend to have higher empathy levels over their male counterparts (Bas-Sarmiento et al., 2017; Cunico, Sartori, Marognolli, & Meneghini, 2012; Ouzouni & Nakakis, 2012; Ward, 2016; Williams et al., 2015; Wilson, Prescott, & Becket, 2012) while nursing and pharmacy students have higher empathy levels than law students (Wilson et al., 2012). Students drawn to nursing may naturally have higher

empathy levels, as the core values of nursing support strong empathetic skills (Aydin, Sehiralti, & Akpinar, 2017; Chun-Chih Lin, Chin-Yen Han, I-Ju Pan, & Pi-Li Lin, 2016; Clendon, 2016; Penprase, Oakley, Ternes, & Driscoll, 2013). Nursing education and empathy will be discussed below in greater detail.

Empathy and Nursing Education

Nurse educators continue to use diverse and mostly experiential teaching modalities to foster empathetic nursing care in their students. Empathy is demonstrated in the attitudes, values, motivations and belief systems of an individual, and may be difficult to influence (Doyle, Hungerford, & Cruickshank, 2014). Poverty simulations have been used to immerse students into the issues with which individuals at or below the poverty level confront in an effort to increase their empathy; the findings were mixed. Jarrell et al. (2014) provided a service learning opportunity for nursing students to interact with the poor; their findings found no statistical changes in empathy levels), while other research revealed a statistically significant increase in empathy levels after simulations regarding the poor (Loomis & De Natale, 2017; Yang et al., 2014). To increase empathy and understanding of patient care and health literacy, nursing students on their first day in a nursing class were given a quiz containing acronyms and information they were not familiar with and could not be expected to have the needed health literacy to answer. The students were then asked to journal their feelings about being expected to know information to which they had not been exposed. The study results demonstrated the correlation between their experience with hospitalized patients who are expected to have a specific level of health literacy and revealed to the students a

better understanding of "being in their shoes" (Weekes & Phillips, 2015). The type of activities that target empathy development chosen for simulation may impact student's empathy levels and this may be a challenge to nurse educators to be cognizant of prioritizing empathy in simulation education.

Experiential pedagogy requiring nursing students to wear ostomy devices and reflection on the experience demonstrated increased empathy in the nursing students toward patients who have ostomies (Kerr, 2015; Maruca et al., 2015; Reed, 2012). Additional techniques have been used to improve empathy levels in nursing students including: poetry writing (Chan, 2014; Saunders & Kowalski, 2015), art (Webster & Jarosinski, 2017), painting, poster boards and peer discussion (Helms & Walker, 2015), biogeography (Kyle & Atherton, 2016), storytelling (Hays, 2013; Wood, 2014), using medical memoirs (Low & LaScala, 2015; Masters, 2012), films (Bilge & Palabiyik, 2017; Mawson, 2014), geriatric medical games (Chen, Kiersma, Yehle, & Plake, 2015), through nursing therapeutics (Richardson, Percy, & Hughes, 2015), and mindful reflection (Kelley & Kelley, 2013; Leonard, 2017; Parvan et al., 2014; Walker & Mann, 2016; Wedgeworth, Carter, & Ford, 2017). The effectiveness of these techniques is supported by qualitative research, narrative discussion, and editorial discourse. Studies with high rigor and randomization are needed for continued empathy research.

Chen et al.'s (2015) geriatric medical games that used validated tools showing the students' (n = 58) empathy levels toward older adults with a statistical increase in empathy levels overall (KCES p = 0.015, JSE-HPS $p < 0.001$). Empathy activities towards disabled people with a pretest, posttest control group study of nursing students (n

= 116) found the experimental group had statistically higher regard for individuals with disability immediately after the study and at a six-month follow-up (Geçkil, Kaleci, Cingil, & Hisar, 2017). These experiential techniques were designed to increase students' overall empathy scores.

A combination of didactic education focusing on communication techniques and empathetic interventions have been found successful in the literature (Bry et al., 2016; Cunico et al., 2012; Nosek, Gifford, & Kober, 2014; Ozcan, Oflaz, & Bakir, 2012) along with role-playing used in a variety of ways to increase empathetic nursing care (Ançel, 2006; Fisher, Taylor, & High, 2012; Little & Bolick, 2014; Pehrson et al., 2016). The use of film in addition to didactic education was shown to be effective through a pre-test, post-test design measured with the JSE-HPS scale ($t = 2.60$; $p = 0.0133$) while the control group did not have a statistical increase in empathy based on didactic education alone (Briggs, Fox, & Abell, 2012). Nursing students educated on communication techniques before entering the clinical setting reported a decrease in the stigma regarding these patients and an increase in empathy from the face-to-face interactions provided at the clinical site (Ketola & Stein, 2013). The research supports teaching empathy in nursing students.

Empathy Over Time

Support for teaching nursing students' empathy is well documented and leads to patient satisfaction and improved care (Crotty & Doody, 2015). Empathy is intangible, and a difficult concept to define and measure consistently. It also requires continuous role modeling from instructors, nurses, and peers (Little & Bolick, 2014; Malpas & Corbett,

2012). Ward et al. (2012) reports the decline of empathy in nursing students ($n = 214$) over nursing school tenure ($f(2, 211) = 4.2$, $p < 0.01$) and this is supported by nursing students ($n = 123$) in another study where their empathetic tendencies decreased over two years (ten Hoeve, Castelein, Jansen, Jansen, & Roodbol, 2017). A study evaluating students over a five-year period found an increase in nursing students' empathy levels through a pretest, posttest study design ($p = 0.001$) (Sheehan, Perrin, Potter, Kazanowski, & Bennett, 2013). Wilson, Prescott, and Becket (2012) evaluated baseline empathy levels among pharmacy students, nursing students, and law students ($n = 282$) using the JSE-HPS. Results showed no changes in the law students' empathy levels, an increase in pharmacy students' empathy levels, and a decrease in nursing students' empathy levels (Wilson et al., 2012), while there were no differences noted in empathy levels between a first semester nursing class versus the final semester nursing class in a different school of nursing (Pazar, Demiralp, & Erer, 2017). Ongoing research of nursing students at different levels in their nursing school career is required.

Lor et al.'s (2015) research showed an increase in empathy levels immediately following a three-day simulation experience ($p = 0.035$) but was not supported 90-days post-intervention ($p = 0.38$) (Lor et al., 2015). Ouzouni and Nakakis (2012) found sixth-semester nursing students had higher levels of empathy over their first semester counterparts ($n = 279$), with older students displaying higher levels of empathy for the younger students. An obesity intervention for medical students to address weight bias and communication skills with SPs found an increase in empathy and counseling skills immediately following the simulation and at a one-year follow-up evaluation (Kushner,

Zeiss, Feinglass, & Yelen, 2014) while evaluation of second-year medical students did not find a decline in empathy, no differences noted per gender, but the more technology-oriented specialty revealed consistently lower empathy levels (Teng et al., 2017). These inconsistent findings support ongoing research into empathy education and the maintenance of empathy levels for nursing students entering professional nursing.

Research on professional nurses currently working in the healthcare system report inconsistent empathy levels. Nurses in Brazil with longer tenure as a professional nurse, older professional nurses, and professional nurses working night shift have lower empathy levels according to this exploratory, descriptive research study (Trevizan, Almeida, Souza, Mazzo, & Mendes, 2015). Empathy levels in oncology nurses were above average from the general population and empathy was found to be more emotional rather than cognitive (Maryam, Rohani, Mohtashami, & Nasiri, 2017), while emergency room nurses (n =40) in France had low levels of empathy (Bourgault et al., 2015).

Nursing students' empathy levels have been shown to be higher than their practicing nurse counterparts (López-Pérez, Ambrona, Gregory, Stocks, & Oceja, 2013). Discussion in research literature suggests technology has a direct impact on nurses' empathy levels (Digby, 2016) along with burnout (Ouzouni & Nakakis, 2012) and well-being (Bourgault et al., 2015). The nurses who have a better understanding of empathy display higher levels of empathy (Marcysiak, Dabrowska, & Marcysiak, 2014). A pre-test, post-test design with traditional and fast-tract-bridging nursing students evaluating empathy training with an SP over time exhibited mixed results. The traditional nursing

students maintained their levels of empathy while the fast-tract-bridging students increased in empathy levels (Ward, 2016).

Empathy and Simulation

Immersive, simulation techniques have been used with students to have a better understanding of patients with diseases that cause auditory hallucinations with increases in empathy levels (Aydin Er et al., 2017; Chaffin & Adams, 2013; Dearing & Steadman, 2008; Fossen & Stoeckel, 2016; Mawson, 2014; Orr, Kellehear, Armari, Pearson, & Holmes, 2013; Wieland, Levine, & Smith, 2014) while others have found no change in the students' overall empathy levels (Sideras, McKenzie, Noone, Dieckmann, & Allen, 2015). Consistency with how to measure effectiveness for auditory hallucination research in a simulation with validated tools would assist for a more cohesive base of evidence.

To increase empathy for patients with acquired brain trauma (ABT), students (n = 390) were immersed into a simulation with the roles of either the patient with an ABT or the nurse caring for the patient. The two-group, pretest, posttest design showed an increase in empathy levels (t (398) = 10.33, $p < 0.001$). An interesting finding of this research study was the higher degrees of empathy noted for the students that were in the role of the nurse caring for a patient with ABT (mean = 3.68, SD 0.62) than the students in the role of the patient with ABT (mean = 3.64, SD = 0.68, $p < 0.001$) (Levett-Jones et al., 2017). The role played during simulation experiences may influence the degree of change in empathy levels for the students.

Bas-Sarmiento et al. (2017) used role-playing, behavior assays, and a flipped classroom to determine the efficacy of empathy training in nursing students (n = 48). The training was followed by a simulation experience and a pre-test (before any training or activities), post-test design (after the simulation), and a one-month follow-up. Validated tools were used for the students' perceptions of their performance and followed up with the patients' assessment of the students' empathy levels, and by three independent observers for triangulation of the findings where statistical significance was found with an increase in overall mean scores (Bas-Sarmiento et al., 2017). The use of simulation to train entry-level professional nurses at a hospital in Ohio decreased orientation time to the units, help nurses acclimate to the units and increase confidence with patient care, and identified nurses that could not provide safe patient care (Zigmont et al., 2015).

The use of an immersive 3D simulation to address nursing students' cultural empathy was used in an Australian nursing school with a pre-test, post-test study design. The students were exposed to a 3D video with unfamiliar smells and tactile stimulus incongruent to their native cultural norms. The use of a validated tool to measure empathy increased the validity of their findings (t (459) = 4.639, p = <0.001), along with a large sample size of students (n = 460) (Everson et al., 2015). Virtual simulations are used to assess empathetic responses in nursing school with virtual patients via online technology with undergraduate nursing students (n = 343) with only 33.54% of the responses given showing empathy to the virtual patient (Strekalova, Krieger, Kleinheksel, & Kotranza, 2017). Virtual education and simulations need to be evaluated for their benefit or detraction for empathetic nursing care. Simulation is a diverse area to draw

from for the pedagogy of nursing education. Utilization of HFMS and SP are frequently seen in simulation research. The use of HFMS and SPs for empathy will be discussed in more detail.

