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Impact of Personalized Interactive Storytelling on Suspension of Disbelief in Clinical Simulation

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This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

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by

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Dedication

This project is, first and foremost, dedicated to my amazing best friend and husband, Dr. Alan Xenakis. Doc, your unending support, love, wisdom, and encouragement has carried me through this journey. Thank you for recognizing my strengths and potential, even when I didn't. Your encouragement and unlimited support and love have been the wind beneath my wings to fly higher than I ever dreamed possible. I thank God every day that He blessed me with you. I love you boundlessly.

To my parents, Aubrey and Connie Smith, I also dedicate this project to you for your endless unconditional love and support during this program and life itself. You have continuously provided me a safe place to call home filled with love, direction, and the words and actions of always having my back. You reflect what loving, supportive, and committed parents are and have been instrumental in my success in this academic and life journey. I love you two without end.

I dedicate this project to my children for your encouragement and support throughout the program with words of encouragement. Your comments, "Mom, you can do it. You are almost there. I am proud of you, Mom," were immeasurable subsistence in helping me move forward in the program. You are the air I breathe, always trust it and never doubt it.

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Abstract

The literature review found suspension of disbelief (SOD) in clinical simulation heavily weighted on educators alone within high-fidelity environments. The project examined a co-created narrative background story applied to a simulated patient's clinical profile to determine achieving an improved connectedness toward the simulated patient leading to enhanced SOD and enhanced levels of learning and reaction. The studied population was third-semester associate degree nursing students over 18 years of age with prior clinical simulation experience who were not repeating the semester. The research methodology used a quantitative experimental design with cluster sampling, randomization, and post-Likert-scored questionnaires. The intervention group co-created personalized storytelling narratives for the simulated patient's clinical profile. After the clinical simulation activity, both intervention and control groups completed questionnaires examining their ability to achieve SOD during the activity and their levels and reaction and learning. Results using two-tailed *t* tests indicated the intervention revealed an enhanced level of presence during the participation. The improved presence revealed a positive, engaging experience applicable to future nursing roles and enhanced knowledge, skills, and confidence. Conclusions were drawn that applying co-created storytelling to a simulated patient's clinical profile improves presence, suggesting an enhanced ability to achieve SOD during the activity. Recommendations for future research projects include studying storytelling in clinical simulation with a larger sample size and having participants create an entire clinical profile, analyzing the influence of emotional position toward simulation on SOD, and maintaining usage of intervention once learned.

Keywords: simulation, suspension of disbelief, nurse education, storytelling

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Chapter 1: Introduction

Suspension of disbelief (SOD) occurs when participants suspend their disbelief that a simulated environment and characters are real with the benefit of enhanced immersion in the activity (Muckler & Thomas, 2019). Theater, movies, magic, fairy tales, literature, and video games can provide a SOD occurrence when the encounter seems so believable that it appears authentic. The technique of suspending disbelief during simulation produces the ability to overlook the unbelievable for the sake of learning with outcomes of enhanced engagement, focus, and learning (Muckler & Thomas, 2019). SOD is also sought to achieve total immersion and outcome mastery for a student in educational and training settings. Primary examples of this application in healthcare include simulating clinical practice used to replicate basic skills, diseases, and appropriate therapeutic behaviors and creating virtual training environments to augment the transfer of knowledge. Muckler and Thomas (2019) explained that a better understanding of what is required for a participant to mentally immerse during simulation could assist in developing effective simulation methods leading to critical thinking and decision-making that replicates real clinical experiences.

David Gaba is recognized as an international innovator in the field of clinical simulation (Miller & Guest, 2021). Gaba explains that simulation is not technology; instead, it is a technique that replaces or enhances the simulation experience to replicate the natural environment interactively (as cited in Miller & Guest, 2021). Many methodologies are used to encourage the accomplishment of SOD to support the authenticated setting. One such approach is the use of SOD-inducing narratives through storytelling. Storytelling is an established method to share cultural traditions, values, and beliefs, producing dynamic and influential interactions between the creator and listener (Jacobs & McCormack, 2019). Chism (2016) shared that when

storytelling narratives are detailed, vivid, meaningful, and a producer of connectedness between the creator and listeners, the narrative and circumstances associated with it are more likely to be converted into memory. Interactive storytelling supports personalization and diversity of learners supporting their interests, leading to an enhanced, personalized learning experience by building on the current knowledge base (Baldwin & Ching, 2017).

The problem of interest (POI) was intended to maximize SOD in clinical simulation by weaving interactive storytelling applied by and drawn from the participant's personalization to the simulated patient's clinical profile. The primary thread in the project's POI methodology integrated interactive storytelling evidence-based research, simulation facilitator clinical expertise, and learner's preference to experience enhanced SOD and levels of reaction and learning during the clinical simulation activity. The Kirkpatrick Partners (2022) explained that levels of reaction and learning reflect the participant's perception that their training was positive, engaging, and relevant to their jobs, and they achieved the intended knowledge, skills, attitude, confidence, and dedication from their participation in the training.

Background of Project of Interest

The concept of SOD originated in 1817 from Samuel Taylor Coleridge, a poet and philosopher who believed literature readers would suspend their doubt and accept the unimaginable if the writer's work resembled truth or reality (Muckler, 2017). Since Coleridge's publications, his theory, called poetic faith, has been translated to understanding the impact of achieving effective SOD in theater, cinema, literature, magic, fairy tales, video gaming, and clinical practice simulation (Tomoko, 2017). Artists, writers, trainers, and clinical simulation instructors who strive to achieve effective SOD for their participants do so with anticipation that they will become fully immersed during the activity. The International Nursing Association for

Clinical Simulation and Learning (INACSL) shared that simulation-based experience should be purposeful and systematic yet flexible and cyclically planned (International Nursing Association for Clinical Simulation and Learning [INACSL], 2016). Aligning with INACSL, the POI conducted an intentional, systematic, and flexible method to address the PICO question.

Intentional discussions among clinical colleagues expressed the desire to reduce barriers to SOD during simulation scenarios to enhance the learning of critical thinking and nursing skills. Discussing these concerns led to systematic in-depth-dives into evidence-based practice (EBP) literature to resolve the obstacles of learners attaining SOD. The literature review presented evidence that a learner's personalized interactive storytelling toward an associated simulated patient's clinical profile would positively influence SOD during simulation activities.

High-Fidelity Clinical Simulation

Clinical simulation is accepted internationally as a crucial andragogical method for improving nursing education (Miller & Guest, 2021). Simulation scenarios are known to encompass variables of the facilitator's educational objectives, resources, training, and intent. One resource variable is the type of fidelity used in the activity. Fidelity is the precision or accuracy of replicating a simulation ranging from dissimilar (low) to analogous (high) replication (Moran et al., 2018). In high-fidelity clinical simulation environments, patient care settings are recreated with simulated healthcare settings with high-fidelity computer-aided manikins posed as simulated patients. The life-like manikins convey human attributes such as heart and lung sounds, audible blood pressure and pulse, verbal communication, and movable physiques tolerable to clinical interventions. These high-fidelity settings aim to provide experienced realism stimuli where SOD is encouraged to maximize learning that is translatable to clinical practice. In

these circumstances, learners gain improved knowledge retention and a deeper understanding of the subject matter (Johnston et al., 2017).

Bridging the Gap

While SOD is encouraged during simulation activities, not all simulation learners can successfully accomplish it. Potential resolution in bridging the gap to achieve effective SOD in simulation activities is revealed by Ruth Charon (as cited in Chism, 2016) and Timbrell (2017). Charon found healthcare professionals who become empathetic with the patient's clinical profile narrative (storytelling) move beyond the patient's illness and see the person as an individual (Chism, 2016). Timbrell (2017) strongly offered that the benefit of storytelling is most effective when infused with imagination, authenticity, and relevant, memorable content. Baldwin and Ching (2017) shared stories to help learners make meaning of content through reflection and synthesis. Applying the findings of storytelling to clinical simulation offered an opportunity to enhance the level of SOD by viewing the simulated patient as an individual by applying the participant's imagination, authenticity, and relevant content. The expected outcome was that the participant would subsequently enhance their connectedness toward the simulated patient, leading to the perception that the activity is real.

Project's Setting Goals and Objectives

The project's intention was to enhance learning translatable to clinical practice, aligning with the project setting's goals and objectives. The project's location, a community college in central Texas, has established the goal of optimizing its community partnerships. Some of the college's primary partners are the area's healthcare organizations offering student clinical experiences. The project's focus on improving learning offers opportunities to strengthen these partnerships by enhancing the quality of graduates who are better equipped for the clinical

setting. Positive economic favor can ensue with improved community healthcare, reduction in staffing needs, and patient outcomes.

Healthy People 2030 and Institute of Healthcare Improvement's Triple Aim

The project also has a broader application to support the national objectives of Healthy People 2030 (U.S. Department of Health and Human Services, 2022) and the Institute of Healthcare Improvement's Triple Aim. The Triple Aim focuses on improving patient health outcomes while reducing costs (Institute of Healthcare Improvement [IHI], 2023). The project aligns with the Triple Aim by enhancing learning, leading to improved patient outcomes while effectively managing learning resources. Healthy People 2030 shares that effective communication between healthcare providers and patients can help improve patients' health and well-being (U.S. Department of Health and Human Services, 2022). Replicating the project's intervention within the clinical practice setting offers opportunities to improve effective communication, skills, and team play techniques in an environment tolerant of errors.

Purpose of the Project of Interest

The purpose of the project was to enhance the achievement of SOD and the levels of reaction and learning in clinical simulation. The expected improvements were to improve the quality of learning that is translatable to clinical practice. The increased quality outcomes were expected to enhance knowledge and skills with improved preparation of application in the clinical practice setting.

Significance of Project of Interest

Clinical simulation offers a safe environment for both patients and healthcare learners. Simulation protects patients by providing learners with a safe environment to practice skills and reason clinically without the risk of harm to real patients (Moran et al., 2018). Simulation also

can be used to introduce review competencies and knowledge in various healthcare settings for new employees, returning practice nurses, changing departments, and annual competency verification processes.

It is believed that while nursing shortages increase and clinical sites decrease, academic settings will need to rely more on simulation to produce the essential workforce needed in healthcare organizations (Aebersold, 2018). The National Council of State Boards of Nursing allows up to 50% of practice hours to be replaced with simulation, recognizing the value of clinical simulation and its ability to support nursing training (Miller & Guest, 2021). It follows that procuring innovative interventions that supplement these endeavors supports the evolution of healthcare's learning landscape, meeting the challenges of healthcare training and practice needs.

Nature of Project of Interest

The project used a qualitative methodology and experimental design with simple randomization. Both the control and intervention groups participated in the same clinical simulation activity, but the intervention group also embedded personal storytelling narratives in the simulated patient's characteristics. Quantitative evaluation questionnaire surveys were used to determine the participant's ability to achieve SOD and levels of reaction and learning during the clinical simulation activity. The selected evaluation tools were chosen to formulate data analysis of the participant's perspective of their simulation activity and outcomes (Wilson et al., 2021). The transcribed data is kept on a password-protected computer in an Excel worksheet for data analysis. Data were analyzed using an independent *t*-test method and will be kept for a minimum of 3 years.

Question Guiding the Inquiry

The question guiding the inquiry was formulated as a PICO question. The project's PICO question was, "In a clinical simulation, do nursing student participants who formulate and apply personalized interactive storytelling narratives to the simulated patient's clinical profile, compared to no such intervention, enhance their ability to achieve suspension of disbelief and levels of reaction and learning during the simulation activity?" Components of the PICO question can be further defined as follows:

P (Population): Nursing student participants who formulate and apply their personalized interactive storytelling narratives to a simulated patient's clinical profile.

I (Intervention): Formulate and apply personalized interactive storytelling narratives to a simulated patient's clinical profile.

C (Comparison): No intervention.

O (Outcome): Enhance the ability to achieve suspension of disbelief during simulation and levels of reaction and learning during the simulation activity.

The hypothesis was, "In a clinical simulation, nursing student participants who formulate and apply their personalized interactive storytelling narratives to the simulated patient's clinical profile, compared to no such intervention, will have an enhanced ability to achieve suspension of disbelief during the simulation activity and achieve enhanced levels of reaction and learning during the simulation activity."