Standardized Patient Actors. A standardized patient actor is an individual trained to portray a patient or family member to act as a real patient with a preset symptom or problem for nursing education (International Association of Clinical Simulation in Learning, 2016; Lopreiato, et al., 2016). Research with SP training during simulated experiences has been used in healthcare extensively. Simulation utilizing SPs have been shown to increase nursing students' self-confidence when dealing with patients that have mental health diagnoses (Alexander & Dearsley, 2013; Carvalho et al., 2014; Choi et al., 2016; Choi, 2012; Dearmon et al., 2012; Doolean et al., 2014; Felton, Holliday, Ritchie, Langmack, & Conquer, 2013; GOH et al., 2016; Martin & Chanda, 2016), improved communication skills in dental students (Brame, Martin, Tavoc, Stein, & Curran, 2012; McKenzie, Tilashalski, Peterson, & White, 2017) and nursing students (Choi et al., 2016; Fay-Hillier, Regan, & Gordon, 2012; Lin et al., 2013; Miles, Mabey, Leggett, & Stansfield, 2015; O'Hagan et al., 2014). A comparison between SPs and real patients for dietetic students' nutrition counseling showed a significant increase in the students' gathering information with an SP ($p = 0.02$) over the real patients (Schwartz et al., 2015). Simulation education increased medical students' and nursing students' communication abilities with SPs portraying a patient with intellectual disabilities (Attoe et al., 2017; Thomas, Courtenay, Hassiotis, Strydom, & Rantell, 2014). Student satisfaction increased using SPs for health assessment (Andrea & Kotowski, 2017;

Bornais, Raiger, Krahn, & El-Masri, 2012; Slater et al., 2016), critical thinking, and problem-solving (Keltner, Grant, & McLernon, 2011; Mills et al., 2014). Students consistently report a decrease in anxiety to enter the mental health patient care area after completing a simulation involving an SP (Herron, Nemeth, & Powers, 2017; Kameg et al., 2014; Sarikoc, Ozcan, & Elcin, 2017; Webster, 2014; Webster & Jarosinski, 2017).

SPs have frequently been used in simulations that involve mental health, communication, or empathy secondary to the authenticity, ability to assess emotional responses, and the nonverbal feedback (Davison, Mackay, & McGivern, 2017; Hall, 2017). A meta-analysis exploring the use of simulation in undergraduate psychiatry education was conducted to evaluate the outcomes and types of simulation activities used to educate future psychiatric practitioners. SPs were used in 48 of the 63 articles reviewed, and only one study used an HFMS. Analysis of the articles found simulation helped to improve communication, build empathy, and decrease the stigma of mental illness for practitioners entering psychiatry (Abdool, Nirula, Bonato, Rajji, & Silver, 2017).

Simulation education focusing on mental health and suicide assessment has been supported in the literature overwhelming with the use of SPs (Davison et al., 2017). The reported reason for SP use in these topic areas is the added authenticity and nonverbal feedback needed for a full assessment of patients dealing with a mental illness or suicidal ideations. Oh, Jeon and Koh (2015) conducted a meta-analysis on simulation with SPs in nursing education. The 18 studies in the analysis showed significant effects on learning motivation (p = .001), knowledge acquisition (p=.05), self-efficacy (p = .001),

communication skills (p = .001), and clinical competence (p = .001). Interestingly, significance was not found for critical thinking (p = .75) and learning satisfaction (p = .43) (Oh, Jeon, & Koh, 2015). The use of SPs is beneficial to nursing education in mental health content.

Simulation with SPs is not limited to only nursing education. A meta-analysis was conducted on the use of SPs in physical therapy education evaluating 14 qualitative and quantitative studies. Clinical replacement with SPs was found to be as effective as the care with patients in the clinical setting and students valued educational experiences SP patients provided (Pritchard, Blackstock, Nestel, & Keating, 2016). Negri et al. (2017) completed a literature review on the gains of simulation in education. The 53 studies in the review support the use of SPs with dramatization for all health science students including medicine, nursing, dentistry, physiotherapy, and pharmacy education. Simulation experiences using SPs has found an increase in satisfaction, self-confidence, knowledge, empathy, realism, reduction in anxiety, improved communication, improved motivation, self-reflection, critical thinking, and improved teamwork (Negri et al., 2017).

Simulation using SPs has shown an increase in empathy levels when caring for patients with HIV (Kim & Shin, 2015), to increase empathetic communication (Webster, 2013, 2014) and with end-of-life issues (Bays et al., 2014; Downar et al., 2017), but not all the research supports the use of SPs for empathetic care. Role-playing was statistically higher (p =.001) in fifth-year medical students over SP training (p =.21) for understanding information from a patient's perspective (Bosse et al., 2012). Ward (2016) found no changes in traditional nursing students' empathy levels over time. Empathy

development through a case study of the same patient that culminated with a simulation with an SP that portrayed that person for the experimental group and a single exposure to the patient by an SP found no statistical differences between the groups (Mennenga, Bassett, & Pasquariello, 2016). Research comparing students on communication skills, knowledge, confidence and empathy in three different groups caring for an SP, in a virtual environment, or a nursing home patient found no statistical differences between the groups, except for empathy level of students caring for patients in the nursing home (Quail, Brundage, Spitalnick, Allen, & Beilby, 2016). Ongoing research on the effectiveness of SPs to help students increase and sustain higher empathy levels is required with appropriate sample sizes and validated tests to measure the variables under study.

Research has also shown there may be gender and cultural bias with SPs that evaluate students' empathetic patient care. A study with 577 medical students conducted a self-evaluation on their empathy levels while the 84 SPs also evaluated the medical students' perceived empathy. Females were always rated higher regardless of race, where black men had the lowest SP rating for empathy, but the highest personal rating for empathy (Berg et al., 2015). Empathy rating for physician assistant students interacting with SPs had higher self-ratings of empathy over four simulation experiences than their instructor and SP evaluations (Floyd, Generous, Clark, Simon, & McLeod, 2015). Ongoing research on gender and cultural bias from the SPs and students' self-perception of empathy needs additional research.

High Fidelity Manikin Simulators. A high-fidelity manikin simulator is a life-

size manikin that mimics the physiological functioning of a human body (Lopreiato et al., 2016) and is used to develop a clinical alternative for nursing education. Simulation research is plentiful for all the health science disciplines and has grown over the past ten years. The use of meta-analysis and literature reviews will be explored for HFMS with a focus on nursing education and quantitative research methodology. HFMS has been used in nursing education for patient safety (Blum & Parcells, 2012; Shearer, 2013), mental health (Brown, 2015b; Hall, 2017; Kunst, Mitchell, & Johnston, 2016), neonatal care and resuscitation (Cheng et al., 2015; Cooper, 2015; Mundell, Kennedy, Szostek, & Cook, 2013; Rakshasbhuvankar & Patole, 2014; Sullivan, 2015), pediatric intensive care (O'Leary, Nash, & Lewis, 2015), end-of-life care (Gillan, Jeong, & van der Riet, 2014; Shaw & Abbott, 2017), prehospital emergency care (Abelsson, Rystedt, Suserud, & Lindwall, 2016), nursing fundamentals (Stroup, 2014), self-efficacy in skills and knowledge (Aebersold & Tschannen, 2013; Franklin & Lee, 2014; Gates, Parr, & Hughen, 2012; Yuan, Williams, Fang, & Ye, 2012), critical care training (Boling & Hardin-Pierce, 2016), care of the deteriorating patient and critical thinking/clinical judgment (Adib-Hajbaghery & Sharifi, 2017; Connell et al., 2016; Hallin, Bäckström, Häggström, & Kristiansen, 2016), interdisciplinary education (Dufrene, 2012), multiple patient care (Blodgett, Blodgett, & Bleza, 2016), crisis resource management skills (Lucas & Edwards, 2017), and psychomotor skills (Vincent, Sheriff, & Mellott, 2015). A consistent finding for the reviews has been the need to have appropriate sample sizes and use of validated instruments.

Shin, Park, and Kim (2015) conducted a meta-analysis evaluating the effectiveness of patient simulation in nursing education. The 20 articles included in the study used a control and experimental group evaluating psychomotor skills. HFMS was found to have a large effect size of (0.81), and the use of SPs had a medium to large effect size (0.51) (Shin, Park, & Kim, 2015). Foronda, Liu, and Bauman (2013) conducted an integrative review including 101 research articles which found simulation increased nursing students' confidence, self-efficacy, and satisfaction with a decreased in anxiety and stress, an increase in skills and knowledge acquisition, and the students valued interdisciplinary education. However, the type of fidelity used to achieve these outcomes was conflicting, and additional research on the type of fidelity is required (Foronda et al., 2013). A literature review for simulation research utilizing only quantitative methods and HFMS for associate degree nursing students included 13 articles. Conflicting evidence was reported for critical thinking, and knowledge acquisition and correlation of clinical skills performance with simulation performance is lacking. The students did report high satisfaction, and confidence levels with simulation training and pre-clinical simulations decreased anxiety upon entry into the clinical setting (Skrable & Fitzsimons, 2014). Additional research with larger sample sizes and validated instruments is needed for future research.

Cant and Cooper (2017) conducted a meta-analysis including 25 articles between the years 2010-2015 with high-quality studies supporting psychomotor skills and improved self-efficacy. The review supported the use of simulation regarding students' satisfaction, increased confidence and critical thinking abilities, but it was identified that

study designs need to be more rigorous with identified effect sizes required for future research methods (Cant & Cooper, 2017). A meta-analysis including 26 controlled studies showed HFMS was beneficial in the cognitive and psychomotor domains of learning and increased clinical skill acquisition (Lee & Oh, 2015). High-fidelity based training was shown to be effective in a recent meta-analysis based on fifteen randomized controlled trials evaluating the skills and knowledge acquisition of practicing nurses. The review included one study that utilized SPs and the rest with HFMS use (Hegland, Aarlie, Strømme, & Jamtvedt, 2017). Ongoing evaluation of best-practices, including the type of fidelity used need to be included for planning simulation education.

NCSBN conducted a multi-site, longitudinal, randomized, controlled study with nursing students (n = 666) to evaluate clinical competency based on the time spent in the simulated clinical setting at 25% and 50% compared to the traditional site where only 10% of clinical time was spent in the simulated clinical setting. The study participants were followed during their two-years in the educational setting and through the first six months of their professional nursing practice. The students in the three groups were found to have no statistical differences in their nursing knowledge assessment ($p = 0.478$) or passing their licensing exams ($p = 0.706$). Nurse manager ratings for the newly graduated nurses' readiness for practice were also consistent at the six-weeks ($p = 0.706$), three-month ($p = 0.511$), and six-month ($p = 0.527$) follow-up (Hayden et al., 2014). The results of this study spurred approval by the NCSBN to approve up to 50% of all clinical time may be spent in the simulated clinical setting. The need to base simulated

experiences on best practices from research to meet the goals of the simulation and the type of fidelity used may influence educational outcomes.

HFMS Versus SP

Current literature supports the use of simulation education to facilitate an increase in empathy levels in nursing students, but the research to support the type of fidelity that fosters empathetic nursing care more effectively is limited. Dean, Williams, and Balnaves (2015) conducted a qualitative study to examine if the type of fidelity used during simulation influences empathy levels in nursing students. The study used two focus groups, four students per group, to explore empathy and communication with high-fidelity mannequin simulators. The students reported it was difficult to engage on an empathetic level with a plastic patient that has no facial expressions or feelings, group dynamics may impede interaction, plastic people should be used for only clinical skills, and the tutor's influence is vital (Dean et al., 2015). The HFMS may cause a distance between emotions and forming attachments decreasing motivation to foster empathy which is a fundamental component of patient-centered care (Dean, Williams, & Balnaves, 2017; Ireland, 2017). Therapeutic touch is a part of empathetic care, and the use of an HFMS may decrease the motivation for students to learn how to integrate healing touch into their patient care (Soffer, 2015).

A study comparing the use of HFMS, SPs, and community volunteers (CV) for a respiratory assessment in nursing students (n = 44) found higher levels of competency with the respiratory assessment ($p < .01$) and health education ($p < .05$) for the students that practiced with the HFMS, but the students' satisfaction was the lowest with the

HFMS group over the SP or CV group (Luctkar-Flude, Wilson-Keates, & Larocque, 2012). Comparison between HFMS and SPs for managing stress and care of a deteriorating patient showed no statistical differences between stress levels ($p = 0.317$) or ability to assess and care for a deteriorating patient ($p = 0.744$) for the two groups, but the qualitative data from a focus group did suggest the use of the SPs was perceived to more valuable for care of a deteriorating patient (Ignacio et al., 2015). A comparison group of nursing students (n = 52) performing an assessment on either a HFMS or SP for assessment of cardiac, thorax, and lung examination reported higher knowledge acquisition with the SP group ($p = 0.024$) although the entire group had a statistical increase after assessing a real patient ($p = <0.001$) (Tuzer, Dinc, & Elcin, 2016). The findings suggest students' satisfaction and confidence with a type of fidelity is not dependent on how well they perform during a simulation experience.

A recent study examining nursing students' (n = 32) anxiety levels during a simulation with random assignment into the SP group using mental rehearsal versus the HFMS group using a mnemonic memory strategy found no statistical differences between the groups ($p = .105$) (Ignacio, Scherpbier, Dolmans, Rethans, & Liaw, 2017). A research study was conducted evaluating nursing students' ability to perform a pediatric assessment with an SP versus an HFMS. Students randomly assigned to either the SP or HFMS group showed no statistical differences in abilities, stress, or anxiety levels, but student satisfaction was higher with the interaction with the SPs (Kubin & Wilson, 2017). Hall (2017) completed a literature review for simulation learning with mental health nursing. The review included 45 studies and compared the usage of HFMS and SPs for

mental health nursing. Empathy was noted as a key component in mental health nursing, but simulations used for empathy utilized SPs only. HFMS helped to decrease students' anxiety with mental health patients, increased knowledge and confidence, improved psychomotor skills, increased clinical reasoning and communication, but no study using HFMS and empathy was noted (Hall, 2017). A meta-analysis evaluating 40 research articles' effect size support the use of HFMS (0.86) and SPs (0.86) for nursing education, but the support was strongest for effects in the psychomotor domain (Kim, Park, & Shin, 2016). Research needs to continue to make sure the type of fidelity chosen meets to objectives of the simulation experience.

Summary and Transition

Chapter 2 discussed how Kolb's experiential learning theory guides the current research project examining how the type of fidelity chosen for simulation provides nursing students the ability to perform empathetic patient care. Research supports the use of simulation for nursing education, and with the addition of the NCSBN supporting up to 50% of all clinical time in the simulated setting (Hayden et al., 2014), nurse educators must utilize the best type of fidelity for each simulated experience. Empathy is a core component of nursing care and needs to be supported with the best form of simulation and fidelity available. Conflicting data regarding the best way to teach empathy and how to sustain it over time has been discussed. Research supports the use of SPs and HFMS for mental health and communication techniques, but research regarding empathy and the best type of fidelity to choose requires ongoing research. The purpose of this quantitative study was to determine if the type of fidelity chosen for simulated experiences had an

impact on nursing students' empathy levels and students' satisfaction and self-confidence during simulation experiences. The gap remains for best practices with empathy training during high-fidelity simulations.

Chapter 3 will provide further detail regarding the study variables, the methodology used for this research project, the timing of the study, recruitment of participants, and the sampling procedures that will be used. Ethical considerations, institutional review board information, and validation of the instruments will be discussed. Details regarding the operationalization of the concepts, instrumentation used, and validation of the study will be explicated.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to determine if the use of HFMS or SPs chosen for simulated experiences had an impact on nursing students' empathy, and satisfaction, and self-confidence levels during simulation experiences. This study also compared the use of the HFMS and SP by nursing students during their simulated clinical experience. In this chapter, I discus the research design and methodology used for this research study. In addition, this chapter contains information about the target population under study, the sampling and sampling procedures, recruitment procedures, participation, and data collection. The instrumentation and definition of the variables under study are discussed, as well as data analysis, threats to validity, and ethical procedures.

Quantitative Research Design and Rationale

Qualitative and quantitative research are based on paradigms that present very different views of reality when used in educational studies. Quantitative research is used to test relationships between variables that are measurable and analyzed with statistics. Qualitative research is used to understand the lived experience of an individual or group, while mixed methods combines the quantitative and qualitative designs (Creswell, 2009; Frankfort-Nachmias, Nachmias, & DeWaard, 2015). The research questions were:

RQ1: What effect does experiential training with HFMS vs. simulation with a SP actor have on the development of empathy levels in nursing students during simulated experiences?

RQ2: What effect does experiential training with HFMS vs. simulation with a SP actor have on nursing students' satisfaction and self-confidence in learning?

Study Variables

A quasi-experimental pretest posttest quantitative research design was used to identify differences in empathy levels, satisfaction, and self-confidence for nursing students depending on whether an SP actor or HFMS was chosen during an experiential simulation experience. Empathy was defined as the ability to understand another person's experiences, concerns, and perspectives with the capacity to communicate this understanding to that person (Jeon & Cho, 2015; Price & Archbold, 1997; Ward et al., 2012). Empathy was measured at the continuous level by the JSE-HPS. The JSE-HPS tool has 20 Likert-item questions and is discussed in detail later in the chapter.

Nursing student satisfaction in this context means their perception of the overall suitability of simulation experiences including the teaching methods, diversity of learning material, facilitation, and motivation with simulation experiences. Self-confidence refers to the nursing students' confidence in their ability to meet the objectives of the simulation expectations. Satisfaction and self-confidence are measured by the NLN-SCLS which consists of 13 Likert-items, and both scales have been tested at the continuous level of measurement (GOH, Selvarajan, Chng, Tan, & Yobas, 2016; Lubbers & Rossman, 2017; Omer, 2016; Petrucci, La Cerra, Aloisio, Montanari, & Lancia, 2016; Ward, 2016).

Study Design

The use of an experimental design requires validated instruments that measure the variables under study accurately while controlling for extrinsic and intrinsic factors that

may influence the study's findings (Frankfort-Nachmias et al., 2015). A true experimental study requires random sampling, which was not possible for this study, because my study required the use of the naturally formed simulation groups. Therefore, a quasi-experimental design was selected to examine the relationship between the dependent variables of empathy, self-confidence, and satisfaction levels and the independent variables of SP or HFMS. Nursing students were randomly assigned to either the SP or HFMS during the simulation experience. The pretest posttest design was used to examine differences in empathy level between the two groups of nursing students.

Methodology

This methodology section describes the population of interest for the study, the type of sampling, sampling procedures, and recruitment information used for the participants. The type of data collection and data analysis procedures are explicated, along with the instruments used to measure nursing students' empathy, self-confidence, and satisfaction levels against the type of fidelity used, HFMS or SP, in an experiential simulated experience. Threats to the study's validity and ethical considerations are discussed.

Population

The target population was nursing students currently enrolled in their junior and senior level nursing clinical courses. The population was nursing students enrolled in a small, Christian university in the southern United States. The university admits students into the baccalaureate nursing program twice per year. The study's target population was a cohort of junior-level students in their first clinical course and a cohort of senior-level

students in their final clinical course of nursing school. The research took place during the 2018 spring semester with the potential size of the target population 220 nursing students. The number of nursing students enrolled varies based on the qualifications of the nursing student applicants and progression after the introductory nursing course.

All nursing students are required to complete on-campus simulation experiences each semester per their clinical course curriculum. The students care for their simulated patient with preset objectives, preparation, and information for each simulation day. The entry-level junior students complete the simulation before entry into the clinical setting, while the senior-level students have participated in previous simulation experiences. This research supported the objectives of the nursing program and did not interfere with the students' preparation or objectives for the simulation experience beyond a change in the type of patient-fidelity used for the experimental group of students and time spent for explanation, consent, and completion of the surveys, which is discussed in more detail later in the chapter.

Sampling and Sampling Procedures

A convenience sample of nursing students enrolled in their first and last nursing clinical course was recruited to participate in the study. The students were given the objectives of the study with the option to consent or refuse participation without any negative repercussions. The students were randomly assigned to the control or experimental group on the day designated for simulation by randomly drawing a number from a basket, one for the control group and two for the experimental group.

The students were all required to participate in the simulation experience per their clinical course curriculum for both the junior and senior levels; however, they were not required to participate in the research study. They must care for their simulated patient holistically and according to the nursing process. The simulation day was scheduled toward the beginning of the clinical course in both the fall and spring semesters before entering the clinical sites for the junior level students. The senior-level nursing students were required to participate in the simulation at the end of their final clinical course of nursing school. Inclusion criteria were as follows: nursing students enrolled in their junior-year, entry-level clinical course and students in their final, senior-year, exit-level clinical course. Exclusion criteria for participation in the study were students that did not complete the pre- and post-survey for the study and those that did not consent to participate in the study.

Effect size, alpha level, and power level. Positive effect size in the medium (.50) to large effect (0.80) range was found in the research (Cant & Cooper, 2017; Davison, Mackay, & McGivern, 2017). The online power analysis tool G* Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) identified a sample size for the statistical analysis (independent t-test, mean difference between two groups), using a-priori alpha of 0.05, power of 0.80, and anticipated effect size of .50 as qualifiers based on acceptable standards of social research and previous research studies (Field, 2013). The calculations recommend the sample size consists of 64 nursing students in each group. Appropriate sample size leads to greater sensitivity to demonstrate that the outcome occurs because of the experimental procedures (Creswell, 2009). My goal was to recruit 64 participants for

each study groups.

Procedures for Recruitment and Exit

Prior to initiating the study, a request to use a simulation experience, previously integrated into the curriculum was approved by the dean and simulation coordinator of the university's nursing program. The simulation coordinator identified simulations in the entry-level clinical course and the exit-level senior course that met the criteria. To make recruitment possible in this research study, first approval by the Institutional Review Board (IRB) was obtained at both Walden University and the local university where data collection occurred. All faculty involved in the simulation experience were notified in advance of the research study's objectives and how the study was conducted. I was the primary researcher, and I provided my contact information to the faculty and students via email and verbally the day of the study. Students were provided information about the study before the simulation day by the simulation coordinator via email. Students were provided with information about the simulation preparation, instructions on the time and date of arrival, and information about the research study. On the day of the simulation, I was present at the simulation lab and reviewed the objectives of the study and provide informed consent verbally, and a written informed consent form was provided to each student with reinforcement of their voluntary participation in the study via the SurveyMonkey program.