Definition of Key Terms

Clinical simulation. An artificial clinical environment representing a real clinical environment and scenarios used to practice and apply clinical skills and knowledge to achieve deemed clinical goals without harm to actual patients (Al-Elq, 2010).

Immersion. An enveloped perception and interactive experience within an environment that provides continuous stimuli (Witmer & Singer, 1998).

Level of learning. The measurement of the participant's achievement of the intended knowledge, skills, attitude, confidence, and dedication from the participation in training (Kirkpatrick Partners, 2022).

Level of reaction. The measurement of the participant's perception that their training is positive, engaging, and relevant to their jobs (Kirkpatrick Partners, 2022).

Presence. A "subjective experience of being in one environment, even when one is physically situated in another" (Witmer & Singer, 1998, p. 225).

Suspension of disbelief. The ability of a participant to accept a simulated environment as authentic (Muckler, 2017).

Scope and Limitations

The target population was nursing students over the age of 18 years of age, enrolled in the project setting. Inclusion criteria included prior experience with clinical simulation activities at the college's simulation laboratory. Exclusion criteria included nursing students who are repeating their semester courses. The project used an experimental design with a quantitative method of questionnaire evaluation tools. A potential scope limitation to the chosen design was the possibility that participant outcomes may not represent nursing students from other nursing programs and levels of progression (Terry, 2018). The project uses asynchronous questionnaires, which could lead to inaccurate responses derived from frustration during the simulation activity leading to misjudgments of their experience (Holzwarth et al., 2021). With questionnaire evaluation tools, there were also opportunities for response bias, the possibility of misunderstood questions, or incomplete questionnaires.

Chapter Summary

SOD is sought in clinical simulation to achieve immersion toward outcome mastery of a student's education and training. SOD occurs when participants suspend their disbelief that a simulated environment and characters are real with the benefit of enhanced immersion in the activity (Muckler & Thomas, 2019). When achieving SOD, participants experience the encounter as if they are with a real patient leading to the enhanced ability to gain knowledge with transference to clinical practice (Muckler, 2017).

Many methodologies are used in clinical simulations to achieve SOD. One approach is integrating storytelling narratives. Chism (2016) shared that when narratives are detailed, vivid, and meaningful, connectedness between the creator and listeners is developed and more likely to be converted into memory. Storytelling narratives that are interactive and personalized support learners' interest, leading to an enhanced learning experience by building on their knowledge (Baldwin & Ching, 2017).

The POI intended to maximize SOD in clinical simulation by weaving interactive storytelling that was applied by and drawn from the participant's personalization to the simulated patient's clinical profile. The concept of SOD originated in 1817 from Samuel Taylor Coleridge, who believed literature readers would suspend their doubt and accept the unimaginable if the writer's work resembled truth or reality (Muckler, 2017). Coleridge's theory has been translated in theater, cinema, literature, magic, fairy tales, video gaming, and clinical practice simulation with anticipation that participants will become fully immersed during the experience.

In high-fidelity environments, patient care environments are recreated as healthcare settings and use computer-aided manikins as patients. These high-fidelity settings aim to provide realistic stimuli where SOD is encouraged to maximize the learning that is translatable to clinical

practice. When high translation occurs, evidence supports learners gaining improved knowledge retention and a deeper understanding of the subject matter (Johnston et al., 2017).

While SOD is encouraged in clinical simulation, not all learners can successfully achieve it. Charon (as cited in Chism, 2016) shared that healthcare professionals who become empathetic with the patient's clinical profile narrative tend to move beyond the patient's illness and see the person as an individual. Timbrell (2017) strongly offered that storytelling was most effective when infused with imagination, authenticity, and relevant, memorable content. Baldwin and Ching (2017) shared stories to help learners make meaning of content through reflection and synthesis. These findings are translatable to the simulation setting with outcomes of SOD's connectedness between the participant and simulated patient.

The purpose of the project was to enhance the ability to achieve SOD and levels of reaction and learning during clinical simulation, improving the participant's quality of learning translatable to their clinical practice. It was expected personalized storytelling narratives applied to the simulated patient with the subsequent achievement of SOD would permeate innumerable healthcare simulation opportunities with adaptability and applicability to clinical practice and academic settings. The project's PICO question was, "In a clinical simulation, do nursing student participants who formulate and apply their personalized interactive storytelling narratives to the simulated patient's clinical profile, compared to no such intervention, enhance the ability to achieve suspension of disbelief and levels of reaction and learning during the simulation activity?"

The definition of key terms was presented. The target population was nursing students over the age of 18 years of age, enrolled in the project setting. Inclusion criteria were prior experience with clinical simulation activities at the college's simulation laboratory. Exclusion

criteria included nursing students who had or were repeating their semester courses. A potential scope limitation to the chosen design was the possibility that the participants' outcomes might not represent different students from other nursing programs or levels of progression (Terry, 2018). Another potential limitation was the asynchronous administration of the questionnaire's evaluation tools, which could lead to inaccurate responses derived from frustration during the activity leading to misjudgments of their experience (Holzwarth et al., 2021).

Chapter 2: Literature Review

Literature Search Methods

Intentional discussions among clinical colleagues expressed the desire to reduce barriers to SOD during simulation scenarios to enhance the learning of critical thinking and nursing skills. Discussing these concerns led to systematic in-depth-dives into EBP and literature to resolve the obstacles in attaining SOD during clinical simulation. The literature review presented evidence that personalized interactive storytelling applied to a simulated patient's clinical profile would positively influence SOD during simulation activities and enhance reaction and learning.

The literature review guided strategies in answering the POI's PICO question. Boolean phrases were used as a search strategy using *clinical simulation* and *nursing* and *storytelling*, *suspension of disbelief* and *storytelling*, and *interactive storytelling* and *clinical simulation*. The search included filters of publications from 2016–2021, peer-reviewed, English language, meta-synthesis, randomized controlled trial, and systematic review. PubMed's clinical queries did not produce any results. EBSCOhost query inclusive of CINAHL, MEDLINE, PsycINFO, ERIC, and Academic Search Complete databases produced 87 resources, of which 12 met the criteria for further review.

Literature Review

Alinier et al.'s (2018) research involved the development of a high-fidelity prototype simulator developed for a more realistic emergency procedure. The authors found using an enhanced replicated procedure in an innovative method enhanced the participant's SOD during the activity. The strength of the author's findings to the POI suggested that producing a more realistic simulated patient and environment will enhance SOD for simulation learners.

The study's weakness was the exclusion of the evaluation data supporting the authors' claim that the innovations achieved the obtainment of SOD for their learners. The study revealed that applying novel strategies in high-fidelity simulation supports the achievement of SOD in clinical simulation and subsequently is applicable to the project's pursuit of a novel application of storytelling (Alinier et al., 2018).

Bearman et al. (2019) studied online narrative reflections of significant simulation experiences during a national faculty development program. The researchers gathered 327 narratives about the participant's powerful narratives during their simulation educational experiences and were categorized into four groups (Bearman et al., 2019). The four groups represented the participant's acknowledged powerful experiences during the simulation. The largest narrative group was categorized as progress in knowledge, skills, and attitudes of health practice with 81% (267/327), and a far second was the transformation of the participant's clinical practice with 8% (25/327; Bearman et al., 2019). Bearman et al. (2019) shared that following closely behind the transformation, but quite significant to the project's intervention, was practice narratives also at 8% (27/327), and the participants reflected how simulation and real practice mirrored one another, and lastly, the smallest but distinctive narratives were humiliation narratives at 2% (8/327). The participants reported powerful emotional and reflective experiences during the formative stages of simulation training (Bearman et al., 2019). The researchers found recurrent themes that influenced participant's past experiences of training during their initial career, when dramatic scenarios were experienced, the awareness of their developing appreciation for the benefits of simulation education, experiences that were highly emotional, simulation scenarios when things "went wrong," and the participant's ongoing reflection of the simulation education (Bearman et al., 2019). The researchers concluded that

simulation-based education was experienced holistically instead of separate modalities of feedback, debriefing, and facilitation (Bearman et al., 2019). The study supports simulation's role in developing powerful emotional and reflective experiences during training and fallibility as part of professional practice. Applying the authors' findings to the project supports the chosen framework and intervention intention to develop a connectedness between the simulated patient and the simulation learner.

Dalinger et al. (2020) studied 13 preservice teachers using customized virtual reality simulations recreating teaching interpersonal challenges confronted on the job. The data issued four themes: authentic practice, perceived transfer of learning, perceived confidence, and challenges (Dalinger et al., 2020). The authors found that 69% (9/13) of the participants experienced increased confidence in applying personal skills, but the study also revealed the most notable challenge was the difficulty in achieving SOD during simulation (Dalinger et al., 2020). The study showed that valuable insights when achieving SOD during the simulation was an increased confidence level can be achieved. The study also shed light on the challenges of obtaining SOD's authenticity, reinforcing the need to develop innovative techniques to overcome the challenges.

Grassini and Laumann (2020) conducted a systematic literature review of presence-immersion study instruments from 2002 to 2019, using Preferred Reporting Items for Systematic Reviews (PRISMA), focusing on questionnaires and physiological measures. The authors conducted a search with criteria of peer-reviewed articles in the English language using research engines of Web of Science, Scopus, and Google Scholar, chosen for their popularity and comprehensive interdisciplinary nature (Grassini & Laumann, 2020). Keywords used included virtual reality and presence, virtual reality and immersion, virtual environment and presence, and

virtual environment and immersion (Grassini & Laumann, 2020). A total of 875 articles were initially identified, and 205 were selected in the preliminary screening, followed by 120 being selected for further review, then 59 for the full-text review, with a final 18 selected to be included in the review (Grassini & Laumann, 2020). Of the final 18, the authors identified questionnaires as the most frequently used and preferred method, with good predictability for presence-immersion validity. The study revealed that presence questionnaires often share similarities with a Likert scale, such as the Presence Questionnaire (PQ), Igroup Presence Questionnaire (IPQ), and Slater-Usoh-Steed Questionnaire (SUS; Grassini & Laumann, 2020). The authors concluded that questionnaires were the most frequently used method for measuring presence immersion (Grassini & Laumann, 2020). The application to the project supported the selection of the IPQ as the project's measurement tool as a valid method for data collection.

Happell et al. (2020) conducted an international qualitative exploratory study involving study settings from Iceland; Finland; Cork, Ireland; Dublin, Ireland; Norway; and the Netherlands. The study's aim was to examine 51 nursing students' perceptions between theory and application in a mental health clinical practice setting (Happell et al., 2020). The researchers found that the participants achieved bridging theory to practice through first-hand experience (Happell et al., 2020). The findings revealed using personal experience and co-created narratives between the educator and learner assisted with aligning theory and practice with an enhanced understanding of the human experience and mental illness (Happell et al., 2020). The study's findings support the project's premise that using personal experiences in the form of narratives will reduce the interruption between theory (simulation) and (clinical) practice.

Hardie et al. (2020) conducted an evaluative study investigating the subjective experience of an immersive virtual reality storytelling experience with nursing and midwifery students. The

researchers explained that storytelling decreased the constraints of achieving SOD and empathy (Hardie et al., 2020). A response rate of 71.2% (n = 94) identified immersive virtual reality (iVR) storytelling was a memorable learning experience, triggering engagement and motivation to learn as an authentic and active learning method (Hardie et al., 2020). The authors shared that a weakness of the findings was the full potential of iVR storytelling was not reached. Conversely, this study was encouraging as positive attributes to provide authentic active learning experiences in clinical simulation through storytelling. The findings suggest the project's intervention will support engagement, motivation, and enhanced ability to achieve SOD by the participant's belief in the authenticity of the simulated patient's clinical profile.

Johnston et al. (2017) aimed to determine if audio-visual narration during simulation prebriefing would transform nursing students' perception of the simulated environment into a real-world replication facilitating learner engagement and learning. The researchers used prebriefing audio-visual narrations of the simulated patient and introduced the high-fidelity manikin as a 'real patient' (Johnston et al., 2017). Findings indicated high levels of satisfaction with simulation, value, realism, achievement of SOD, and transferability of knowledge and skills to clinical practice (Johnston et al., 2017). A participant response rate of 92% (385/418) was achieved, and the findings revealed that greater than 90% indicated the activity recreated real-life situation, greater than 95% the scenario was a valuable learning experience, and greater than 90% increased confidence following the activity (Johnston et al., 2017). The strength of the study's findings suggested application of prebriefing storytelling narratives to the simulated patient's characteristics will produce participants' enhanced ability to achieve SOD and levels of reaction and learning during the simulation activity.