The participants' demographic information of age, gender, ethnicity, marital status, experience with simulation, and experience in healthcare obtained (Appendix A). The surveys contained no identifiers regarding the student beyond the demographic

information needed for the study. All students were asked to arrive at the simulation center 45 minutes earlier than the course usually meets to allow for an explanation of the objectives and time to take the JSE-HPS survey and demographic data. The students were given an additional 30-minutes at the end of the simulation to take the post-simulation survey of the JSE-HPS and the NLN SCLS. The researcher and clinical instructors were blinded to the students that answered the questions of the study as each student was given the same amount of time and no identifiers were on the survey. I explained this procedure to the students to help decrease any pressure to participate in the study. All student participants had the informed consent form integrated into the online survey documents.

The population sample was chosen because they were currently enrolled in an entry-level and exit-level nursing class. The simulation is a requirement for the entry-level clinical course before students enter the clinical site to prepare the students to care for a patient at the hospital. The exit-level seniors were required to complete the simulation in their clinical course before graduation from the nursing program. The students were given objectives of the study and were able to refuse participation without any consequences.

I collected data during a single day per the clinical course calendar for the junior-level students and later in the semester for the senior-level students. The students were scheduled for an eight-hour day at specific times for three hours to prepare, participate, and debrief for the simulation experience. Presimulation objectives, preparation work, and electronic charting was provided to all students by their clinical course instructors

with no changes for the simulation required for the research study, beyond the notification about the study and students' voluntary participation for both groups of students. The simulation consisted of four nursing students per simulation group caring for their simulated patient, either the HFMS or the SP. There were four or five simulation groups working simultaneously depending on the number of students in the course.

The students reported to the simulation center one-and-a-half hours before interacting with the HFMS or the SP. This time provided students the opportunity to ask questions, receive the report on their patient, complete the research surveys and informed consent, and for the groups of students to discuss the plan of care. The students were given electronic access to an independent survey generator that was provided by the lead researcher for the pre-simulation survey. After this was completed, the students had 20 to 30 minutes with their simulated patient to apply the nursing process and care for the HFMS or SP with integrated debriefing by the clinical instructors. The anticipated time for the simulation and debrief was one hour. The same clinical instructors ran and debriefed the simulations while the lab coordinator and lead researcher were engaged with the pre-simulation information. The clinical instructors were given the post-simulation survey link to provide to the students, depending if they are in the experimental or control group. The university's nursing department was notified of the research findings via email with a request to share the findings with all the faculty, students and staff involved in the study.

Instrumentation Operationalization Constructs

The independent variable in this study was the type of fidelity used during the simulation experience, SP or HFMS, which is a categorical variable. The dependent variable of empathy was measured at the interval level of measurement using the JSE-HPS. The dependent variables of self-confidence and satisfaction were measured at the interval level of measurement by the NLN- SCLS.

JSE-HPS. The JSE-HPS was developed with the preliminary psychometric data published in 2001, and is copyrighted by Thomas Jefferson University. The JSE was developed for physicians to apply cognitive empathy with patient care and more recently specifically for administration in health-professionals-in-training and in-practice (Hojat & Gonnella, 2017). The psychometric properties have been established between different languages and healthcare professions including English language and in nursing (Jeon & Cho, 2015; Kerr, Stahnke, & Behnen, 2015; Leombruni et al., 2014; Montanari et al., 2015; Paro, Daud-Gallotti, Tibério, Pinto, & Martins, 2012). The JSE has been translated into 55 different languages, 74 countries have received permission to use the scale, and three versions are available (a) medical students, S-version, (b) health professions, HP-version, and (c) health professions students, HPS-version (Thomas Jefferson University, 2017). I received permission to use the JSE-HPS according to the designated guidelines of Thomas Jefferson University, (Appendix B).

The JSE-HPS version for healthcare professions students was tested for reliability and validity with nursing students, (see Appendix C). The study was conducted with 333 nursing students in differing levels of training (Ward et al., 2009). The three underlying

constructs of perspective taking, compassionate care, and standing in the patient's shoes are consistent with the construct of empathy and patient care which support the construct validity of the scale (Cronbach α=.77, r=.38, *p*=.001), the magnitudes of eigenvalues for the three factors were 4.6, 1.8, and 1.3 (Ward et al., 2009). The psychometric properties of the JSE-HPS with Italian nursing students were further supported by Montanari's et al., (2015) findings where the test-retest correlation was 0.50 ($p < 0.001$) for the overall scale. The internal consistency of the scale was satisfactory, Cronbach's α = 0.78 the interclass correlation coefficient (ICC) between the first and second administration was 0.50 ($p = 0.001$), and the magnitude of eigenvalues for the three factors were 4.44, 3.04, and 1.67. Leombruni et al. (2014) tested the measurement properties and confirmatory factor analysis of the JSE S-Version in Italian medical students with the internal consistency (r = .076) and test-retest reliability (r = 0.72) and is further supported by the psychometric testing with 1187 Iranian medical students (Shariat & Habibi, 2013). The operational definition of empathy is the ability to understand the world from another person's experiences, concerns, and perspective with the capacity to communicate this understanding to that person (Jeon & Cho, 2015; Price & Archbold, 1997; Ward et al., 2012).

The target population for the JSE-HPS is health-care providers or students, and the content of the items in the JSE-HPS are aimed at this target population which supports content and face validity (Hojat & Gonnella, 2017). The psychometric properties of the JSE-HPS are well supported by research in different languages and countries. The 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly

agree) has a total of 20 items on the questionnaire. Scoring of the 20-item scale includes 17-items with positive factor structure coefficients, and the other 3-items have negative factor structure coefficients, a higher score on the JSE-HPS indicates greater empathy. The first factor of perspective taking is addressed with 10-items on the scale, and example of this factor is, “Healthcare providers should try to think like their patients in order to render better care” (Montanari et al., 2015, p. 487). The second factor of compassionate care is addressed with 8-items on the scale, and an example of this factor is, "Patients feel better when their healthcare providers understand their feelings.” (Montanari et al., 2015, p. 487). The final factor of standing in the patient’s shoes is addressed with 2-items on the scale, for example, “Healthcare providers’ understanding of the emotional status of their patients, as well as that of their families, is one important component of the healthcare provider-patient relationship” (Hojat et al., 2001; Montanari et al., 2015, p. 487; Ward et al., 2009). The JSE-HPS constructs, internal and face validity will address the empathy level of nursing students for the proposed study.

NLN-SCLS. The NLN conducted a national, multi-site, multi-method project initiative to establish resources for nurse educators regarding simulation from, June 2003 to May 2006. One of the goals was to develop a framework for nurse educators to use as a guide in the development, implementation, and evaluation of simulation in nursing education. The NLN’s SCLS was an instrument developed during the first phase of the study to have a reliable instrument available during the study and for future simulation research (Jeffries & Rizzolo, 2006). The SCLS is a free, public-domain, instrument available for individual researchers to utilize if the NLN copyright statement is included

in the survey, (Appendix D).

The SCLS addresses the dependent variables of nursing students' satisfaction and self-confidence during a simulation activity. The SCLS focuses on students' low-learner reaction and learning with a cognitive focus (Adamson, Kardong-Edgren, & Willhaus, 2013). The purpose of this study was to evaluate students' self-confidence and satisfaction in learning during the simulation experience with either an HFMS or the SP. The operational definition for self-confidence is the nursing students' confidence in his or her ability to meet the objectives of the simulation expectations while self-confidence in learning is the students' self-confidence in specific content, content necessity, skills development, available resources, and knowledge to address issues that arise in the simulated environment (Franklin et al., 2014). An example question for self-confidence on the SCLS is, "I am confident that I am mastering the content of the simulation activity that my instructors presented to me" (Chan, Fong, Tang, Pui Gay, & Hui, 2015, p. 281). Satisfaction is defined as the nursing students' perception of the overall suitability of simulation experiences (Franklin et al., 2014), for example, "The teaching methods used in this simulation were helpful and effective" (Chan et al., 2015, p. 281). The SCLS is a 13-item instrument designed to measure student satisfaction (five items) with the simulation activity and self-confidence in learning (eight items) using a five-point scale. Reliability was tested using Cronbach's alpha: satisfaction = 0.94; self-confidence = 0.87 (Jeffries & Rizzolo, 2006). The SCLS is a five-point, Likert-type scale where participants responses range between "Strongly Disagree" to "Strongly Agree," (see

Appendix E). The higher the scores, the higher the students' levels of satisfaction and self-confidence with the simulation.

Franklin, Burns, and Lee (2014) tested the psychometric properties of the NLN's SCLS with 2200 novice nurses enrolled in a pre-licensure baccalaureate nursing program. The item-analysis reliability using Cronbach's alpha for the overall SCLS was 0.92: satisfaction = 0.92 and self-confidence = 0.83. Confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) were conducted for the model fit. CFA findings of a poor model fit led to the use of EFA, and the conceptual model accounted for 76% of the variance in the SCLS. Correlation between the satisfaction and self-confidence factors was 0.78. A two-factor model was used for the EFA, but it was shown the overall test represented good model fit. Strong concordant validity ($r = 0.78$, $p = 0.000$) was demonstrated with the satisfaction and self-confidence subscales (Franklin et al., 2014). The SCLS was translated into Chinese and tested for reliability and validity with 161 nurses. The CFA, final two-factor structure had satisfactory fit with $\chi 2 = 92.12$ (df =54) and the Cronbach's alpha: satisfaction = 0.95 and self-confidence = 0.97 (Chan et al., 2015).

Verbal approval was obtained from the local university's school of nursing dean to use their student population for this research study. The use of the JSE-HPS and the SCLS instruments measured the dependent variables of nursing students' empathy, self-confidence, and satisfaction with the type of fidelity used during the simulation experience. IRB approval was obtained from both Walden University and the local university prior to data collection.

Data Analysis

Descriptive statistics and the independent t-test were used to compare the mean differences between the HFMS and the SP group using the Statistical Package for the Social Sciences (SPSS), version 23 (I.B.M. Corp, 2013). The first three Assumptions used for the independent t-test were considered with the dependent variable of students' empathy levels and self-confidence/satisfaction measured at the continuous levels by the JSE-HPS and the NLN- SCLS instruments. The independent variable was categorical (the type of fidelity) with the random assignment into either the control group (HFMS) or the experimental group (SP), and all students participated in the study with a single occurrence during the study (Field, 2013). The data were cleaned and visually reviewed for omissions or incomplete forms.

RQ 1. What effect does experiential training with high-fidelity manikin simulation vs. simulation with a standardized patient actor have on the development of empathy levels in nursing students during simulated experiences?

($H_0$1). There will be no difference in the development of empathy levels in nursing students during simulated experiences who have experiential training with high-fidelity manikin simulators versus training with a standardized patient actor, $\mu 1 = \mu 2$.