Van Schalkwyk et al. (2019) conducted a conceptual and empirical research study aimed at providing a comprehensive synthesis of how transformative learning currently is represented in the health professions education literature and how it influences activities such as simulation. Ten bibliographic databases were searched, producing an initial 1,080 abstracts for review, of which 266 were selected for full-text reviews, with 99 chosen for the study (Van Schalkwyk et al., 2019). The authors found transformative learning encompasses effective empathic listening, self-reflection, and infusing authentic experiences that transformed the understanding, interpreting, or viewing, influencing their values, attitude, behaviors, and how they viewed themselves and others (Van Schalkwyk et al., 2019). The researchers also found health learners subjected to unfamiliar settings (such as simulation) find transformative learning (such as experiential storytelling) encouraging to learners where they are active participants in providing patient care (Van Schalkwyk et al., 2019). The study revealed the positive outcomes of transformative learning methods, such as storytelling and formulating active participants in patient care. Application to the project supports the transformative intervention of the storytelling method as a viable option to encourage engagement leading to SOD during the clinical activity.

Milota et al.'s (2019) systematic literature review of 36 articles aimed to determine what evidence was available for models to teach narrative medicine. The researchers' review was a two-step process of searching electronic databases and then targeting key authors and articles focused on narrative medicine (Milota et al., 2019). The study revealed narrative pedagogy consisted of three basic steps: reflecting engagement with patient narratives, personal reflection, and sharing their reflection (Milota et al., 2019). The study used the Kirkpatrick model to evaluate outcomes with the four-level model of (a) participation; (b) modification of perceptions

and knowledge skills; (c) behavioral changes; and (d) changes in practice (Van Schalkwyk et al., 2019). The researchers found that level 1 participation assessment primarily used surveys or feedback forms (N = 14), finding associated effects of gratitude, hope, satisfaction, or pleasure (Milota et al., 2019). Milota et al. (2019) shared assessing level 2 revealed increased identification with peers and community, increased satisfaction with work, and a sense of wellness, while level 3 (behavioral changes) increased personal and professional growth, and level 4 (changes in practice) reported enhanced awareness of their patient's perspectives. The findings provided evidence that narrative medicine (storytelling) is an effective pedagogic tool (Milota et al., 2019) useful for translation to clinical simulation. A weakness in the project's intervention was revealed as the study could not demonstrate unequivocal evidence of the effect of narrative (storytelling) medicine on learners' behavior, nor could it demonstrate a clear application to simulation pedagogy (Milota et al., 2019).

Fusco et al. (2020) reviewed a case study and film, *Meet Fred Santiago*, depicting a man suffering from multiple chronic health conditions and the impact his health had on his family. Fusco et al. (2020) reported that the film's storytelling helped bridge the learner into the reality of SOD. A total of 1,921 learners and 250 faculty, who represented 12 different health professions, watched the film, resulting in 96% (1858/1921) and 69% (174/250) completing the evaluation tool. Of those that completed the evaluation, greater than 85% agreed or strongly agreed that the film presented a realistic view of the challenges and breadth of issues faced by patients with multiple chronic health problems (Fusco et al., 2020). The authors concluded that the film was a valuable tool to introduce learners to complex interrelationships of medical, psychological, and social issues experienced with chronic health conditions (Fusco et al., 2020).

The significance and strength of Fusco et al.'s (2020) review is that a learner's ability to achieve SOD can be enhanced through storytelling.

Sharma et al. (2017) studied the possibility of developing learners' wisdom through mindfulness training, journal writing, and narrative simulation among 160 participants enrolled in a leadership course. The study's aim was to find evidence for the MORE life experience model and to use the model as an interventional tool to foster wisdom (Sharma et al., 2017). Sixty-seven percent (108/160) completed the study, revealing habitual action, personal mastery, and suppression predicted cognitive wisdom, mindfulness predicted reflective wisdom, composite wisdom predicted mindfulness, concluding wisdom may be amenable through the study's intervention (Sharma et al., 2017). Relevance to the project is using narrative simulation as a method to induce wisdom and understanding of the simulated patient's characteristics and clinical profile. A gap in the study was that there was no quantification of wisdom and understanding.

Škola et al. (2020) studied the influence of a 360° virtual reality headset image and immersion in an interactive ancient cultural narrated story as a simulated underwater archeology diver. Fifteen participants rated the experience positively for high levels of presence, immersion, and subjective judgment (Škola et al., 2020). Objective brain signal data revealed reproducible results with positive past studies of virtual experiences and consistent with achieving SOD (Škola et al., 2020). The study revealed virtual reality simulation and interactive storytelling enhanced presence, immersion, and subjective judgment and that studying brain signal data is a feasible method to evaluate experienced virtual reality, storytelling experiences, and SOD. The study's significance to the project is the evidence that interactive narratives have a positive

influence on achieving presence, immersion, and subjective judgment during the simulation activity.

Conceptual Framework

Dr. Jean Watson's caring theory was developed between 1975 and 1978 and continues to be used by clinical nurses and academic programs worldwide (Parker, 2010). The theory directs a compassionate, caring approach applied during the human-to-human interactions between healthcare providers and their patients (Utley et al., 2018). Watson's philosophy in the clinical setting supports connectedness between the provider-patient dyad translatable to implementing patient-centered care and subsequently improved patient outcomes.

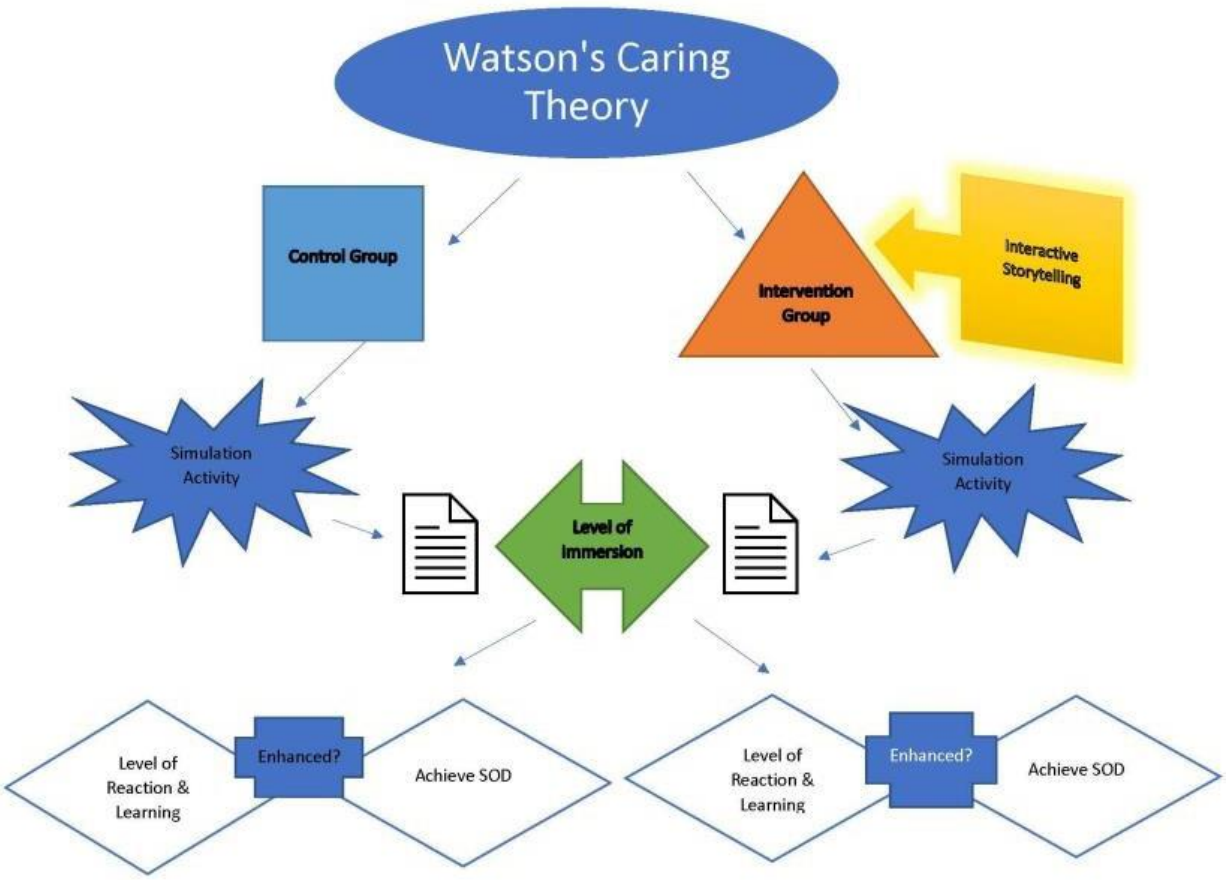
Watson's theory application to the clinical setting provides equally beneficial opportunities within the clinical simulation setting. Unlike the practice setting, the clinical simulation setting lacks human–human fellowship and is replaced with a human–simulator relationship. Applying Watson's theory as the framework provided an expectation that enhanced immersion would be achieved through the participant's interactive storytelling of the simulator's clinical profile. The improved immersion was anticipated to lead to the desired connectedness between the participant toward the simulator by recognizing humanistic characteristics with subsequent connectedness with the simulated patient.

Watson shares that the method of being human is developed by identifying ourselves with others, discovering similar shared dilemmas, thereby guiding our common humanity and avoiding viewing ourselves or others simply as a moral status of an object (Watson Caring Science Institute, 2021). The challenge faced between simulation learners and the simulation's relevance is realized in Watson's words. The conundrum is connecting maximum immersion to the simulation activity, where the learner deters from viewing the simulator as an object instead

of a patient. The project intended to combine Watson's model with personalized interactive storytelling to bridge the gap between the two. The expected outcomes were enhanced SOD and levels of reaction and learning during the simulation activity. Hence, achieving the goal, enriched levels would be translatable to the learner's clinical practice in improved quality educational experiences. A theoretical model pictorial can be viewed in Figure 1.

Figure 1

Theoretical Model for Watson's Caring Model, Interactive Storytelling



Note. Adapted from *Watson's Caring Science and Human Caring Theory*, by Watson Caring Science Institute, 2021 (https://www.watsoncaringscience.org/jean-bio/caring-science-theory/). In the public domain.

Chapter Summary

Chapter 2 guided strategies in answering the POI's PICO question. Boolean phrases were used as a search strategy using *clinical simulation* and *nursing* and *storytelling, suspension of disbelief* and *storytelling*, and *interactive storytelling* and *clinical simulation*. The search included filters of publications from 2016–2021, peer-reviewed, English language, meta-synthesis, randomized controlled trial, and systematic review. PubMed's clinical queries did not produce any results. EBSCOhost query inclusive of CINAHL, MEDLINE, PsycINFO, ERIC, and Academic Search Complete databases produced 87 resources, of which 12 met the criteria for further review.

The literature review revealed a more realistic simulated patient and environment would enhance SOD for simulation learners (Alinier et al., 2018). Bearman et al. (2019) exposed that simulation is experienced holistically and can induce powerful emotional and reflective experiences. These findings support the POI's chosen framework and intervention in developing connectedness between the simulated patient and simulation learner. Dalinger et al.'s (2020) study brought valuable insights into the importance and challenges of SOD's authentic and meaningful learning, but when achieved, an increased confidence level can be experienced. Dalinger et al.'s (2020) study also emphasized the challenges of obtaining SOD's authenticity, reinforcing the need to develop innovative techniques to overcome the challenges.

Grassini and Laumann's (2020) study found questionnaires the most frequently used preferred method, with good predictability for presence immersion validity. The literature review also emphasized that using personal experience could potentially contribute to reducing the gap between theory (simulation) and practice in learning (Happell et al., 2020). Applying the evidence to the project supports using questionnaire surveys as the project's evaluation tools and

applying personal narrative experiences is expected to reduce the interruption between theory (simulation) and (clinical) practice.

Hardie et al.'s (2020) study revealed positive attributes that interactive storytelling could trigger engagement and motivation as authentic and active learning experiences. The findings supported the project's intervention with the expectation of enhanced engagement, motivation, and ability to achieve SOD by authenticating the simulated patient's clinical profile. The literature review also found that learners experienced high levels of satisfaction with simulation, value, realism, and quality educational outcomes when audio-visual narrations were conducted (Johnston et al., 2017). The findings suggested that the project's intervention would produce similar outcomes of enhanced participant engagement and level of reaction during the simulation activity.

Van Schalkwyk et al. (2019) revealed learners subjected to unfamiliar settings (such as simulation) find transformative learning (such as experiential storytelling) encourages active participation in providing patient care. Fusco et al.'s (2020) review showed the positive influence storytelling has on the ability to achieve SOD. The findings of these two studies revealed transformative learning, such as the project's intervention would encourage engagement in the activity with a positive influence to achieve SOD.

Sharma et al.'s (2017) study revealed storytelling's ability to increase, amend, affirm wisdom, and achieve SOD. Applying the evidence to the project's intervention suggests that increased wisdom and understanding of SOD may occur. Škola et al.'s (2020) study uncovered that virtual reality simulation coupled with storytelling enhanced presence, immersion, and subjective judgment. Škola et al.'s (2020) findings supported the project's interactive storytelling as a positive influence in achieving SOD during simulation activities. Dr. Jean Watson's caring

theory was selected as the project's conceptual framework. The framework directs a compassionate, caring approach applied during the human-to-human interactions and connectedness between healthcare providers and their patients (Utley et al., 2018). Unlike the clinical setting, the clinical simulation setting lacks human–human rapport and comprises the human–simulator relationship.

Using Watson's theory as the framework, the connectedness between the human–simulator dyad was expected to generate a deeper level of immersion into the simulation activity. The anticipated enhanced immersion supports SOD and connectedness by creating recognizable humanistic characteristics in the simulated patient. The project intended to use Watson's connection model and personalized interactive storytelling to enhance SOD and the level of reaction.

Chapter 3: Research Method

Chapter 3 outlines the methods, rationales, and purpose of the project. The chapter shares details of the project design, methodology, and feasibility appropriateness. Institutional review board (IRB) approval and process, interprofessional collaboration, practice setting, and target population are presented. Risk and benefits, the chosen measurement tools, data collection and management processes, originally anticipated timeline, and data analysis planning are also offered.

Purpose

The purpose of the project was to enhance the achievement of SOD and the levels of reaction and learning in clinical simulation. The improvements were expected to lead to improved quality of learning translatable to clinical practice. Achieving the increased quality enhances knowledge and skills with improved preparation of application in the clinical practice setting. The project was also expected to find the intervention of applying personalized storytelling narratives to the simulated patient adaptable to innumerable healthcare simulation opportunities in both academic and clinical practice settings. The project's PICO question was, "In a clinical simulation, do nursing students who formulate and apply their personalized interactive storytelling narratives to the simulated patient's clinical profile, compared to no such intervention, enhance the ability to achieve suspension of disbelief and levels of reaction and learning during the simulation activity?" It is anticipated that areas where concentration and focus are challenged, such as clinical simulation and practice, will benefit from personalized storytelling narratives.

Project Design

The project used an experimental design. An experimental design was chosen to ensure the intervention and nonintervention groups were as similar as possible, except for the exposure to the intervention (Terry, 2018). Cluster sampling was used to support the project's available study subjects (Heavey, 2019). The project used two project team members, one who was blinded and one who was unblinded. Blinding was applied to the project team member observing and evaluating both groups of participants during their simulation activity. Blinding was chosen to deter potential selection and accidental bias while minimizing the variability of the evaluation of the intervention (Suresh, 2011). The unblinded project team member, who was not the project's principal investigator, conducted and facilitated the informed consenting process, randomization, SOD training, and the project's intervention.

Participants were randomized to either the nonintervention or intervention group by using simple random sampling. Both the nonintervention and intervention groups participated in the same clinical simulation activity appropriate for their level of training and education. The intervention group also embedded personalized storytelling narratives to the simulated patient's characteristics and clinical profile before the clinical simulation activity was conducted.

De-identified randomization folders were generated for both nonintervention and intervention participants. For participants randomized in the nonintervention group, the randomization folder included the synopsis of the simulated patient form (see Appendix A), the IPQ survey (Igroup, 2016; see Appendix B), and the Likert-scored Kirkpatrick modeled questionnaire survey evaluation form (see Appendix C). For participants randomized to the intervention group, the randomization folder included the synopsis of the simulated patient form,

the IPQ survey (Igroup, 2016), the Likert-scored Kirkpatrick model evaluation form, and the personalization form (see Appendix D).

Since participants' SOD awareness may vary and provide an unintended variable, each participant participated in the same SOD training prior to the simulation activity to create a common knowledge baseline. The unblinded team member presented the training in a private room following randomization and before applying storytelling narratives to the clinical profile. The training format of a video defining SOD and providing examples of SOD in application in cinema, video games, and literature was presented to each participant to provide consistency in training. SOD was defined as the ability of a participant to accept a simulated environment as authentic (Muckler, 2017).

Following consenting, randomization, and SOD training, the unblinded team member read the synopsis of the simulated patient form (see Appendix A) to both nonintervention and intervention participants. For participants randomized to the intervention group, the unblinded member retrieved the personalization form (see Appendix D) and asked the participant to formulate and apply personalized storytelling narratives to the simulated patient's characteristics and clinical profile. The unblinded team member read the personalization form questions and wrote the participant's personalization to the simulated patient, Jennifer Williams. Following the personalization, the unblinded team member verbally reviewed the synopsis infusing the personalization gained from the intervention participants, placed the personalization form in the participant's randomization folder, and closed it.

After reading the synopsis of the simulated patient form for the nonintervention participants and the personalization of Jennifer for the intervention group, the unblinded team member provided the participant with the closed randomization folder and instructed the

participant to bring the folder with them to the simulation area but not to open the folder until instructed to do so. The unblinded team member escorted the participant to the clinical simulation laboratory, where the blinded team member escorted the participant with their folder to the clinical simulation room to begin the activity. The closed folder was placed in the simulation room's chair.

The blinded team member entered the simulation room and introduced themself as project team members. The blinded team member conducted routine prebriefing for both the nonintervention and intervention participants. Prebriefing included the introduction of the clinical simulation surroundings of a medical record, supplies, a simulated patient, and awareness that high-fidelity patients would communicate with the participant during the simulation. The participant was informed they had 30 minutes to conduct the simulation, and the team member would announce the start time. The participant was instructed to review the medical record and provider orders, complete a head-to-toe assessment and vital signs, and provide ordered patient care appropriate within their scope of practice and patient care needs. The blinded team member then read the synopsis of the simulated patient form without customizations.

The simulation scenario presented a 38-year-old female experiencing a productive cough, fever, and extreme fatigue with a subsequent medical diagnosis of pneumonia. She appeared somewhat anxious about something but had not shared what that may be. Expected nursing interventions were outlined on the simulation check sheet (see Appendix E).

The blinded team member went to the simulation control room and announced the beginning of the simulation activity and provided the simulated patient's audible responses of communication between the participant and simulated patient during the activity. The participant

proceeded in the planned simulation activity until the 30 minutes for the activity had expired or the completion of tasks was achieved. The blinded team member collected observational data on time, settings, simulated patient actions, events, and correct and incorrect interventions from the simulation events form (see Appendix F).

Upon completing the simulation activity, routine debriefing was conducted between the participant and the blinded project team member. Following the debriefing, the blinded team member instructed participants to complete their enclosed questionnaires within their folder, place the completed questionnaire back in their folder, and seal it. The participants were instructed to submit their sealed folders in the designated, labeled, secured location in the simulation laboratory on the day of their participation. Then the blinded project team member escorted the participant out of the simulation laboratory.

Methodology Appropriateness

The project used a quantitative methodology. An advantage of the methodology is the ability to determine correlational and causal relationships between variables with a successive presentation of scientifically valid logical outcomes (Terry, 2018). The methodology was well-suited to capture thematic analysis of the intervention while deterring selection and accidental bias on the dependent variables. The methodology of using questionnaire surveys as evaluation tools facilitated the ability to analyze complex, deep, and rich perspectives of the participant's views toward the simulation activity (Wilson et al., 2021). Using the quantitative data provided valuable insights into the influence the intervention had on achieving SOD and levels of reaction and learning during the simulation activity.

Feasibility and Appropriateness

The project's feasibility and appropriateness to achieve adequate participant recruitment within the project's setting appeared positive. The project setting has five separate nursing cohorts varying from approximately 30 to 60 students in each. The project required two project team members, one unblinded and the other member blinded to randomization and application of the project's intervention. The unblinded member was secured, and the blinded member was the project's principal investigator. The project was planned for 4 days when the project's setting is not conducting other student simulation activities. The 4 days provided the adequate obtainment of necessary private rooms, simulation laboratory, equipment, and supplies. The project's setting's nursing executive and simulation laboratory coordinator leadership had provided support for the project and signed a clinical site agreement. Associated costs for the project included minimal printing of project forms and participant randomization folders.

IRB Approval and Process

Prior to beginning the project, Abilene Christian University (ACU) and the project setting's IRB approval were sought (see Appendix G). Both the unblinded and blinded project team members completed the Collaborative Institutional Training Initiatives (CITI) training courses for responsible conduct of research (Collaborative Institutional Training Initiative Program, 2022). Ethical research principles were consistently applied throughout the project's processes. Data collection instruments, informed consent forms, project forms, and recruitment materials were submitted for review and approval from each IRB. Project activities were not conducted prior to IRB's approval.

Interprofessional Collaboration

Interprofessional collaborations were ongoing between the project team members and the project setting stakeholders. Project setting stakeholders included the simulation laboratory coordinator and the executive nursing director. Project team members and stakeholders were individuals versed in ethical research principles, clinical simulation activities, and concepts of SOD in clinical simulation. Collaborations were ongoing between the project team members and stakeholders to ensure the project's intention was met while the setting's dedication to supporting student success was maintained.

Practice Setting

The setting for the project was a central Texas community college. The college offers visual and performing arts, competitive athletics, and healthcare programs. Within the college's healthcare programs resides preparation for students to become registered or licensed vocational nurses. The nursing program imparts online and in-person classrooms with lecture, clinical, and simulation instruction. The nursing building is located on the college campus with ease of access and includes a clinical simulation laboratory with high-fidelity mannequins, equipment, and supplies. The nursing programs maintain over 200 actively enrolled nursing students with ample resources of space, location, and participant pool for the project's processes.

Target Population

The target population was nursing students over the age of 18 years of age enrolled in the project setting. Inclusion criteria included prior experience with clinical simulation activities at the college's simulation laboratory. Exclusion criteria included nursing students who were or had repeated their semester courses. The determined sample size represented the total population of a 30-nursing student semester cohort, equating to a 30-participant recruitment goal. By achieving

the recruitment goal, a 95% confidence level, 0.03–0.05 confidence interval, and exhaustion of knowledge learned from the population were determined as the recruitment goal (Creative Research Systems, 2019).

Risks and Benefits

The project gained IRB expedited review, as it involved no more than minimal risk. The project adhered to ethical principles of the Belmont Report (U.S. Department of Health and Human Services, 1979), inclusive of autonomy that is respect for persons and beneficence. Respect for persons requires that participants be given the opportunity to choose what shall or shall not happen to them by providing informed consent (U.S. Department of Health and Human Services, 1979). Since the participants were potential students of mine as the project's primary investigator, there was a risk that students might feel compelled to enroll. Further, students may believe enrolling in the project would increase course success and grades. Students also may have feared that not participating would decrease their opportunities to succeed in courses and programs. Combating this risk was to maintain ethical research principles of autonomy.

Terry (2018) shared autonomy is the ethical principle related to informed consent. The project's informed consent was provided with clear communication that the student had the right to participate or not participate without imposing any risks to influence their course success, grades, or program. Further, the consent expressed participation was entirely voluntary without forms of coercion. As an additional measure to protect the potential participant, the unblinded project team member performed the consenting process and was not the project's primary investigator.