(H_A1). There will be a difference in the development of empathy levels in nursing students during simulated experiences who have experiential training with high-fidelity manikin simulators versus training with a standardized patient actor, $\mu 1 \neq \mu 2$.

Analysis. An independent t-test will be used to determine if there is a statistically significant difference between the two groups means on the dependent variable of

empathy.

RQ 2. What effect does experiential training with high-fidelity manikin simulation vs. simulation with a standardized patient actor have on nursing students' satisfaction and self-confidence in learning?

(H_02). There will be no difference in nursing students' satisfaction and self-confidence in learning during simulated experiences who have experiential training with high-fidelity manikin simulation versus training with a standardized patient actor, $\mu 1 = \mu 2$.

(H_A2). There will be a difference in nursing students' satisfaction and self-confidence in learning during simulated experiences who have experiential training with high-fidelity manikin simulation versus training with a standardized patient actor, $\mu 1 \neq \mu 2$.

Analysis. An independent samples t-test will be used to determine if there is a statistically significant difference between the two groups means on the dependent variable of nursing students' satisfaction and self-confidence.

Interpretation of Results. Nursing education research is conducted to support best-practices in educational modalities. The ability to generalize findings is possible with ongoing research that helps to support research findings, appropriate sample size, and the need to use ethically appropriate standards (Creswell, 2009). Significance for this study was at the $p < .05$ level to be considered statistically significant per the independent samples t-test, with Cronbach's alpha level set at 0.5 and power of 0.80 (Field, 2013). Mean differences and effect size was discussed and appropriate data

displayed visually for clarity. If there is a marked deviation from the normal distribution or the internal consistency reliability is not found with the independent sample t-test for the scales, then the nonparametric Mann-Whitney U test would be used for analysis. Mann-Whitney U may be used in place of the independent sample t-test when the data is not sufficiently normal or with ordinal data (Creswell, 2009; Field, 2013).

Threats to Validity

The ability to accept or reject the null hypothesis is based on valid findings. There are issues that may influence the validity of a research study, and the following sections will discuss internal, external, construct, and statistical conclusion validity. The ethical procedures followed for the study will also be discussed in more detail.

Threats to External Validity

External validity issues arise when incorrect inferences are drawn from the research findings to other settings or situations (Creswell, 2009). The ability to generalize findings needs to be used cautiously as the sample of the population in a single setting may not be transferrable to a similar population in a different location. The sample used for this research study was drawn from a small, Christian university that may impede the generalizability of the findings. The research findings were cautiously situated into context according to findings of similar research studies. A single research study needs to have cautious interpretation and adds to the existing body of knowledge.

Testing reactivity is possible with the pre-test, post-test design of this study and may sensitize the participants' responses to the same test or influence how they answer the questions at each interval; therefore, replication studies are useful to validate research

findings (Frankfort-Nachmias et al., 2015). Multiple treatment inferences may be of issue with the senior-level students as they have had simulation experiences in the past that may influence the current study findings. Examination between the junior-level and senior-level student responses will be evaluated for any variations between the two groups. Interaction effects of selection biases and the experimental variable is a risk for this convenience sample. The students were in a single cohort in the nursing program which may have influenced the study findings, but the testing between the two groups and noting of differences helped to decrease this external validity threat.

Threats to Internal Validity

Internal validity threats come from the different instruments, procedures, treatments, or participants that may cause incorrect interpretation of the results regarding the population under study (Creswell, 2009). The instruments used in this study required students to use self-reporting, and self-report bias may occur with subjective self-report assessments (Kuentzel, Henderson, & Melville, 2008). The internal constructs of both the JSE-HPS and the SCLS supported the constructs of my study. Using the same instruments at both intervals supported the study outcomes, but participants could become familiar with the instrument questions which could influence how they answered the post test.

The participants were in two different levels of their nursing education courses that may impact the internal validity of the findings, both positively and negatively. Data collection was completed in a single day for both the junior and senior level students, which helped to minimize the threat to the internal validity and experimental

mortality. The study used a convenience sample of students enrolled in their junior and senior levels of nursing school. Random selection of students was not possible as the focus on nursing students was required for the study. The use of random assignment into the control and experimental groups helps to decrease the risk to the internal validity of the findings (Frankfort-Nachmias et al., 2015). The use of the entire cohort helped to minimize the risk of statistical regression, as the participants varied in knowledge, skill, and confidence level with nursing care.

All testing was completed in a single day for both the junior-level and senior-level nursing students which supported the internal validity of the findings with a consistent history and maturation time over the course of the research study (Creswell, 2009). The differences between the two group's experience in nursing school's traditional clinical site could have influenced differences between the two groups' outcome data. The data analysis examined mean differences between the two groups of cohorts.

Threats to Construct or Statistical Validity

Construct validity threats occur when the constructs under question are not defined and measures adequately (Creswell, 2009). The use of the JSE-HPS and NLN-SCLS supported the constructs required to measure empathy and satisfaction and self-confidence with simulation by the frequent testing performed in the research literature. Statistical conclusion validity occurs when inferences are drawn from the data inaccurately because of violation of assumptions on the specific statistical tests an inadequate number of participants, and inaccurate statistical power (Creswell, 2009; Field, 2013). The university's nursing program had an adequate number of nursing

students that met inclusion criteria to participate in this study. An adequate sample size assists to decrease the risk of statistical conclusion validity. Assumptions for the independent t-test were reviewed and tested for as required.

Ethical Procedures

Highest regard was given to protecting the rights and minimize risk to the participants under study for this research study. Permission was obtained from the Walden University's IRB, as well as the university's IRB before any data collection procedures were initiated. The initial agreement was obtained from the university's dean and simulation director before approaching the students enrolled in the clinical nursing courses. Once permission was obtained from the IRBs, the nursing students were approached the day of the simulation experience. Permission to participate in this research study was obtained, and those that participate remained anonymous. Students were provided informed consent, but participation in the surveys was not tracked during the simulation day, beyond giving the information and clarification as needed.

Informed consent was given both verbally and in writing before beginning the research process. All students were provided background information about the study, the procedures used during the study, the students' responsibilities, the right to refuse to participate without any penalty to the student, and the privacy/confidentiality used throughout the study's process. The students were required to participate in the simulation experience per their clinical course requirements, but participation in my study was voluntary.

Each student was given access to participate in the research study, but some students chose not to participate by not filling out the surveys. Students were informed their participation in the study had no influence on their grade or review from their clinical instructors. To further ensure this, the participants completed the survey on their own time before and after the simulation experience. All students were given the same amount of time to complete the research instruments before and after the simulation experience. Students were able to withdraw from the study at any time without negative repercussions.

The consent and surveys were provided through the electronic survey link. The electronic survey link contained the consent as the first option for all students. Students that consented to participate were directed to complete the instruments in the survey and those that did not consent were not given any further questions in the electronic survey questions. The surveys had no identifiers beyond the descriptive data, and each survey had a random number assigned to it. All responses were kept confidential, and no identifiers were placed in the survey that could lead back to the individual student. All data were provided through the SurveyMonkey link and on their secure server for up to 30 days. I kept all data in a secure removed, password protected computer, in a personal location where it will be kept for five years.

All participants were given the opportunity to ask questions during the research study. The participants were also given the primary researcher's contact information for any concerns or follow-up questions, and the faculty and students were updated on the results of the research study. Participation in the research study did not pose a threat to

the students' welfare or wellbeing. The additional time required to complete the surveys posed a risk of minor discomfort from sitting in front of the computer for a longer period.

The benefits of the students participating in the research study was a better understanding of what empathy is in patient care, increased knowledge on the research process, and the ability to help support best-practices in simulation education. Anonymity was maintained during the reporting phases of the research study, and concentrated efforts to minimize risk to the students was maintained.

Summary

Empathy is a core component of nursing care. It is important to provide learning opportunities to encourage nursing students to continue to practice empathetic patient care. The type of fidelity used during simulated clinical experiences may influence nursing students' abilities to relate to their simulated patient; as well as, their self-confidence and satisfaction with the type of fidelity used during the simulated clinical experiences. The quasi-experimental, pre-test, post-test design examined a sample population of nursing students to help provide evidence for simulated clinical experiences.

Current research supports the use of simulation experiences for nursing students while in nursing school, but there is a gap in the literature for the type of fidelity that enhances nursing students' empathy levels. This research study adds to the current body of knowledge and provide some insight into nursing students' empathy, satisfaction, and self-confidence with the type of fidelity used during simulated clinical experiences. Chapter 3 described how the research study would be conducted and chapter 4 will detail

the data analysis results, presentation of the descriptive and statistical tests and assumptions that will be conducted.

Chapter 4 expands on the interventions of this research study. The data collection procedures used for the current study, the results gathered during the study, display of the findings, and discussion on the overall results. The findings in relation to external validity will be discussed, any challenges encountered, and support or rejection of the hypotheses will be discussed.

Chapter 4: Results

Introduction

The purpose of this study was to compare nursing students' empathy, self-confidence, and satisfaction levels between the use of HFMS and SP actors used during their simulated clinical experience. The research questions and the hypotheses for this research study were:

RQ1: What effect does experiential training with HFMS vs. simulation with a SP actor have on the development of empathy levels in nursing students during simulated experiences?

$H_0$1: There will be no difference in the development of empathy levels in nursing students who have experiential training with HFMS versus training with a SP actor during simulated experiences.

H_a1: There will be a difference in the development of empathy levels in nursing students who have experiential training with HFMS versus training with a SP actor during simulated experiences.

RQ2: What effect does experiential training with HFMS vs. simulation with a SP actor have on nursing students' satisfaction and self-confidence in learning?

$H_0$2: There will be no difference in satisfaction and self-confidence in learning actor for nursing students who have experiential training with HFMS versus training with a SP during simulated experiences.

H_a2: There will be a difference in satisfaction and self-confidence in learning for nursing students who have experiential training with HFMS versus training with a SP actor during simulated experiences.

The results of this study were computed using the statistical package for the social sciences (SPSS) for the participants who answered the demographic information, JSE-HPS, and NLN-SCLS data downloaded into SurveyMonkey. The participants had access to the SurveyMonkey link before and after their simulation experience to complete on their own time. Chapter 4 will detail the data collection procedures, changes and challenges encountered during the research process, the results of the study, and the summary.

Data Collection

Data collection began in the spring semester of 2018 after Walden University's Institutional Research Board (IRB) granted approval (#01-26-18-0604155) and the partnering university's IRB granted permission for nursing students to be recruited and collect data. I approached nursing students enrolled in their first (N1) and second semester (N2) clinical nursing courses before their simulated clinical experience. I approached the N2 students one week before their clinical simulation day and described the purpose of my study and asked for voluntary participation. The students' clinical instructor provided the pre-simulation SurveyMonkey link via email on the day I approached the students regarding the research study. N2 students were scheduled to rotate through the simulation over the following Thursday and Friday. I was present during the 2-day simulated clinical experience to clarify any questions regarding the

research study. The students arrived according to their timed simulation rotation schedule provided by their clinical faculty. The faculty determined which students would be in each group and students were instructed to sit with their groups upon arrival to the simulation pre-briefing room. The students rotated in groups of four with random assignment to a total of four rooms, two rooms that had the experimental SP group and two rooms with the control HFMS group. The faculty randomly assigned the student groups to their tables as they entered the room. The HFMS group were the first 2 tables and the second two tables were the SP groups. The total number of students enrolled in the N2 course consisted of 104 students, with 42 participating in the pre-simulation electronic survey.

The N1 students were approached one week before the start of the rotating simulation that extended over a 2-month period during the spring semester. The N1 students arrived in groupings of 16 students per week to participate in their simulation experience. The groups did fluctuate between 3-4 students as some students were absent from the clinical simulation day or there was an uneven number scheduled for the day. The students attended the simulation experience on Wednesday and Thursday with approximately four students per group, with two groups rotating through daily. The N2 clinical nursing course consisted of 104 students with 93 participating in the presimulation electronic survey. The survey for the study was available prior to the simulation day, but the students were not required to participate in the study, with 11 students not participating in the presimulation survey.

Nursing students who participated during the first three weeks of the rotating simulation schedule interacted with the SP during their simulation experience. Nursing students who participated in the simulation experience the final three weeks of the rotating schedule participated with the HFMS during their simulation experience. The schedule for each student was completed after random assignment was determined and based on the availability of the clinical lab. I was present for the simulation rotations with the experimental SP group, but not present during the control HFMS group. The simulation coordinator who facilitated the N1 students' rotated simulation experiences gave the nursing students the research study's objectives and voluntary participation with an electronic link to SurveyMonkey when she sent out the presimulation information to the students. The simulation coordinator did not discuss the project during the simulation day.

Data Collection Changes

The plan for this study involved approaching students in their first and last clinical nursing courses that contained a simulation experience scheduled for all students to complete the simulation in a single day. IRB approval was not received until after the N1 students' single day simulation experience was complete. The final clinical semester students' single day simulation was canceled secondary to a lack of available faculty to facilitate the simulation. The unavailability of the final semester students prompted the need to approach the N2 students that were completing their clinical simulation experience in a single day simulation.

Baseline Descriptive and Demographic Data

There were 104 students in both the N1 and N2 clinical courses for a possible sample of 208 students. Participation in the research study was voluntary and not all students chose to participate. The students' participation was anonymous; therefore, negative consequences for non-participation was avoided. The N1 clinical course had 93 (69.6%) students participate in the research study while the N2 clinical course had 42 (30.4%) students participate. The majority (70.4%) of the participants were 18-24 years old, mostly female (86.6%), and single (70.9%). Fifty-nine percent of the nursing students were Caucasian, 20% African American, 13% Latino descent, 6% Asian descent, 1.5% American Indian/Alaska Native, and 0.8% rather not say. Table 1 contains the demographic characteristics of the nursing students.

Table 1

*Demographic Characteristics of Nursing Students (*N *=135)*

Characteristic	*n*	%
Age at time of survey (years)		
18-24	95	70.37
25-34	27	20
35-44	11	8.15
45-54	2	1.48
Gender		
Female	116	86.57
Male	18	13.43

(table continues)

Marital Status at time of survey		26.87
Married	36	70.90
Single	95	2.24
Divorced	3	
Race		20.00
Black/African American	27	58.52
White/Caucasian	79	13.33
Latino/Mexican Descent	18	1.48
American Indian/Alaska Native	2	5.93
Asian Descent	8	0.74
Rather not say	1	
Current Semester in Clinical Course		69.63
Novice 1 Semester	93	30.37
Novice 2 Semester	42	

The G* Power calculation determined the needed sample size for validity was 128 nursing students with 64 students in the control group (HFMS) and 64 students in the experimental group (SP). The pre-simulation survey had 135 valid responses with eight not calculated secondary to incomplete surveys. There were 123 valid responses post-simulation surveys. After the surveys were totaled, the experimental (SP) group had 59 (48%) while the control group (HFMS) reached the required 64 (52%) students. Therefore, the number of participants in the research study fell slightly short of the number calculated a priori via the G*Power calculation of alpha of 0.05, power of 0.80, and anticipated effect size of .50.

Most of the nursing students had experience with simulation (97.8%) as a learning tool with both HFMS and SPs, (see Table 2). The pre-simulation survey and post-

simulation survey influences internal validity as the participants became familiar with the JSE-HPS used in both surveys and may be a threat to the internal validity of the research findings (Creswell, 2009). I calculated a Cronbach's alpha of .739 for JSE-HPS scale by using the scores of the pre-simulation and post-simulation surveys. This reliability level correlates with previous research of the JSE-HPS in nursing students (Kiersma, Chen, Yehle, & Plake, 2013; Montanari et al., 2015; Williams et al., 2015).

Table 2
*Simulation and Healthcare Background of Participating Nursing Students (*N = *135)*

Characteristic	*n*	%
Participated in previous simulations		
Yes	131	97.76
No	3	2.24
Have experience in healthcare		
Yes	66	48.89
No	69	51.11

The pre-simulation survey contained all the demographic data while the post-simulation contained the different levels of education and designation of HFMS and SP. The surveys were independent of each other and did not link the demographic data with the education level and experimental or control group. Therefore, demographic data analysis between the groups was not possible.

Results

An independent samples *t*-test was conducted to compare the mean JSE-HPS scores for nursing students before their simulation experience ($N = 135$) and after ($N = 127$). The assumption of homogeneity of variance was assessed by the Levene's test, $F = .617$, $p = .433$ which indicated no significant violation of the equal variance assumption; therefore, the equal variances assumed version of the *t*-test was used. The demographic data were not linked to the N1 and N2 groups, so homogeneity between the different groups was not addressed. The *t*-test results revealed no significant differences in the JSE-HPS scores before the simulation ($M = 112.62$, $SD = 10.77$) versus after the simulation ($M = 114.54$, $SD = 11.42$); $t(260) = -1.399$, $p = .163$, two-tailed. The 95% CI for the difference between sample means, $M_1 – M_2$, had a lower bound of -4.62 and an upper bound of .78. Table 3 and Figures 1 and 2 two present the pre-simulation and post-simulation breakdown of the JSE-HPS scores.

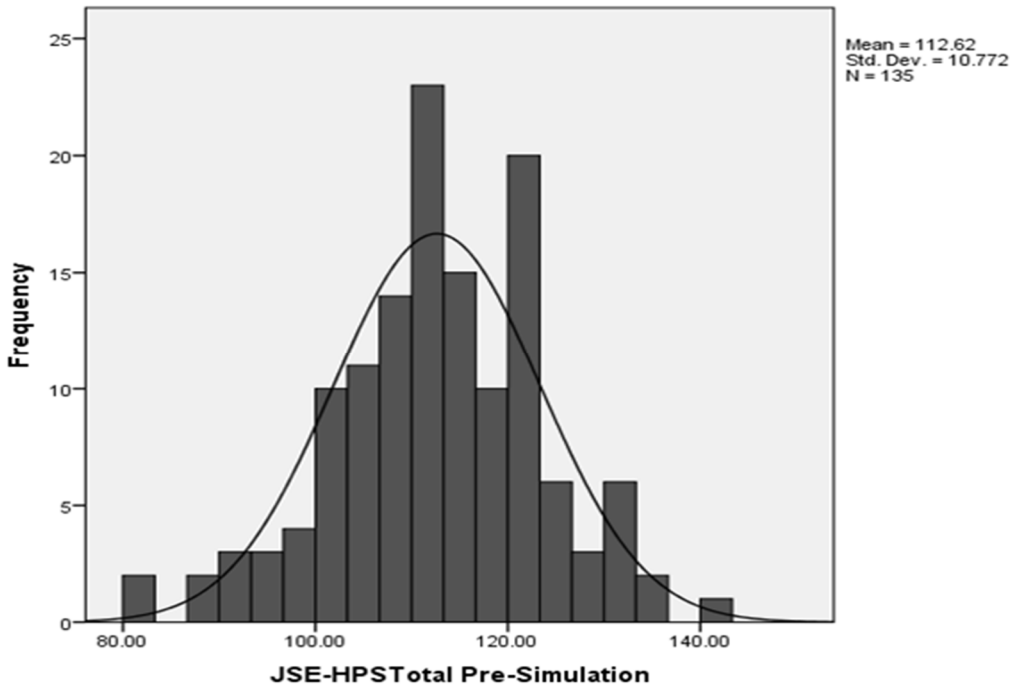

Figure 1. Pre-Simulation JSE-HPS Total Mean Scores

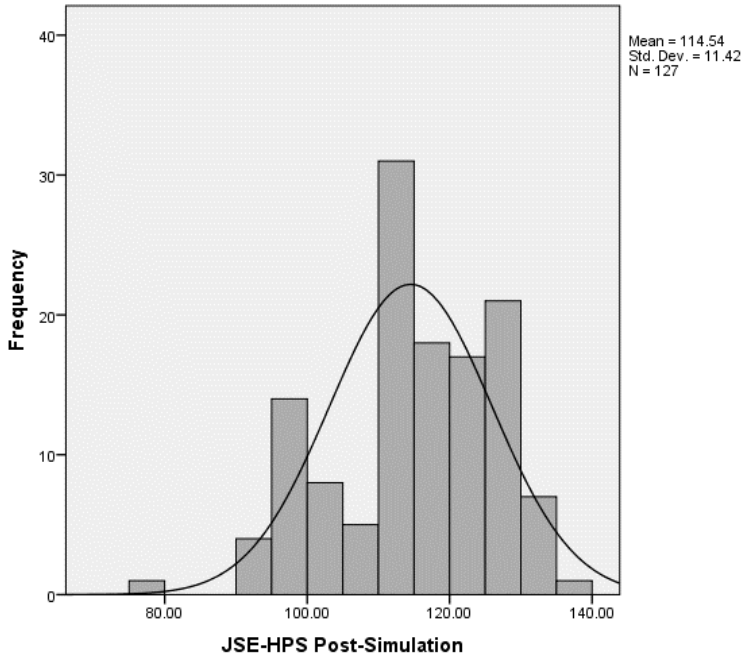

Figure 2. Post-Simulation JSE-HPS Total Mean Score

The participants answered the JSE-HPS before (N =135) and after (N = 127) the simulation experience (M = -1.918, SD = 1.371), with no statistical differences between the pre-simulation and post-simulation empathy levels, $t(260) = -1.399$, $p = .163$, two-tailed. The 95% CI for the differences between the sample means, $M_1 – M_2$, had a lower bound of -4.62 and an upper bound of -.781, (see Table 3).

Table 3

JSE-HPS Total Before and After Simulation

Variable	Mean	SD	*t*	*p*
JSE Total	-1.918	1.371	-1.399	.163

An independent samples *t*-test was conducted to compare means between the JSE-HPS of the post test for nursing students in the control group using HFMS (N = 64) and the experimental group using SP (N = 59). The assumption of homogeneity of variance was assessed by the Levene's test, $F = 3.643$, $p = .059$ which indicated no significant violation of the equal variance assumption; therefore, the equal variances assumed version of the *t*-test was used. The HFMS group (M = 114.28, SD = 12.54) and SP group (M = 115.15, SD = 9.79) showed no statistical differences; $t(121) = .427$, $p = .670$, two-tailed. The 95% CI for the difference between sample means, $M_1 – M_2$, had a lower bound of -3.17 and an upper bound of 4.91, (see Table 4). The null hypothesis ($H_0 1$) was retained because there were no differences in the development of empathy levels in nursing students during simulated experiences who have experiential training with high-fidelity manikin simulators versus training with a standardized patient actor.

Table 4

JSE-HPS Mean Comparison of HFMS and SP in Nursing Students

Variable	Mean	SD	*T*	*p*
JSE Total	.87	2.04	.427	.670

An independent sample *t*-test was conducted to compare means between the National League of Nursing (NLN) satisfaction and self-confidence scale between the HFMS and SP groups. The assumption of homogeneity of variance was assessed by the Levene's test, $F = 2.352$, $p = .128$ which indicated no significant violation of the equal variance assumption. Therefore, the equal variances assumed version of the *t*-test was used. The HFMS satisfaction scores ($M = 21.87$, $SD = 4.46$) and SP satisfaction scores ($M = 22.23$, $SD = 3.52$) showed no statistical significance; $t(120) = .493$, $p = .623$. The 95% CI for the difference between sample means, $M_1 - M_2$, had a lower bound of -1.09 and an upper bound of 1.81, (see Table 5).

The assumption of homogeneity of variance was assessed by the Levene's test, $F = 4.646$, $p = .033$; this indicated a violation of the equal variance assumption; therefore, the equal variances not assumed version of the *t*-test was used. The self-confidence scores in the HFMS group ($M = 33.76$, $SD = 4.81$) and the SP group ($M = 33.34$, $SD = 3.74$) showed no statistical mean difference with $t(120) = -.534$, $p = .59$. The 95% CI for the difference between sample means, $M_1 - M_2$, had a lower bound of -1.96 and an upper bound of 1.12, (see Table 5). The null hypothesis ($H_0 2$) was retained with no difference on nursing students' satisfaction, and self-confidence in learning during simulated

experiences who have experiential training with high-fidelity manikin simulation versus training with a standardized patient actor.

Table 5

NLN Satisfaction and Self-Confidence Comparing HFMS and SPs During Simulation

Variable	Mean	SD	*T*	*P*
NLN Sat Total	.360	.730	.493	.623
NLNSC Total	-.415	.784	-.530	.597

Summary

Chapter 4 provided the research findings based on the statistical tests. Changes made were explicated along with answering the research questions and hypotheses. Charts and tables provided a breakdown of the descriptive statistics and the independent *t*-tests used to analyze the data. The results revealed no significant differences in nursing students' empathy, self-confidence, and satisfaction between the HFMS versus the SP simulations. Chapter 5 will discuss the interpretation of the findings, limitations of the study and future recommendations.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to determine if the type of fidelity chosen for simulated experiences had an impact on nursing students' empathy, satisfaction, and self-confidence levels during simulated experiences. A quantitative quasiexperimental pretest posttest design was used with a convenience sampling of nursing students during a simulated clinical day with HFMS versus SP actors. Nursing students enrolled in their first and second clinical course completed their simulated day and were randomly assigned to the control group (HFMS) or the experimental group (SP).

The two research questions driving this research study were:

RQ1: What effect does experiential training with HFMS vs. simulation with a SP actor have on the development of empathy levels in nursing students during simulated experiences?

RQ2: What effect does experiential training with HFMS vs. simulation with a SP actor have on nursing students' satisfaction and self-confidence in learning?

There were no noted statistical differences regarding nursing students' empathy, satisfaction, and self-confidence when interacting with a HFMS or SP during the simulated clinical experience. Chapter 5 will present the interpretation of the findings, limitations of the study, recommendations, implications for positive social change, and the conclusion.

Interpretation of the Findings

Empathy is a core component of patient-centered care that facilitates open communication between patients and healthcare providers (Dinkins, 2018; Mennenga et al., 2016). Nurse educators that continue to use high-fidelity simulation need to integrate empathy into their simulation experiences. There is a gap in the literature regarding how the choice of fidelity in simulation experiences impacts empathy, satisfaction, and self-confidence levels in nursing students. The results of this study addressed this gap.

Empathy: SP Versus HFMS

The first purpose of this research was to determine if there were differences between nursing students' empathy levels depending on whether they had a simulation experience with a HFMS versus a SP. No statistically significant differences were found. Kubin and Wilson (2017) found no statistical differences in worry and comfort nursing students who conducted a pediatric assessment with either HFMS or a live child. Ignacio, Scherpbier, Dolmans, Rethans, and Liaw (2017) used SPs and HFMS to evaluate differences in nursing students' stress levels when caring for either an SP or a HFMS that had a deteriorating medical condition. There was no significant difference in the instruments that assessed worry, comfort, or stress for nursing students when caring for either an SP or a HFMS which supports the use of both HFMS and SPs for nursing education. There is limited research that evaluates nursing students' empathy levels when caring for either a HFMS or a SP.

Research in psychiatric simulations has primarily utilized SPs which leaves a research gap for the use of HFMS in psychiatric simulations. Abdool, Nirula, Bonato,

Rajji, and Silver (2017) conducted a meta-analysis exploring the use of simulation in undergraduate psychiatry education and found only one study that used HFMS over the 48 studies that used SPs for their education and research. Nonverbal feedback such as facial expressions, eye contact, body posturing, and attitude that SPs provide to the healthcare students was cited as the major determining factor for the use of SPs over HFMS in psychiatric simulation (Abdool, Nirula, Bonato, Rajji, & Silver, 2017). Ongoing research to explore the differences in empathy and psychiatric education between the two types of fidelity is required to establish best practices for nursing education.

Satisfaction and Self-confidence: SP Versus HFMS

The second purpose of this research was to examine any differences in nursing students' satisfaction and self-confidence when completing a simulated experience with a HFMS versus a SP which revealed no differences between the groups. The NCSBN's longitudinal study used both HFMS and SPs in the simulated clinical environment in comparison with the traditional clinical environment but did not evaluate difference between the use of the SP or HFMS (Hayden et al., 2014). Hayden et al., (2014) conducted research with simulation experiences at 0%, 10%, 25%, and 50% in the study and found no statistical differences between the groups and approved up to 50% of clinical time may be in the simulated setting. The approval of up to 50% of clinical time in the simulated environment requires nurse educators to research differences between the HFMS and the SPs used in simulation and nursing students' satisfaction and self-confidence between the two types of fidelity.

Luctak-Flude, Wilson-Keates, and Larocque (2012) found an increase in nursing students' satisfaction and self-confidence when conducting a respiratory assessment (p = < .05) with a SP over the HFMS. Tzer, Dinc, and Elcin (2016) also found statistical significance ($p < .001$) in satisfaction and self-confidence for nursing students' assessment and knowledge acquisition with a SP over the HFMS. Ignacio et. al., (2015) conducted a mixed methods study which showed no statistical significance ($p = .744$) between the nursing students caring for the HFMS or SP who deteriorated during the simulation, but the qualitative data did suggest the use of a SP was perceived more valuable in the facial expressions and increased realism the nursing students perceived during the simulation. The conflicting research findings exploring differences between the HFMS and SP require ongoing research for best-practices for nurse educators to choose between the two types of fidelity used during simulation experiences.

Theoretical Implications

Kolb's ELT consists of four cyclic phases which are the concrete experience, reflective observation, abstract conceptualization, and active experimentation. The four phases were applied in this study by (a) the concrete experience where the students engaged in the simulation activity, (b) reflective observation where the students gave thoughtful deliberation to the simulation experience and discussed the simulation with their peers and faculty, (c) abstract conceptualization was used to add to the nursing students' knowledge base and identification of relationship between different variables in the simulation and make conclusions about their abilities, empathy, satisfaction, and self-confidence, and (d) active experimentation enabled the nursing students to apply the

principles they had learned from their previous traditional and simulated experiences which then integrated the new knowledge gained during the study's simulation into their knowledgebase for future interventions in patient care (Kolb, 1984). The results of this study supported Kolb's ELT.

The relevancy of being able to go through the Kolb's four cycles enables students the opportunity to increase their knowledge base on specific topics with each new simulation and ultimately enable nursing students to assume the professional nursing role. The simulation environment is a safe area that allows students to make mistakes they can learn from (Atkinson, Jr., & Murrell, 1988; Chmil et al., 2015; Kolb, 1984). Nursing instructors are in the clinical setting to ensure safe patient care and prompt the students to make correct choices. The simulated environment places the educator into a facilitator role that allows the students to be able to complete all nursing actions independently whether the action is correct or incorrect and then cycle through the four phases of the ELT.

Limitations of the Study

Limitations are inherent for all research designs, and this study was no exception. The generalizability to other nursing students outside the central Texas area may be limited. The university for the population under study was part of a small Christian university and most of the students were female. The power analysis calculated the need for 128 participants divided between the control and experimental group. The sample for the study consisted of 134 students from two different cohorts that participated in the pre-simulation survey. The post-simulation survey consisted of 123 students with 59 in the

experimental group and 64 in the control group. The different cohorts and decreased post-simulation responses also influence the ability to generalize findings.

Most of the participants were in their early twenties, Caucasian, and female. Approximately half the participants had experience in healthcare and half did not. The background of the students may have influenced the study outcomes as well as cultural similarity of the participants. Most of the students had completed previous simulation experiences that may influence the current study's findings. The generalizability of the study findings is limited based on the specifics of the population under study.

Recommendations

Future research needs to continue to determine the appropriate choice of fidelity for nursing students to facilitate empathy, satisfaction, and self-confidence. A population with more diversity, at differing educational, and healthcare levels need to be used. Also, a multi-site, multi-state research study would assist to provide more generalizable data. Larger cohort sizes at the same level of education would also help add to the evidence. The pre-ponderance of research regarding patients with mental health diagnosis have utilized SPs in their research (Abdool et al., 2017; Davison, Mackay, & McGivern, 2017; Goodman & Winter, 2017). Well-designed research studies in different specialties are needed to support the type of fidelity most effective during those simulation experiences.

The results from this study will be integrated into the overall body of evidence that supports best practices in simulation education. The results support nurse educators in choosing either a HFMS or a SP for empathy, satisfaction, and self-confidence in nursing students' simulation experiences. Educators need to be aware of the need to

teach empathy, and if ongoing initiatives are supporting the growth or decline of empathy during nursing school tenure (Bas-Sarmiento et al., 2017; Bauchat et al., 2016; Ward, 2016). Ongoing research and looking at the entirety of the evidence is critical for best practice in simulation.

Implications

Positive Social Change

Patient-centered, empathetic healthcare leads to improved patient outcomes, decreased adverse events, and overall satisfaction (Bauchat et al., 2016; Crotty & Doody, 2015; Doherty & Thompson, 2014; Frankel et al., 2017; Teding van Berkhout & Malouff, 2016). Research has shown conflicting data on whether empathy decreases in nursing and healthcare students over the course of their tenure in their educational programs (Pazar, Demiralp, & Erer, 2017; Sheehan, Perrin, Potter, Kazanowski, & Bennett, 2013; ten Hoeve, Castelein, Jansen, Jansen, & Roodbol, 2017; Ward, 2016; Ward et al., 2012; Wilson, Prescott, & Becket, 2012). Nurse educators need to utilize best practices when designing simulation experiences and foster education that supports empathy in nursing students. Positive social change begins with one nurse at a time providing patient-centered, empathetic, nursing care to each of his or her patients. The results of my study impact positive social change to empower nurse educators to choose either a HFMS or SP for nursing students to perform empathetic patient care in the simulated clinical setting.

Recommendations for Practice

The need for current nurse educators and practicing nurses to be a role-model for empathetic nursing care begins at the entry-level of nursing education, and throughout the

nursing students' tenure while in nursing school. Future research can focus on interventions to develop nursing students' empathy, satisfaction, and self-confidence in patient care (Bas-Sarmiento et al., 2017; Ireland, 2017; Jeffrey & Downie, 2016; Ward, 2016). Positive social change to the healthcare system begins at the start of the nurses' education and may be facilitated in the simulated clinical environment.

Conclusion

Half of all nursing students' clinical education may be in the simulated setting. The current research study contributes to best practices when choosing the type of fidelity to be used for nursing students while in the simulated clinical setting. There were no noted statistical differences noted in nursing students' levels of empathy, satisfaction, and self-confidence when interacting with a HFMS or a SP. Ongoing research is required to support best-practices in simulation education and when choosing to use a HFMS or SP. The use of Kolb's experiential learning theory supported this research initiative and is helpful in simulation research. Positive social change begins with nursing students that are supported in and helped to develop empathy, satisfaction, and self-confidence in nursing care.

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Appendix A: Student Demographic Survey

Directions: Please circle your response and provide any requested information as appropriate.

Age _____yrs

Marital Status
Married
Single
Divorced
Widowed
I'd rather not say

Gender
Male
Female

Race
White or Caucasian
Black, or African American
Latino or Mexican Descent
American Indian or Alaska Native
Asian Descent
Other Pacific Islander
I'd rather not say

Do you have experience with simulation as an educational tool? Yes No

If yes, how many simulations have you participated in?_____

Do you have experience working in healthcare? Yes No

If yes, was the experience as:
an employee Yes No
a volunteer Yes No

If yes, about how much time have you spent working in healthcare? _____yrs

Appendix B: JSE-HPS Permission

RE: JSE-HPS
Jefferson Scale of Empathy <empathy@jefferson.edu>
Mon 6/12, 10:30 AMDawn Riess

Hi Dawn,

Great, thank you for your agreement to the terms of use. I look forward to hearing more about your study. As to the timeframe, we ask that you complete the administration(s) within 6 months.

Thanks,

Shira

From: Dawn Riess [mailto:dawn.riess@waldenu.edu]
Sent: Monday, June 12, 2017 11:18 AM
To: Jefferson Scale of Empathy <empathy@jefferson.edu>
Subject: Re: JSE-HCP

Hi Shira,

I will be able to comply with all of these requirements without issue. I have just begun the dissertation process and I hope to begin research in Spring term of 2018. I will have additional information about my student population at that time and I do plan to publish the study (after the dissertation is completed). I'm VERY excited to use your instrument. I have been researching the most appropriate scale on empathy and nursing students, the JSE-HPS is the most valid and reliable scale I have found.

I appreciate the assistance with this and I will be following up again closer to the time that I will need to utilize the scale. What kind of timeline should I adhere to? Would a couple months prior be sufficient time?

Thank You!

Dawn Riess

From: Jefferson Scale of Empathy <empathy@jefferson.edu>
Sent: Friday, June 9, 2017 2:58:10 PM
To: Dawn Riess
Cc: Mohammadreza Hojat
Subject: RE: JSE-HCP

Hi Dawn,

Thank you for your interest in the Jefferson Scale of Empathy. We're glad you're considering the JSE for your research project with nursing students, where the HPS-version would be the most appropriate. Once we receive your agreement to the conditions of use, we will send you the Scale, scoring algorithm and the User Guide so will be able to conduct your study.

Although there is normally a charge for using the JSE, we sometimes make concessions for medical students if no funding is available. In that case, permission might be granted to make copies of the scale, but you would have to do all data entry, scoring and other analyses yourself as I know you want to do anyway. We do not grant free use for multi-institutional or multi-year projects; or for multiple versions of the JSE.

If you would like to be considered for this, these conditions apply:

- Please send a brief description of your study including the expected number of participants, the institution from which they will be selected, and the duration of the study (approximate beginning and ending dates).
- If the scale is posted on a website, it needs to be a secure site with access by invitation only and it needs to be removed from the website promptly at the permission end date.
- Please copy the scale exactly as it is. The text of the items, their order of appearance, instructions and response scale must remain unchanged and intact.
- Please include the following copyright on all administrations: © *Thomas Jefferson University, 2001. All rights reserved.*
  Jefferson, as the sole copyright holder, maintains the copyright for granting or declining permission for any additional use of any and all versions of the JSE
- Administrations are for a single not-for-profit project which includes participants from a single institution and lasts not more than 6 months.
- You agree to follow our scoring instructions, particularly on handling the missing data.
- Please do not share any part of the copyrighted files you receive with any person or entity except those directly involved in your project who agree to honor the copyright.
- If the results of this project will be published, include the names of all authors/investigators and send us a copy of any publication resulting from the study.

Please consider these conditions to ensure that your project meets these criteria. If any condition cannot be met but you believe there are extenuating circumstances that warrant a waiver, please include that in your response. Once we have the information

requested above, including your written agreement to each condition, we will consider your request to use the JSE for free or at a reduced rate.

I look forward to hearing from
you.

Regards,

Shira Carroll

Empathy Project Coordinator

Center for Research in Medical Education & Health Care

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empathy@jefferson.edu

Jefferson.edu/ScaleofEmpathy

Appendix C: JSE-HPS

Jefferson Scale of Empathy

Scoring Algorithm

A respondent must answer at least 16 (80%) of the 20 items; otherwise, the form should be regarded as incomplete and excluded from the data analysis.

If a respondent fails to answer 4 or fewer items, the missing values should be replaced with the mean score calculated from the items the respondent completed.

To score the scale: Items 1, 3, 6, 7, 8, 11, 12, 14, 18, and 19 are reverse scored items (i.e., Strongly Agree=1…Strongly Disagree=7), while the other items are directly scored on their Likert weights (i.e., Strongly Disagree=1…Strongly Agree=7).

The total score is the sum of all item scores.

The higher the score, the more empathic the behavioral orientation.

PLEASE NOTE: This scoring algorithm is provided for the sole use of scoring JSE forms purchased for a single project. Copying or sharing the algorithm with any other person or entity is prohibited.

Jefferson Scale of Empathy

Health Professions Student version (HPS-version)

Instructions: Using a ball-point pen, please indicate the extent of your agreement or disagreement with *each* of the following statements by marking the appropriate circle to the right of each statement.

Please use the following 7-point scale (*a higher number on the scale indicates more agreement):*
Mark one and only one response for each statement.

1-------2-------3-------4-------5-------6-------7
Strongly Disagree ***Strongly Agree***

	1	2	3	4	5	6	7
1. Health care providers' understanding of their patients' feelings and the feelings of their patients' families does not influence treatment outcomes.....	O	O	O	O	O	O	O
2. Patients feel better when their health care providers understand their feelings.	O	O	O	O	O	O	O
3. It is difficult for a health care provider to view things from patients' perspectives.	O	O	O	O	O	O	O
4. Understanding body language is as important as verbal communication in health care provider - patient relationships.	O	O	O	O	O	O	O
5. A health care provider's sense of humor contributes to a better clinical outcome.	O	O	O	O	O	O	O
6. Because people are different, it is difficult to see things from patients' perspectives..	O	O	O	O	O	O	O
7. Attention to patients' emotions is not important in patient interview.	O	O	O	O	O	O	O
8. Attentiveness to patients' personal experiences does not influence treatment outcomes……...	O	O	O	O	O	O	O
9. Health care providers should try to stand in their patients' shoes when providing care to them.....	O	O	O	O	O	O	O
10. Patients value a health care provider's understanding of their feelings which is therapeutic in its own right.	O	O	O	O	O	O	O
11. Patients' illnesses can be cured only by targeted treatment; therefore, health care providers' emotional ties with their patients do not have a significant influence in treatment outcomes.	O	O	O	O	O	O	O
12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.	O	O	O	O	O	O	O
13. Health care providers should try to understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language.....	O	O	O	O	O	O	O
14. I believe that emotion has no place in the treatment of medical illness.	O	O	O	O	O	O	O

15. Empathy is a therapeutic skill without which a health care provider's success is limited							
16. Health care providers' understanding of the emotional status of their patients, as well as that of their families is one important component of the health care provider - patient relationship.....	O	O	O	O	O	O	O
17. Health care providers should try to think like their patients in order to render better care.....	O	O	O	O	O	O	O
18. Health care providers should not allow themselves to be influenced by strong personal bonds between their patients and their family members.....	O	O	O	O	O	O	O
19. I do not enjoy reading non-medical literature or the arts.....	O	O	O	O	O	O	O
20. I believe that empathy is an important factor in patients' treatment.	O	O	O	O	O	O	O

Appendix D: NLN-SCLS Permission

Tools and Instruments

Use of NLN Surveys and Research Instruments

The NLN's copyrighted surveys and research instruments are an important part of its research activities.

Permission for non-commercial use of surveys and research instruments (includes, theses, dissertations, and DNP projects) is granted free of charge. Available instruments may be downloaded and used by individual researchers for non-commercial use only with the retention of the NLN copyright statement. **The researcher does <u>not</u> need to contact the NLN for specific permission**. In granting permission for non-commercial use, it is understood that the following caveats will be respected by the researcher:

1. It is the sole responsibility of the researcher to determine whether the NLN research instrument is appropriate to her or his particular study.
2. Modifications to a survey/instrument may affect the reliability and/or validity of results. Any modifications made to a survey/instrument are the sole responsibility of the researcher.
3. When published or printed, any research findings produced using an NLN survey/instrument must be properly cited. If the content of the NLN survey/instrument was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

Permission for commercial use of NLN surveys and research instruments must be obtained from the NLN. Commercial use includes publishing in journals, books, or inclusion in any product that is sold. Please submit a written request to copyrightpermission@nln.org. In most instances, requests for permission are reviewed within 4 weeks of their receipt.

Appendix E: **Student Satisfaction and Self-Confidence in Learning**

Student Satisfaction and Self-Confidence in Learning

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

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

Satisfaction with Current Learning	SD	D	UN	A	SA
1. The teaching methods used in this simulation were helpful and effective.	1	2	3	4	5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	1	2	3	4	5
3. I enjoyed how my instructor taught the simulation.	1	2	3	4	5
4. The teaching materials used in this simulation were motivating and helped me to learn.	1	2	3	4	5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	1	2	3	4	5
Self-confidence in Learning	SD	D	UN	A	SA
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	1	2	3	4	5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	1	2	3	4	5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	1	2	3	4	5
9. My instructors used helpful resources to teach the simulation.	1	2	3	4	5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	1	2	3	4	5
11. I know how to get help when I do not understand the concepts covered in the simulation.	1	2	3	4	5
12. I know how to use simulation activities to learn critical aspects of these skills.	1	2	3	4	5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time..	1	2	3	4	5