Recruitment processes were performed outside the classroom setting through general email and an e-flyer. A member of the project setting's staff, who was someone other than the

project's principal investigator, such as the nursing school's administrative assistant, conducted email correspondences. Recruitment methods deterred the risk of students believing their course success, grades, or program would be influenced based on their participation. E-flyers were not placed in classrooms where the project's author performs class lectures. Sample flyers and email correspondences were submitted to the IRBs for review and approval to ensure the protection of participants was maintained.

Beneficence reflects the goal of doing no harm while maximizing the possible benefits (U.S. Department of Health and Human Services, 1979). Accordingly, the potential benefit of participating in the project was experiencing the enhanced ability to achieve SOD during clinical simulation activities. Muckler (2017) explained that achievement of SOD during clinical simulation activities enhances the learner's experience to the point they view the encounter as if they are with a real patient. A potential risk included experiencing anxiety with achieving a new clinical experience activity (Cornine, 2020). If participants experienced anxiety, the project team behaviors, such as using humor, inviting teaching behaviors, and being caring to lower student anxiety, were conducted (Cornine, 2020). Potential benefits included learning a new technique to achieve SOD during clinical simulation that is adaptable to clinical practice and academic settings.

Instruments and Measurement Tools

The project pursued a quantitative methodology incorporating two surveys. The IPQ is a psychological evaluation tool that measures the participant's level of perceived presence in a simulated environment (Igroup, 2016). Presence is defined as a "subjective experience of being in one environment, even when one is physically situated in another" (Witmer & Singer, 1998, p. 225). Historically, questionnaires have been considered the most appropriate and most frequently

used method to measure expressed presence (Grassini & Laumann, 2020). The IPQ (see Appendix B) was used to determine the ability to achieve SOD by the measurement of presence during the simulation activity. The IPQ was developed from previously validated subjective questionnaires with subsequent validation of its own ability to measure presence in a virtual environment (Igroup, 2016).

The IPQ is composed of three subscales of presence, spatial presence, involvement, and experienced realism within 17 differing questions (Igroup, 2016). Question 1 evaluates the presence measurement, while Questions 11, 12, 13, and 14 measure experienced realism.

Accordingly, Questions 1, 11, 12, 13, and 14 were chosen for data analysis measuring presence and experienced realism to evaluate the ability to achieve SOD during the simulated activity (Igroup, 2016). Using the IPQ did not incur expenses as it was used under the authors' copyright notices and publications for research purposes (Igroup, 2016).

The second questionnaire survey, the evaluation form (see Appendix C), determined the levels of reaction and learning by applying the Kirkpatrick model, which is a 5-point Likert-scored evaluation form. Questions 1, 2, and 3 were designed to evaluate levels of reaction, while Questions 4, 5, 6, and 7 evaluated levels of learning. Kirkpatrick's model evaluates learning from four levels of reaction, learning, behavior, and results (Alsalamah & Callinan, 2022). The model also has become a standard tool for evaluating a program's effectiveness in higher education (Milota et al., 2019). The evaluation model originated in 1959 by Donald Kirkpatrick and continues to be recognized as a valid measurement tool of levels of reaction and learning (Alsalamah & Callinan, 2022). Alsalamah and Callinan (2022) conducted a bibliometric analysis of the Kirkpatrick model aimed to determine its relative effectiveness, utility, and validity and

found that the model continues to remain a useful, appropriate, and applicable evaluation tool in evaluating levels of reaction and learning.

Data Collection and Management

Each participant was assigned a de-identified randomization folder for reviewing, completing, and collecting questionnaire surveys and check sheet forms. The blinded project team member obtained observational data. During the simulation activity, the blinded project team member used the simulation check sheet and simulation events form (see Appendix E and Appendix F) to document the satisfactory or unsatisfactory responses to the participant's interventions.

The check sheet also included an available comment section. The blinded team member added the completed check sheet to the participant's randomization folder without viewing other forms in the folder.

Forms and processes were de-identified to maintain the confidentiality of the participant's information and the project's data. Consenting, randomization processes, SOD training, personalization of the clinical profile, and completing forms were conducted in private rooms in the project setting. The de-identified data was transcribed to a password-protected computer using an Excel worksheet, which was converted for data analysis using the IntellectusStatistics software (IntellectusStatistics, 2022).

Project collection tools and data were and will remain secured behind a locked door in a locked file cabinet in the project setting. Access to the cabinet will be restricted to project team members. Data will be kept for a minimum of 3 years. Following the 3 years, considered a reasonable amount of time, data records will be shredded, and electronic data records will be

erased using a commercial software application designed to remove all data from the designated project computer.

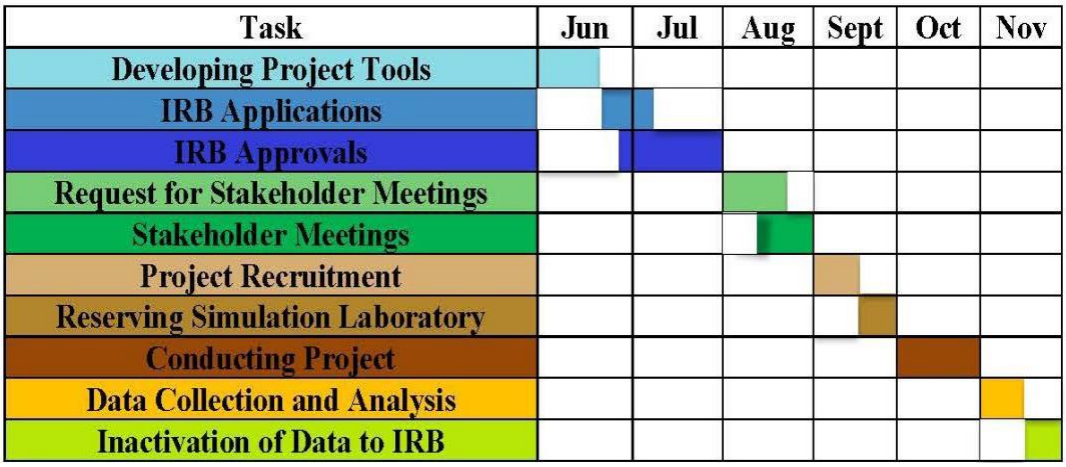
De-identified data collected during this project will also be stored in a secure ACU drive under the project researcher's name. The university will own the data in case access is needed at a future date. This storage system is provided by the online graduate school for doctoral student research data and supported by the university's information technology (IT) department for security purposes and kept for the minimum required time according to IRB guidelines.

Timeline

The timeline for the project was 23 weeks. The timeline reflected preproject procedures of developing, obtaining, and organizing data collection and evaluation tools, recruitment media, and SOD audio-visual training material, which took 3 weeks. The following 5 weeks focused on IRB-associated tasks of project submissions, correspondences, and approvals. Once IRB approvals were obtained, stakeholder meetings were requested and granted at the project site. The meetings focused on discussing and facilitating recruitment, enrollment, and simulation laboratory reservation processes with project site stakeholders. The meetings were held during the following 4 weeks. Project recruitment procedures began after the meetings and ended the following 4 weeks, inclusive of scheduling participants and associated reservations of the simulation laboratory. The project was conducted during the next 4 weeks, followed by data collection and analysis. Data collection and analysis lasted 2 weeks. The inactivation of the project and data collection was submitted and approved to each IRB 1 week after the data analysis was completed. See Figure 2 for a pictorial timeline.

Figure 2

Pictorial Timeline of Project



Analysis Plan

The project included three dependent variables and one independent variable. The dependent variables included (a) enhanced ability to achieve SOD during simulation activity; (b) level of reaction (conclusion that training was positive, engaging, relevant to their future job; and (c) level of learning (conclusion that training achieved intended knowledge, skills, attitude, confidence, and dedication from participation; Kirkpatrick Partners, 2022). The independent variable was the formulation and application of the participant's personalized interactive storytelling to the simulated patient's clinical profile.

An independent samples *t* test was used to conduct data analysis. The independent samples *t* test was used to determine if there was a significant difference between the two groups on a scale-level dependent variable (IntellectusStatistics, 2022). The *t* test computes the *p*-value by determining the difference between the average scores of two groups and then computing the *t* statistic, leading to the *p*-value (IntellectusStatistics, 2022). A significant result indicates there

is an observed relationship presenting the unlikelihood there is a null hypothesis (IntellectusStatistics, 2022).

Chapter Summary

Chapter 3 provided the project design, methodology, feasibility appropriateness, IRB approval and process, interprofessional collaboration, practice setting, target population, risk and benefits, chosen measurement tool, data collection and management, anticipated timeline, and analysis plan. The purpose of the project was to enhance the ability to achieve SOD and levels of reaction and learning in clinical simulation, improving the participant's levels of reaction and learning translatable to their clinical practice. The project's PICO question was, "In a clinical simulation, do nursing student participants who formulate and apply their personalized interactive storytelling narratives to the simulated patient's clinical profile, compared to no such intervention, enhance the ability to achieve suspension of disbelief and levels of reaction and learning during the simulation activity?"

The project used an experimental design with cluster sampling. The project used two project team members, one who was blinded and one who was unblinded to the randomization and applied intervention. The project used simple random sampling. Both the nonintervention and intervention groups participated in the same clinical simulation activity appropriate for their level of training and education. The intervention group also embedded personalized storytelling narratives from the simulated patient's characteristics and clinical profile before the clinical simulation activity was conducted.

De-identified randomization folders were generated for both nonintervention and intervention participants. The folders had the synopsis of the simulated patient form, the IPQ (Igroup, 2016), the Kirkpatrick model Likert-scored evaluation form, the personalization form,

and the simulation events form. Each participant participated in the same SOD training prior to the simulation activity to create a common knowledge baseline. Following consent, randomization, and suspension of disbelief training, the unblinded team member read the synopsis of the simulated patient form of the simulated patient to both nonintervention and intervention participants.

For participants randomized to the intervention group, the unblinded member retrieved the personalization form and asked the participant to formulate and apply personalized storytelling narratives to the simulated patient's clinical profile. The unblinded team member read the personalization form questions and wrote the participant's personalization and then updated the synopsis infusing the personalization. The completed personalization form was placed in the participant's randomization folder and closed.

The unblinded team member provided the participant with the closed randomization folder and instructed the participant to bring the folder with them to the simulation area but not to open the folder until instructed to do so and escorted the participant to the clinical simulation laboratory. The blinded team member escorted the participant to the clinical simulation room to introduce themself and conduct routine prebriefing for both the nonintervention and intervention participants. The participant was informed they had 30 minutes to conduct the simulation, and the team member would announce the start time.

The team member instructed the participant to review the medical record and provider orders, complete a head-to-toe assessment, and provide ordered patient care appropriate within their scope of practice and patient care needs. The blinded team member then read the synopsis of the simulated patient form without customizations from the intervention participants. The simulation scenario presents a 38-year-old female experiencing a productive cough, fever, and

extreme fatigue with a subsequent medical diagnosis of pneumonia. She appeared somewhat anxious about something but had not shared what that may be. Expected nursing interventions were outlined on the simulation check sheet. The blinded team member went to the simulation control room to announce the beginning of the simulation activity and provided the simulated patient's audible responses of communication between the participant and simulated patient during the activity. The participant proceeded in the planned simulation activity until time had expired or the completion of tasks was achieved. During the simulation activity, the blinded team member collected observational data on time, settings, simulated patient actions, events, and correct and incorrect interventions, and then documented the findings on the simulation events forms. Following the activity, the blinded team member performed routine debriefing and instructed participants to open their randomization folder, complete the enclosed questionnaire surveys, and return to the designated, secured location on the day of their participation.

The project used a quantitative methodology. The project's feasibility and appropriateness to achieve adequate participant recruitment within the project's setting appeared positive. The project was planned for 4 days providing the feasibility of obtaining private rooms, a simulation laboratory, equipment, and supplies, with executive leadership providing verbal support for the project. Associated costs for the project included minimal printing of project forms and participant randomization folders.

Prior to beginning the project, ACU and the project setting's IRB approval were sought. Interprofessional collaborations were ongoing between project team members and project setting stakeholders. Project setting stakeholders included executive and simulation laboratory nursing leadership. The setting for the project was a central Texas community college. The college's healthcare programs prepare students to become registered or licensed vocational nurses. The

target population was nursing students over the age of 18 years of age, enrolled in the project setting with prior experience with clinical simulation activities at the college's simulation laboratory. Exclusion criteria included nursing students who had or were repeating the semester courses.

The project gained an IRB expedited review, as it involved no more than minimal risk. Since the participants were potential students of the project's author, there was a risk that students may feel compelled to enroll. Combating this risk was to maintain ethical research principles of autonomy. The project's informed consent was provided in a clear communication that the student had the right to participate or not participate without imposing any risks to influence on-course success, grades, or program. Further, that participation was entirely voluntarily based without forms of coercion.

Recruitment processes were performed outside the classroom setting through a general email and an e-flyer. A member of the project setting's staff, who was someone other than the project's principal investigator, such as the nursing school's administrative assistant, conducted email correspondences. A potential risk included experiencing anxiety with achieving a new clinical experience activity (Cornine, 2020). If participants experienced anxiety, the project team behaviors, such as using humor, inviting teaching behaviors, and being caring to lower student anxiety, were conducted (Cornine, 2020). Potential benefits included learning a new technique to achieve SOD during clinical simulation that was adaptable to clinical practice and academic settings.

The project pursued a quantitative methodology incorporating two survey questionnaires. The IPQ (Igroup, 2016) was used to determine the ability to achieve suspension of disbelief during the simulation activity. The second questionnaire survey evaluated the levels of reaction

and learning using a Kirkpatrick model 5-point Likert-scored evaluation form. Each participant had a de-identified randomization folder assigned for reviewing, completing, and collecting questionnaire surveys and check sheet forms. Project collection tools and data will remain secured and behind a locked door in a locked file cabinet in the project setting. Access to the cabinet will be restricted to project team members. Data will be kept for a minimum of 3 years afterward; data records will be shredded, and electronic data records will be erased using a commercial software application designed to remove all data from the designated project computer. De-identified data collected during this project will also be stored in a secure ACU drive under the project researcher's name. The university will own data in case access is needed at a future date.

The expected timeline for this project was 16 weeks. The project included three dependent variables and one independent variable. The dependent variables included (a) enhanced ability to achieve SOD during simulation activity, (b) level of reaction, and (c) level of learning. Two-tailed independent sample *t* tests were used to conduct data analysis.

Chapter 4: Results

The project was an experimental design with cluster sampling and a quantitative methodology. The research design was chosen to determine correlational and causal relationships between variables with a successive presentation of scientifically valid logical outcomes (Terry, 2018). The project compared the control group to the intervention group's ability to achieve SOD during the simulation activity and levels of reaction and learning. Using questionnaire surveys as evaluation tools facilitated the ability to analyze complex, deep, and rich perspectives of the participant's views toward the simulation activity (Wilson et al., 2021). The data analysis used for the project was two-tailed independent sample *t* tests determining significant differences between the control and intervention groups' results.

Data Collection

The IPQ Questions 1, 11, 12, 13, and 14 were selected to measure the ability to achieve SOD. Question 1 evaluated the presence measurement, while Questions 11, 12, 13, and 14 measured experienced realism, both of which assess the ability to achieve SOD during the simulated activity (Igroup, 2016). Question 1 asked how aware the participant was of the natural world of their surroundings while navigating in the simulated environment. Possible answers ranged from *extremely aware* (-3), *moderately aware* (0), to *not aware at all* (3). Question 11 asked if the participant felt present in the virtual space with associated possible measurements of *entirely disagree* (-3) to *fully agree* (3). Question 12 posed whether the virtual world seemed more realistic than the real world, with possible answers ranging from *fully disagree* (-3) to f*ully agree* (3). Question 13 asked if they felt they perceived pictures on a scale of *fully disagree* (-3) to *agree fully* (3). Lastly, Question 14 posed if the participant was captivated by the virtual world on a measurement range between *fully disagree* (-3) to *fully agree* (3).

The Kirkpatrick model Likert-scored evaluation form evaluated the levels of reaction and learning. The evaluation form's Questions 1, 2, and 3 were used to determine the levels of reaction, and Questions 4, 5, 6, and 7 measured levels of learning. Possible answers for each question uniformly ranged from *strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), or *strongly agree* (5). Levels of reaction questions included Question 1 asking if participation in training was positive, while Question 2 posed if the involvement in activity was engaging. Question 3 asked if participation applied to a future job as a nurse. Levels of learning Question 4 posed if participation enhanced knowledge, while Question 5 asked if participation enhanced skills. Question 6 posed if participation enhanced confidence, and Question 7 asked if participation achieved the intended dedication of their involvement.

Participants consented before any project activities occurred. Following consent, participants were randomized into either the control or intervention group and viewed the SOD video providing a consistent foundation of understanding of SOD. The simulated patient's synopsis of the simulated patient form was read to both nonintervention and intervention participants. Participants in the intervention group were asked to formulate and apply personalized storytelling narratives using the personalization form to the simulated patient's clinical profile. Participants from both groups then conducted the simulation activities while observational data collection ensued by the blinded project team member. Following the conclusion of the activity, participants were invited to complete the two surveys and insert the completed surveys into their de-identified participant folder, placing them in the secured designated location for future data analysis.

The total number of participants in the project was five third-semester nursing students who met the inclusion and exclusion criteria. Randomization presented three intervention

participants and two control participants. Project data collection took place over four weekend days at the project site.

Data Analysis

Once the data was collected, it was recorded into a Microsoft Excel spreadsheet and kept in a secure location at the project site. The method used to capture, quantify, compile, and manage data collection was two-tailed independent samples *t* tests for both the IPQ and evaluation forms. The IPQ data analysis included the assumption of homogeneity of variance. Levene's test was conducted to assess the variance. The results for each question met the assumption of homogeneity of variance (IntellectusStatistics, 2022).

Question 1, measuring presence, was conducted using the two-tailed independent samples *t* test. The result was significant based on an alpha value of .05, $t(3) = 5.03$, $p = .015$, indicating the null hypothesis cannot be rejected (IntellectusStatistics, 2022). The finding suggests that participants' presence during the simulation activity was significantly different between the intervention and control categories of groups, with an enhancement in the intervention group (IntellectusStatistics, 2022). The results are presented in Table 1.

Table 1

Two-Tailed Independent Samples t *Test for Q1: Presence by Groups*

Variable	Intervention		Control		*t*	*p*	*d*
	M	*SD*	*M*	*SD*			
Q1	1.33	1.15	-3.00	0.00	5.03	.015	5.31

Note. $N = 5$. Degrees of freedom for the *t* statistic = 3. *d* represents Cohen's *d.* (IntellectusStatistics, 2022).

Data analysis for questions evaluating experienced realism from Questions 11, 12, 13, and 14 was conducted using the two-tailed independent samples *t* test. Each question was

determined to meet the homogeneity of variance. The questions did not reveal a significant difference between the intervention and control categories of groups. Alpha values are seen in Table 2.

Table 2

Alpha Values for Q11, Q12, Q13, and Q14

Variable	Question 11	Question 12	Question 13	Question 14
Alpha value	.05, *t*(3)	.05, *t*(3)	.05, *t*(3)	.05, *t*(3)

Note. Data generated from IntellectusStatistics (2022).

Table 3 presents the results of experience realism questions.

Table 3

Two-Tailed Independent Samples t *Test for Q11, Q12, Q13, and Q14: Realism by Groups*

Variable	Intervention		Control				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Q11	-0.67	2.31	-3.00	0.00	0.36	.268	1.43
Q12	-0.33	2.52	0.50	0.71	-0.44	.692	0.45
Q13	-2.33	0.58	-3.00	0.00	1.55	.219	1.63
Q14	2.33	0.58	3.00	0.00	-1.55	.219	1.63

Note. N = 5. Degrees of freedom for the *t* statistic = 3. *d* represents Cohen's *d.*

(IntellectusStatistics, 2022).

Data analysis of the evaluation form measuring the participants' level of reaction and learning used a two-tailed independent samples *t* test to determine whether the mean of questions was significantly different between the intervention and control categories of groups (IntellectusStatistics, 2022). Questions 1, 2, 3, and 7 only had one unique value of 5 (*strongly agree*) for each question, revealing no significant difference between the groups. Questions 4, 5,

and 6 met homogeneity of variance but did not reveal significant differences between the two groups' levels of reaction or learning. Two participants in the intervention group rated Questions 4 and 5 as *agreeing*, while the remaining rated them as *strongly agreeing*. One of the intervention participants rated Question 6 with an *agreement*, while the remaining participants rated the question with a *strongly agreed* (see Table 4 and Table 5).

Table 4

Alpha Values for Q4, Q5, and Q6

Variable	Question 4	Question 5	Question 6
Alpha value of .05	$t(3) = -1.55$, $p = .219$	$t(3) = -1.55$, $p = .219$	$t(3) = -0.77$, $p = .495$

Note. Data generated from IntellectusStatistics (2022).

Table 5

Two-Tailed Independent Samples t *Test for Q4, Q5, and Q6: Learning by Groups*

Variable	Intervention		Control				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Q4	4.33	0.58	5.00	0.00	-1.55	.219	1.63
Q5	4.33	0.58	5.00	0.00	-1.55	.219	1.63
Q6	4.67	0.58	5.00	0.00	-0.77	.495	0.82

Note. N = 5. Degrees of freedom for the *t* statistic = 3. *d* represents Cohen's *d.*

(IntellectusStatistics, 2022).

Limitations of Project

The sampling size, cluster sampling, and previous experiences with simulation activities limited the generalizability of the project's findings. The determined sample size comprised 30 participants with a completion rate of 100%. The determined size equated to a 95% confidence level with a 0.03–0.05 confidence interval. Instead, the sample size was 5, with a 100%

participation rate. Heavey (2019) explained that when the sample size is too small, there is a risk of not finding a statistical difference even though one does exist.

A second limitation was the application of cluster sampling from one community college and selected semesters of nursing students. Cluster sampling was chosen to support the project's method of available participants, location, and demographics of the project's control and intervention groups. Yet, Heavey (2019) warned that though this form of sampling is relatively quick and inexpensive, it might not represent the ability to generalize applications to other similar populations. Therefore, the chosen design had the possibility that the participants' outcomes may not represent different students from other nursing programs or levels of progression (Terry, 2018).

A third limitation was the possibility of previous experiences with simulation activities or the simulation laboratory. These experiences may have influenced the participants' view of their participation in the project experience. Burbach et al. (2016) shared previous experience factors of anxiety, uncertainty, or prior experience with a similar simulation scenario that can influence views and performance on simulation activities. Hence, the elements could have influenced their project experience and subsequent questionnaire responses. Further, the asynchronous administration of the questionnaire's evaluation tools could have led to inaccurate responses derived from frustration during the activity leading to misjudgments of their experience (Holzwarth et al., 2021).

Chapter Summary

The project was an experimental design with cluster sampling and a quantitative methodology. The project used questionnaire surveys as the evaluation tools to determine the ability to achieve SOD during the simulation activity and levels of reaction and learning. Data

analysis used two-tailed independent sample *t* tests to determine significant differences between the control and intervention groups. The IPQ evaluation Questions 1, 11, 12, 13, and 14 were selected to measure the ability to achieve SOD. Question 1 evaluated the presence measurement, while Questions 11, 12, 13, and 14 measured experienced realism, both of which assess the ability to achieve SOD during the simulated activity. The Kirkpatrick model Likert-scored evaluation form evaluated the levels of reaction and learning. The evaluation form's Questions 1, 2, and 3 were used to determine the levels of reaction, and Questions 4, 5, 6, and 7 measured levels of learning.

Data collection activities included consenting, randomization, providing a consistent foundation of understanding of SOD, and presentation of the simulated patient's synopsis of the simulated patient form. The intervention group was asked to formulate and apply personalized storytelling narratives using the personalization form to the simulated patient's clinical profile. Participants from both groups conducted the same simulation activities while observational data collection was collected. Following the conclusion of the activity, participants were asked to complete the IPQ and evaluation form. The total number of participants in the project was five third-semester nursing students, all of whom met the inclusion and exclusion criteria. Project data collection took place over four weekend days at the project site.

IPQ Question 1, measuring presence, revealed a significant difference between the intervention groups' ability to achieve SOD over the control group. Data analysis for Questions 11, 12, 13, and 14, experiencing realism, did not reveal a significant difference between the intervention and control categories of groups. Data analysis of the evaluation form, measuring the participants' level of reaction and learning, Questions 1, 2, 3, and 7 only had one unique value of 5 (*strongly agree*) for each question revealing no significant difference between the

groups. Questions 4, 5, and 6 met homogeneity of variance but did not reveal significant differences between the two groups' levels of reaction or learning. Two participants in the intervention group rated Questions 4 and 5 as *agreeing*, while the remaining rated them as *strongly agreeing*. One of the intervention participants rated Question 6 with an *agreement*, while the remaining participants rated the question with a *strongly agreed*.

The sampling size, cluster sampling, and previous experiences with simulation activities limited the generalizability of the project's findings. The determined sample size was 30 participants when five were achieved. Secondly, the application of cluster sampling was from only one community college with one selection of semesters of nursing students. Thirdly, the possibility of previous experiences with simulation activities or the simulation laboratory may have influenced the participants' view of their participation in the project experience.

Chapter 5: Discussion, Conclusions, and Recommendations

The project aimed to enhance the achievement of SOD and levels of reaction and learning in clinical simulation activities. SOD is considered the ability to accept a simulated environment as authentic (Muckler, 2017). The selected intervention was interactive storytelling applied by and drawn from the participant's personalization to the simulated patient's clinical profile. Both the intervention and control groups followed the same simulation activity. Evaluation tools of questionnaire surveys were used for both groups to determine if the intervention created a significant difference between the groups' ability to achieve SOD and levels of reaction and learning.

Thirty participants were invited to participate in the project; five were enrolled and completed the project's protocol. Participants were third-semester nursing students in an associate's degree nursing program at a community college in central Texas. Participants had prior simulation activity experience and had not, nor were not, repeating their third semester. Chapter 5 discusses the project findings with associated interpretations and conclusions, EBP findings, relationship to Doctor of Nursing Practice (DNP) Essentials, and recommendations for future research and clinical practice.

Discussion of Findings

The project's PICO question asked if nursing students who formulated and applied their personalized interactive storytelling narratives to a simulated patient's clinical profile, compared to no such intervention, would have an enhanced ability to achieve SOD and levels of reaction and learning during the simulation activity. Level of reaction was defined as measuring participants' perception that their training is positive, engaging, and relevant to their jobs (Kirkpatrick Partners, 2022). Level of learning was defined as the measurement of the

participant's achievement of their intended knowledge, skills, attitude, confidence, and dedication from the participation in training (Kirkpatrick Partners, 2022). The sensation of presence refers to a subjective experience of being in one environment when physically situated in another (Witmer & Singer, 1998) and is closely associated with achieving SOD during simulation activities. Experienced realism is defined as things or situations represented in a method that is accurate or true to life (Wolters Kluwer, 2018).

The evaluation tool used to determine the ability to achieve SOD was the IPQ measuring the participant's sensation of presence and experienced realism (Igroup, 2016). The data analysis did reveal a significant difference between the intervention and control groups' sensation of experienced presence. The findings suggest that the intervention did enhance the participant's ability to achieve SOD through the sensation of presence. The review did not find a significant difference in the participants' experienced realism. However, it is unclear if the small sample size influenced the ability to determine if experienced realism was achieved.

A Likert-scored evaluation questionnaire evaluated levels of reaction and learning. The data did not reveal significant differences between the groups' levels of reaction or learning. Still, participants' responses from the evaluation exposed a strong agreement that their participation was positive, engaging, and applicable to their future job as a nurse. Further, the participants either *agreed* or *strongly agreed* that their participation enhanced their knowledge, skills, and confidence. Also, the results revealed that all participants believed their participation achieved the intended dedication to their participation. Students supplemented their responses with comments that their participation was "whole-heartedly" applicable to their future job as a nurse.

The new knowledge and findings help the current body of nursing knowledge by identifying interactive narrative storytelling applied to a simulated patient's clinical profile that can enhance the perception of presence during the simulated activity. When a participant experiences a sense of presence during a simulated activity, the encounter improves the ability to gain knowledge and skills (Muckler, 2017). Therefore, the findings present opportunities to infuse the intervention in simulation activities with the anticipation of participants achieving the sensation of presence associated with experiencing SOD. Further, the results provide an opportunity for participants to incur benefits of improved knowledge and skill attainment through enhanced ability to achieve SOD during simulation activities, translatable to clinical practice.

Dr. Jean Watson's caring theory was used as the project's model. The theory facilitates a connectedness of human-to-human interactions between the healthcare team and the patient (Utley et al., 2018). The model's principle of being human is developed by identifying ourselves with others, discovering similar shared dilemmas, then leading to our common humanity while avoiding viewing ourselves or others simply as a moral status of an object (Watson Caring Science Institute, 2021). The model was selected to build a structural framework that would deter the participant's tendency to view the simulator as an object. Instead, the framework would facilitate an environment where the participant would engage the simulated patient as a natural person leading to an enhanced sense of presence, SOD, and levels of reaction and learning.

Project Findings and Nursing Leadership

The project's findings have added to the current knowledge of supporting participants' ability to experience the sensation of presence during a simulated activity in an uncomplicated and budget-friendly approach. Accordingly, nursing leaders can implore nursing educators to

apply the intervention to enhance various simulation activities of new, annual, and ongoing competencies acquisitions, validation, and maintenance of essential skill sets. Since the intervention originates and is developed in the mind of the participant, there are no added operational expenses in its application to numerous learning opportunities and activities.

Nursing leaders who facilitate the intervention can benefit from their team's enhanced ability to sense presence during simulation. Muckler and Thomas (2019) shared that the benefits of achieving a sense of presence during clinical activities lead to improvements in engagement, focus, education, and learning. Opportunities for implementation can include annual skill competency validation, skill fairs, and clinical simulation scenarios of emergent, risky, or routine practices. The gains in knowledge and skill sets are translatable in various clinical practice settings when serving patients, their families, and the residing community.

Project Findings and DNP Essentials

The project findings and relationship to the DNP Essentials include Essentials IV and VI. The American Association of Colleges of Nursing (2006) shared that Essential IV focuses on information systems and patient care technologies with attention to supporting safe, efficient, patient-centered care and clinical decision-making. Essential IV expects the DNP to be at the helm of healthcare delivery and involved in information innovation and its application and appropriateness for healthcare consumers (American Association of Colleges of Nursing [AACN], 2006).

The intervention aligns with Essential IV by supporting safe and efficient decision-making within a technology-infused simulation environment by improving the sense of presence and immersion. Outcomes of enhanced immersion support engagement in a trial-and-error experience within a safe space to practice without imposing risks of patient harm. Gained

knowledge and skills in this type of setting are translatable to clinical practice improving safety, efficiency, and patient-centered decision-making and care.

The intervention also mirrors Essential IV's focus on applying innovation in technology for healthcare consumers. The Essential is met with the novelty of co-developing the simulated patient's clinical profile by the simulation facilitator and participant, traditionally performed solely by the facilitator. Outcomes of the intervention have shown a greater sense of presence in the simulation activity with associated expectations of greater involvement, attention, and knowledge gain (Muckler & Thomas, 2019).

Essential VI emphasizes the value of interprofessional collaborations (AACN, 2006). The Essential expects the DNP to lead interprofessional teams with collaborative skills by developing and implementing models and standards that improve patient outcomes (AACN, 2006). The Agency for Healthcare Research and Quality (2022) also emphasizes the importance of healthcare collaboration through multidisciplinary teams that assist in improving patient outcomes. The Agency for Healthcare Research and Quality (2022) shared that clinical simulation helps establish high levels of individual and team performance with its ability to identify safety protocols and practice breaches. Coupling Essential VI and the Agency for Healthcare Research and Quality's acknowledgment of the value of multidisciplinary collaborations aligns with the project's intervention.

The project's intervention application is feasible for any interprofessional member of a simulation activity. One of the benefits of the intervention is its ease of development and implementation during simulation activities. Outcomes in collaborative simulation activities can support the participant's ability to experience an enhanced feeling of presence, leading to enhanced group engagement and subsequent team learning.

Recommendations for Future Research and Clinical Practice

Recommendations for future research projects include studying narrative storytelling in clinical simulation with a larger participant sample size. Studying an entire cohort of nursing students may determine if there is a significant difference between using the intervention and improving the student's appropriateness and timeliness of nursing interventions. Further, having a more robust participant involvement may be able to determine if there is a significant difference in the participant's levels of learning and reaction.

Another potential study is having participants create the entire characteristic profile through narrative storytelling to determine if the participant's sense of presence and connectedness toward the simulator is enhanced. Studying the participants' emotional position toward simulation activities may also provide insights if innate influences of a participant's beliefs and feelings affect the ability to achieve SOD during clinical simulation. Finally, long-term research would be beneficial to identify if learning and adopting the intervention during simulation is maintained long termed by participants.

Suggestions for the application of the project's findings include implementing the intervention in simulation learning activities in academia and clinical practice settings to enhance presence and subsequent knowledge retention and use. Opportunities for application in nursing academia include nursing students' learning skills, disease processes, and nursing interventions in chronic and acute patient populations. Application of the intervention in clinical practice can include nurses' competency skill validations and recertifications. Introducing processes and procedures to healthcare professionals and patient interactions using the intervention can enhance the sense of presence during instruction, leading to enhanced engagement and learning.

The intervention can also be infused during routine and critical simulation scenarios within nursing and in collaboration with interprofessional healthcare simulation events.

Conclusion

The project's purpose was to determine if the participant's narrative storytelling of a simulated patient's clinical profile would enhance the achievement of SOD and levels of reaction and learning in clinical simulation activities. The project's findings revealed a significant difference in sensing presence during the simulation activity. Sensing presence during simulation indicates a participant's ability to achieve SOD. The results showed that participants who applied narrative storytelling to their patient's clinical profiles had a greater sense of presence than the participants who did not. Experienced realism, another indicator of achieving SOD, was not determined as a significant difference. The conclusion is that the intervention enhanced the participant's presence and ability to achieve SOD but not through experienced realism. The project's aim to determine if the intervention would improve levels of reaction and learning found no significant difference. The results did find that both groups felt their participation in the project was highly positive in their levels of reaction and learning.

Recommendations for future research projects include studying narrative storytelling in clinical simulation as the intervention with a larger participant sample size and studying an entire cohort of nursing students' performance with and without the intervention to determine if there is a significant difference between the group's appropriateness and timeliness of nursing interventions in each group. Further, having a more robust participant involvement may determine the intervention's ability to influence levels of learning and reaction.

Another potential study is having participants create the entire characteristic profile through narrative storytelling to determine if the participant's sense of presence and

connectedness toward the simulator is enhanced, thereby enhancing SOD. Studying the participants' emotional position toward simulation activities may also provide insights if innate influences of a participant's beliefs and feelings affect the ability to achieve SOD during clinical simulation. Finally, long-term research would be beneficial to identify if participants maintain learning and adopt the intervention during simulation long-term.

Suggestions for applying the intervention are in academia and clinical practice settings to enhance presence and subsequent knowledge retention and use. Nursing academia opportunities include practicing and learning skills, disease processes, and nursing interventions in various patient populations. Application in clinical practice ranges from skill validations and recertifications to introducing processes and procedures. Further, the intervention can be applied to simulated healthcare professionals, patient interactions of common and critical simulation scenarios, and collaboration of interprofessional healthcare simulation events.

Chapter Summary

The purpose of the project was to enhance the achievement of SOD and levels of reaction and learning in clinical simulation activities. The selected intervention was interactive storytelling applied by and drawn from the participant's personalization to the simulated patient's clinical profile. Thirty participants were invited to participate; five were enrolled and completed all the project's protocols. The project's PICO question asked if nursing students who formulated and applied their personalized interactive storytelling narratives to a simulated patient's clinical profile, compared to no such intervention, would have an enhanced ability to achieve suspension of disbelief and levels of reaction and learning during the simulation activity. The evaluation tool used was the IPQ survey measuring the participant's sensation of presence and experienced realism. The data analysis did reveal a significant difference between the

intervention and control groups' sensation of experienced presence. The review did not find a significant difference in experienced realism. The findings did not reveal significant differences between the groups' levels of reaction or learning.

The new knowledge and findings help the current body of nursing knowledge by identifying interactive narrative storytelling applied to a simulated patient's clinical profile that can enhance presence during the simulated activity. Dr. Jean Watson's caring theory was used as the project's model to deter the participant's tendency to view the simulator as an object instead and engage the simulated patient as a natural person. The project's findings have added to the current knowledge of supporting participants' ability to experience the sensation of presence during a simulated activity in an uncomplicated and budget-friendly approach.

The project findings and relationship to the DNP Essentials include Essentials IV and VI. Essential IV supports safe and efficient decision-making through innovative technology. The Essential is met with the intervention's novel approach to replace traditional methods of developing the simulator's clinical profile with the participants' application of their narrative storytelling. Essential VI emphasizes the value of interprofessional collaborations and expects the DNP to lead in healthcare practices and systems as an effective communicator with collaborative skills (AACN, 2006). The project's intervention is universally applicable to members of an interprofessional team with its ease of adoption and implementation in simulation activities.

Recommendations for future research include studying narrative storytelling with a larger sample size and having the participants create the entire characteristic profile of a simulated patient. Additionally, recommendations are to research the influence of participants' emotional position toward simulation activities and SOD and to identify if participants maintain learning

and adopt the intervention during simulation long-term. Suggestions for the application of the project's findings include implementing the intervention in simulation learning activities in academia and clinical practice settings to enhance presence and subsequent knowledge retention and use.

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Appendix A: Synopsis of the Simulated Patient Form

Synopsis of the Simulated Patient Form

Jennifer Williams, is a 38-year-old female, recently admitted to the medical unit from the emergency room last evening with coughing, fever, and extreme fatigue with a diagnosis of pneumonia in both the right and left lungs. Her covid screening is negative. Jennifer has a history of childhood asthma that she states has resolved in her twenties, and an appendectomy two years ago. She appears somewhat anxious and worried about something but hasn't shared what that may be about. She has a productive cough with green sputum and a sputum sample has been sent down to the lab for analysis. She keeps stating she is exhausted and feels like she has the flu. She has an IV in her right forearm and has LR at 125 cc/hr. hanging with 500 cc left to count. She has not urinated since her admission. She had labs drawn an hour ago, but the results are not in yet. The prescribed medications have been ordered but have not arrived at the unit. Her last vital signs are temperature 100.5, blood pressure 128/62, respirations 24 per minute, oxygen saturation 93% on room air, and pain scale of 7 when she coughs.

Appendix B: Igroup Presence Questionnaire (IPQ)

IPQ

Participant Randomization Number: _____

Now you'll see some statements about experiences. Please indicate, whether or not each statement applies to your experience. If a question is not relevant to the virtual environment you used, just skip it. You can use the whole range of answers. There are no right or wrong answers, only your opinion counts.

You will notice that some questions are very similar to each other. This is necessary *for statistical reasons* . And please remember: Answer all these questions only referring to this *one* experience.

How aware were you of the real world surrounding while navigating in the virtual world? (i.e. sounds, room temperature, other people, etc.)?

extremely aware ○ ○ ○ ○ ○ ○ ○ not aware at all
-3 -2 -1 0 +1 +2 +3
moderately aware

How real did the virtual world seem to you?

completely real ○ ○ ○ ○ ○ ○ ○ not real at all
-3 -2 -1 0 +1 +2 +3

I had a sense of acting in the virtual space, rather than operating something from outside.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

How much did your experience in the virtual environment seem consistent with your real world experience ?

not consistent ○ ○ ○ ○ ○ ○ ○ very consistent
-3 -2 -1 0 +1 +2 +3
moderately consistent

How real did the virtual world seem to you?

about as real as an imagined world ○ ○ ○ ○ ○ ○ ○ indistinguishable from the real world
-3 -2 -1 0 +1 +2 +3

I did not feel present in the virtual space.

did not feel ○ ○ ○ ○ ○ ○ ○ felt present
-3 -2 -1 0 +1 +2 +3

I was not aware of my real environment.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

In the computer generated world I had a sense of "being there"

not at all ○ ○ ○ ○ ○ ○ ○ very much
-3 -2 -1 0 +1 +2 +3

Somehow I felt that the virtual world surrounded me.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I felt present in the virtual space.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I still paid attention to the real environment.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

The virtual world seemed more realistic than the real world.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I felt like I was just perceiving pictures.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I was completely captivated by the virtual world.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

The virtual world seemed more realistic than the real world.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I felt like I was just perceiving pictures.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

I was completely captivated by the virtual world.

fully disagree ○ ○ ○ ○ ○ ○ ○ fully agree
-3 -2 -1 0 +1 +2 +3

Number	PQI/II Nr. (internal)	IPQ item name	shortcut	loading on ...	English question	English anchors	Copyright (item source)
1	s62	G1	sense of being there	PRES	In the computer generated world I had a sense of "being there"	not at all--very much	Slater & Usoh (1994)
2	s44	SP1	sense of VE behind	SP	Somehow I felt that the virtual world surrounded me.	fully disagree--fully agree	IPQ
3	s30	SP2	only pictures	SP	I felt like I was just perceiving pictures.	fully disagree--fully agree	IPQ
4	s28	SP3	not sense of being in v. space	SP	I did not feel present in the virtual space.	did not feel--felt present	???
5	s31	SP4	sense of acting in VE	SP	I had a sense of acting in the virtual space, rather than operating something from outside.	fully disagree--fully agree	IPQ
6	s33	SP5	sense of being present in VE	SP	I felt present in the virtual space.	fully disagree--fully agree	IPQ
7	s64	INV1	awarenes s of real env.	INV	How aware were you of the real world surrounding while navigating in the virtual world? (i.e. sounds, room temperature, other people, etc.)?	extremely aware-moderately aware-not aware at all	Witmer & Singer (1994)
8	s37	INV2	not aware of real env.	INV	I was not aware of my real environment.	fully disagree--fully agree	IPQ
9	s40	INV3	no attention to real env.	INV	I still paid attention to the real environment.	fully disagree--fully agree	IPQ
10	s38	INV4	attention captivate d by VE	INV	I was completely captivated by the virtual world.	fully disagree--fully agree	IPQ
11	s48	REAL1	VE real (real/not real)	REAL	How real did the virtual world seem to you?	completely real--not real at all	Hendrix (1994)
12	s7	REAL2	experien ce similar to real env.	REAL	How much did your experience in the virtual environment seem consistent with your real world experience ?	not consistent-moderately consistent-very consistent	Witmer & Singer (1994)
13	s59	REAL3	VE real (imagine d/real)	REAL	How real did the virtual world seem to you?	about as real as an imagined world--indistinguish aNotble from the real world	Carlin, Hoffman, & Weghorst (1997)
14	s47	REAL4	VE wirklich	REAL	The virtual world seemed more realistic than the real world.	fully disagree--fully agree	IPQ

igroup.org. (2016). *igroup presence questionnaire (IPQ) Item Download.* igroup.org: http://www.igroup.org/pq/ipq/download.php#English

Appendix C: Evaluation Form

Evaluation Form

Participant Randomization Number: _____

Review the below questions and circle the level you believe best represents your participation today.

1. I believe my participation in the training was positive.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

2. I believe my participation in the training was engaging.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(2)	(2)	(3)	(4)	(5)

3. I believe my participation in the training was applicable to my (future) job as a nurse.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

4. I believe my participation enhanced my knowledge from my participation.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

5. I believe my participation enhanced my skills from my participation.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

6. I believe my participation enhanced my confidence from my participation.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

7. I believe my participation achieved the intended dedication of my participation.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

Appendix D: Personalization Form

Personalization Form

Participant Randomization Number: _____

1. Tell me who is Jennifer?

2. What language does Jennifer speak and understand?

3. What ethnicity is Jennifer?

4. What nationality is Jennifer?

5. Does Jennifer have any culture considerations, if so, what are they?

6. What is Jennifer's marital status?

7. Does Jennifer have children? If so, share about who they are.

8. What is Jennifer's educational level?

9. What is Jennifer's religion?

10. What is Jennifer's occupation?

11. Why is Jennifer anxious?

12. What is Jennifer worried about?

13. Why hasn't Jennifer shared what she is anxious and worried about?

14. What else do you want to personalize about Jennifer's social, psychological, emotional, physical, spiritual, medical, or demographic characteristics and histories?

Appendix E: Simulation Check Sheet

Simulation Check Sheet

Participant Randomization Number: _____ Simulation Time Begin: _____Simulation Time Ends: _____

Intervention	Satisfactory	Un-satisfactory	Comments
Washes hands			
Introduces self			
Verifies patient			
Verifies allergies			
Reviews medical record and provider orders			
Begins head to toe assessment			
Acknowledges crying with therapeutic communication techniques			
Engages with patient			
Notices O2 saturation is decreasing and applies nasal cannula @ 2L/minute as ordered			
Acknowledges whimpering and coughing with therapeutic communication techniques			
Is engaging with patient			
Continues assessment			
Completes assessment			
Provides therapeutic communication techniques			
Is engaging with patient			
Applies safety precautions of bed in low position, call light in reach, side rails up times two			
Washes hands			
Informs patient to call for assistance			

Appendix F: Simulation Events Form

Simulation Events Form

Participant Randomization Number: _____ Simulation Begin Time: _____End Time: _____

Time	Settings	Simulated Patient Actions	Events/Interventions/Correct	Events/Interventions/Incorrect
0-5 minutes	Blood pressure-130/68 Monitor- Normal sinus rhythm (NSR) Respirations- 24 Oxygen saturation- 92% on room air	Responds to verification of name, date of birth, allergies; coughing when speaking	Washes hands, introduces self, verifies patient and allergies, begins reviewing medical record and provider orders	Does not wash hands, introduce self, verifies patient and allergies, nor begin reviewing medical record and provider orders
5-10 minutes	Vital signs remain same, except Oxygen saturation is slowly decreasing with crying	Starts whimpering/slight crying and coughing; answers posed questions	Begins head to toe assessment; acknowledges crying with therapeutic communication techniques; is engaging with patient	Does not acknowledge crying; does not notice O2 saturation is decreasing; does not provide therapeutic communication techniques; is not engaging with patient
10-20 minutes	Blood pressure- 136/80 Monitor-NSR Respirations-26 Oxygen saturation- 90% on room air	Continues whimpering and coughing; answers posed questions	Notices O2 saturation is decreasing and applies nasal cannula @ 2L/minute as ordered; Acknowledges whimpering and coughing with therapeutic communication techniques; is engaging with patient; Completes assessment	Does not notice O2 saturation is decreasing; does not provide therapeutic communication techniques; is not engaging with patient; does not complete assessment
20-30 minutes	Blood pressure-130/78 Monitor-NSR Respiration-22 Oxygen saturation- with nasal cannula on at 2L/min-96%; without nasal cannula on at @ 2L/min-90%	Stops whimpering and coughing; answers posed questions	Completes assessment; provides therapeutic communication techniques; is engaging with patient; applies safety precautions of bed in low position, call light in reach, side rails up times two; washes hands; informs patient to call for assistance; announces they have completed simulation	Does not complete assessment, provide therapeutic communication techniques, is not engaging with patient, does not apply safety precautions of bed in low position, call light in reach, side rails up times two, does not wash hands, does not inform patient to call for assistance

Appendix G: Abilene Christian University IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

June 16, 2022

Audra Renee-Smith Xenakis
Department of Nursing
Abilene Christian University

Dear Audra,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled

"Impact of Personalized Interactive Storytelling on Suspension of Disbelief in Clinical Simulation",

was approved by expedited review (Category 7) on 6/16/2022 (IRB # 22-065). Upon completion of this study, please submit the Inactivation Request Form within 30 days of study completion.

If you wish to make any changes to this study, including but not limited to changes in study personnel, number of participants recruited, changes to the consent form or process, and/or changes in overall methodology, please complete the Study Amendment Request Form.

If any problems develop with the study, including any unanticipated events that may change the risk profile of your study or if there were any unapproved changes in your protocol, please inform the Office of Research and Sponsored Programs and the IRB promptly using the Unanticipated Events/Noncompliance Form.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs