ANXIETY IN HEALTHCARE ACTORS POST DIFFICULT TOPIC HEALTHCARE SIMULATION-BASED LEARNING ACTIVITY

by Sarah Elizabeth Pearce

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

Difficult topic healthcare simulation-based learning activities help to prepare healthcare profession students in a manner which is consistent with the experiences they will face in their careers. However, while these types of simulation-based learning activities need to be simulated, little to no research has been conducted regarding the topic of the psychological effect on standardized patients (SP) who participate in these activities within simulation-based learning experiences. The purpose of this study was to provide a quantitative examination, of the anxiety related effects of difficult topic simulation-based learning activities on standardized patients. This study utilized an experimental quantitative post-test only control group design where 66 study participants were randomly sorted into groups. The number of participants sampled was consistent at 66. Participants were made up of standardized patients from simulation programs across the United States. The treatment group participated in a difficult topic simulation-based learning activity and the control group participated in a non-difficult topic simulation-based learning activity. Study participants completed the State Trait Anxiety Inventory (STAI) to assess the *s-anxiety* and *t-anxiety* scores of participants. Data analysis illustrated no difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience. The researcher rejected the null hypothesis for state scores of standardized patients illustrating a significant relationship between standardized patients' level of state anxiety and difficult topic and non-difficult topic simulation-based learning activities. Recommendations for future research are discussed.

Keywords: *Healthcare Simulation, Experiential Learning, Standardized Patients, High-Fidelity Simulation, Difficult Topic Simulation, Anxiety*

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List of Abbreviations

ASPE	Association of Standardized Patient Educators
HSBL	Healthcare Simulation Based Learning
SSH	Society for Simulation in Healthcare
SP	Standardized Patient

CHAPTER ONE: INTRODUCTION

Overview

Simulation based learning in healthcare profession student education provides students with a realistic, feedback driven, and supportive learning environment, which further assists in the reduction of risk and error to the patients and clients these students will serve in their chosen profession (Block et al., 2018). Standardized patients are a learning resource within simulation-based learning environments, which are utilized to advocate for best practice simulation-based learning (King et al., 2019) and to provide healthcare profession students with the opportunity to practice communication skills. Simulating difficult topics during simulation-based learning activities can provide healthcare professions students with the applicable training they require; however, little empirical evidence exists related to the effects of difficult topic simulation-based learning activities on the standardized patients. Chapter one of this study presents the background of the study, defines the problem and purpose statements of the study, declares its significance, identifies the research questions associated with the study, and concludes with an outline of various definitions and or special terms related to the study.

Background

Simulation based learning is an effective experiential learning activity associated with the theory of behaviorism in which students are provided with conditioned training environments that elicit behavioral changes through targeted feedback and debriefing (Block et al., 2018). Additionally, healthcare profession students can apply knowledge, skills, and attitudes in a realistic environment, providing them with applicable practice in taking on the full scope of their professional role and required responsibilities (Block et al., 2018). Standardized patients (SPs) support evidenced based practice in simulation-based learning activities as a learning resource which increases the overarching fidelity of simulation and provides students with an opportunity to practice communication skills (Witt et al., 2018). Additionally, standardized patients provide students with an opportunity to train in a manner which is consistent with their future practice (King et al., 2019). Current trends in simulation-based learning

activities support the increased usage of SPs in simulation-based learning activities, to ensure best practice in healthcare profession student education and training.

Difficult topics such as death and dying, suicide, violence, abuse, etc. are topics that all healthcare professionals must learn how to address with care and confidence. This level of practice affords patients and their families the quality, care, and advocacy they deserve. Simulation based learning can support the reduction of healthcare profession student anxiety related to these difficult topics (Alexander, 2019). However, for many students the realism and fidelity involved in the simulation of these difficult topics, can be extremely difficult and in some students' opinions stressful and fear inducing (Maestre et al., 2013). Using simulation-based learning, healthcare professionals can repetitively train in a safe manner, related to preparing for difficult topics with confidence, patience, advocacy, and quality (Park et al., 2017).

Historical Overview

Healthcare simulation has its roots in the early 1920's as a developing practice for the aviation industries training programs to reduce risk and error in the flight industry (Aebersold, 2016). However, the concept of simulation as a training methodology can be traced back to the early 1800's in the form of war gaming such as chess and jousting (Aebersold, 2016). In 1911 the concept of utilizing dolls to train healthcare profession students was popularized by Martha Jenkins Chase (Aebersold, 2016). In 1960 Laerdal introduced the first resuscitation training manikin (Aebersold, 2016). In 1986 Gaba and DeAnda developed the Comprehensive Simulation Training Environment (CASE) and the successful launch of the manikin as the functional technology in which healthcare profession students could train in a safe learning environment was initiated (Aebersold, 2016). Currently healthcare simulation-based learning is required by most healthcare profession training programs accrediting bodies and state boards of licensure (Aebersold, 2016).

The first standardized patient (SP) was trained by Howard S. Barrows in 1963 (Barrows, 1968). Barrows (1968) a medical doctor, realized that he could train lay persons to simulate various patient cases in a realistic manner which would allow his students to practice in a standardized manner, and encounter

the same patients each semester. While the process was slow, the interest and use of standardized patients in healthcare simulation eventually became popularized as a valuable training tool for healthcare profession students (Hardee & Kasper, 2005). In 1991 Canada became the first to explore the use of Standardized Patients as a core component of their pre-licensure exam (Rosen, 2008). Research published after integration of this practice showed that utilizing SPs for this type of competency verification was a valid, reliable, and evidenced based practice (Beaulieu et al., 2003). In 2004 this same process was fully adopted in the United States as a core aspect of a medical student's licensure (Cantrell & Deloney, 2007). Continued use of SPs in healthcare profession education, as well as continuing research in these areas, are important aspects of ensuring that evidenced based and best practice simulation-based learning activities are integrated in healthcare education programs across the globe (Lewis et al., 2017).

Prior to the use of standardized patients simulation-based learning was completely manikin based, and most of the healthcare profession student training consisted of working with and training procedures and skills on actual patients, placing these patients at risk for student error (Harminder et al., 2013). This type of apprenticeship training while common practice in medical education does not align with the appropriate standards of providing quality and equitable care to patients and their family members, and thus the need for a more effective and safe manner, in which healthcare profession students could train was born (Rosen, 2008). Simulation with manikins afforded healthcare profession students the opportunity to practice and train in a realistic setting, until mastery of skills, and knowledge deficits close, and prior to working with real life patients, effectively contributing to the reduction of errors and risks related to healthcare profession student training (Fox, 2011). Standardized patients grew from this idea of safe and equitable healthcare profession student training as a method by which higher levels of realism and fidelity could be obtained in simulation-based education (Barrows, 1968).

A standardized patient (SP) can be formally defined as a "a lay person who has been trained to portray a patient with a specific condition in a realistic way" (Cleland et al., 2009, p. 478). A highly trained and skilled SP should according to Clealand, Abe, and Rethans (2009), not be identifiable as portraying the role of a patient by a clinician. SPs are a valuable and important aspect of ensuring that

healthcare profession students can train the same way they will later practice. While SP methodology has changed vastly in the last 40 years, the increase of their use has been exponential (McNaughton, & Anderson, 2017). While high-fidelity manikins are currently being designed, and re-designed, the realism of the technology still leaves much to be desired. Using SPs in simulation instead of manikins, students can train in a hyper-realistic manner, with the added benefit of receiving targeted feedback from the eyes of the patient (Decker et al., 2008).

Anxiety in simulation-based learning has been a topic of discussion since the late 1980's when an article by Bordewich (1988) published an article on the topic of death education in the classroom. But it was not until the early 2000's that the literature focus in simulation-based education shifted to identifying a potential correlation between participation in simulation-based learning activities and increased anxiety in participants (Bokken et al., 2006). End of life scenarios and other difficult topic simulation-based learning scenarios have been an aspect of simulation-based learning since the advent of simulation in the early 1960's and are indeed an important aspect of a healthcare profession students training and preparation (Alexander, 2019). While the research suggests that difficult topic simulation-based learning activities can provide students with effective strategies to respond to these situations in practice (Williams-Reade, 2018), these healthcare simulation-based learning activities can cause anxiety amongst participants (Alexander, 2019).

According to Barleycorn and Lee (2018) "the World Health Organization (WHO) recognizes traumatic injury is a public health problem in both high income and low to middle income countries and Kehoe et al. reported trauma to be the leading cause of death in people between the ages of 25– 50 years and the second leading cause for those over 75 years" (p. 37). In a time when trauma is a leading cause of death, the need to train healthcare professionals to care for patients who are victims of various forms of traumatic injuries is clear (Philippon et al., 2015). Facilitating and integrating simulation as a method of training healthcare professionals to meet the needs of trauma patients, both clinicians and healthcare professionals can better support their patients by participating in training which assists them to reduce overarching cognitive error and risks to patients (Barleycorn & Lee, 2018). Additionally, clinicians and

healthcare professionals can develop a better understanding and mastery of motor skills, teamwork, and communication in highly adverse and stressful scenarios, which are often defining characteristics of trauma care (Barleycorn & Lee, 2018).

Theoretical Background

Simulation based learning is an effective experiential learning activity in which evidenced based practices are utilized to provide healthcare profession students with the opportunity to receive targeted feedback in a realistic setting (Block et al., 2018). Additionally, healthcare profession students can apply knowledge, skills, and attitudes in a realistic environment, so that they can practice taking on the full role scope of their role setting (Block et al., 2018). Standardized patients (SPs) support evidenced based practice in simulation-based learning activities by increasing overarching fidelity of simulation and providing students with an opportunity to practice their communication skills (Witt et al., 2018). Additionally, SPs provide students with an opportunity to train in a manner which is consistent with their future practice (King et al., 2019). Current trends in simulation-based learning activities support the increased usage of SPs in simulation-based learning activities, to ensure best practice in healthcare profession student education and training.

The high levels of realism are an important aspect of simulation-based learning as it assists the students in the suspension of disbelief so that they can safely practice various psychomotor, cognitive, and affective domain skills in a consistent manner to which they would in practice (Jaber et al., 2019). However, this high level of realism can cause the scenarios to increase anxiety in participants (Alexander, 2019). Much attention over the years has been paid to how to appropriately simulate these difficult topic simulation-based learning scenarios, such as patient death, but little attention has been paid to the effect of this anxiety on simulation participants, specifically as it relates to standardized patients (Mileder, 2015).

The theoretical framework for this study includes the learning theory of behaviorism and the contributions of Ivan Pavlov (1997) and B.F. Skinner (1938), and the effect of simulation-based learning on the behavioral changes and conditioned responses of participants in simulation. Behaviorism provides the basic support for many simulation-based learning activities (Erlam et al., 2017). Behaviorist principles

align with simulation in the development of realistic training environments where various stimuli exist in the support of the development of conditioned response, i.e. learner handwashing simulated in a realistic context, targeted feedback/external stimuli, repeated over time can in turn develop into a conditioned hand-washing response (Aliakbari et al., 2015).

Problem Statement

Healthcare profession students will deal with various difficult topics such as death and dying, suicide, domestic violence, substance abuse, sexual assault, abuse, neglect, etc. in their careers and professional practice (Williams-Reade, 2018), simulation based learning with standardized patients can provide a valuable method by which these healthcare profession students can train for these difficult topics, toward the goal of reducing risk and error to patients, clients, and families (Park et al., 2017). However, while these topics provide students with valuable learning experiences, little quantitative evidence exists related to the effect of these difficult topic simulation-based learning activities on the standardized patients (SPs). However, some beginning research which merits further study, indicates a potential correlation between difficult topic simulation-based learning activities and an increase in anxiety related to the participants in simulation (Philippon et al., 2015). Standardized patients require hours of training, monetary resources, and support within their roles as a valuable educational resource in healthcare simulation-based learning; however, lack of job satisfaction could lead to loss of these high value educational resources (Vignoli, 2017). The desire to retain these hard to replace and highly valuable educational resources in healthcare profession student training leads to the desire to identify potential risk factors to said standardized patients as well as the desire to provide a safe and equitable learning environment for all participants of simulation-based learning activities.

Current studies related to analogue PTSD, which is defined as post-traumatic stress disorder experienced from the viewing of trauma rather than actual experience, has indicated a strong correlation between increased PTSD and the viewing of traumatic films or images (Holz, Lass-Hennemann, & Michael, 2016). Individuals who were exposed to traumatic films or images identified an increased post

traumatic response to these films specifically claiming experiencing increased anxiety, heart rate, cortisol levels, and lack of ability to separate themselves from the traumatic films and images (Miedl, Wegerer, Kerschbaum, Blechert, & Wilhelm, 2018). Standardized patients may experience a higher level of anxiety post difficult topic simulation-based learning activity (Sarikock et al., 2018). Sarikock et al. (2018) examined the effects of a difficult topic simulation-based learning activity on the anxiety levels pre and post simulation. Results from this study indicate an increase in SP anxiety post-difficult topics simulation-based learning activity.

Further studies indicate a correlation between viewing of traumatic films and an inability to appropriately process the trauma, due to a quantifiable effect on the stages of REM sleep cycles (Sopp, Brueckner, Schäfer, Lass-Hennemann, & Michael, 2019). Individuals who viewed these traumatic films had difficulty sleeping, and did not advance to the final two stages of REM sleep cycles, as those individuals who did not view the traumatic films, indicating a correlation between analogue PTSD and risks related to realistic experiences, without exposure to actual trauma (Sopp, Brueckner, Schäfer, Lass-Hennemann, & Michael, 2019). In turn this indicates strong support for the examination of quantifiable risks to standardized patients as it relates to participation in difficult topic of traumatic simulation-based learning experiences. More studies need to be designed to target these types of risky simulation-based learning activities to determine the quantifiable effects and risk factors. The problem is that the literature has not explored a quantitative relationship between healthcare actor's anxiety levels post difficult topic simulation-based learning activities.

Purpose Statement

The purpose of this quantitative experimental, post-test only control group, with random assignment design study is to examine a potential link between the anxiety related effects of difficult topic simulation-based learning experiences on standardized patients participating in these scenarios. The dependent variables in this study are *t-anxiety and s-anxiety levels* of the standardized patients in difficult topic simulation-based learning activities. The independent variable of this study are *type of simulation-*

based learning activity where the groups are difficult topic and non-difficult topic, with a covariate of the standardized patient *years of experience*. Difficult topics as they relate to an increase in simulation-based learning activities can be defined as the simulation or role portrayal by standardized patients of difficult topics ranging from giving bad news, as well as but not limited to patients with psychological problems such as suicidal ideation, depression, etc., and the increase of anxiety in standardized patients while portraying these roles in simulation-based learning activities (Sarikoc et al., 2018). The population of this study consisted of trained standardized patients recruited from simulation programs across the United States, ages ranged from 18-84 years old, ethnicities included White, Asian, Black, Hispanic, and Jewish. Gender of participants was made up of 20 male, 45 female, and 1 non-binary. Participants were divided into two groups, with one group participating as the control group and the other as the treatment group. Participants were randomly sorted into either the treatment group (difficult topic simulation) or control group (non-difficult topic simulation), and then completed a post-test report of their state and trait anxiety levels.

This study tested the theories of Pavlov (1997) and Skinner (1938) by comparing the independent variable of *type of simulation-based learning activity* to the dependent variables of post-test *t-anxiety and s-anxiety* scores of standardized patients using the State Trait Anxiety Inventory (Spielberger et al., 1983). The sample for this study consisted of 66 trained standardized patients. The independent variable of *type of simulation-based learning activity* can be generally defined as those simulation-based learning activities which consist of topics related to death and dying, suicide, domestic violence, end of life, abuse, delivering bad news to clients, patients, and family members (Alexander, 2019). These experiences are directly related to preparing healthcare profession students for similar real-life difficult scenarios, and to provide them with the tools they require to address these difficult topics (Williams-Reade, 2018). The dependent variables, *t-anxiety and s-anxiety post-test scores* of standardized patients, generally refers to the state and trait anxiety of standardized patients' post- difficult topics simulation-based learning scenario on a scale ranging from no anxiety to no anxiety to high anxiety (Spielberger et al., 1983).

Significance of the Study

Simulation based learning is an innovative learning resource and important aspect of the curriculum which assists in the development of cognitive, psychomotor, and affective domain-based learning (Felton & Wright, 2017). The continued use of standardized patients in simulation as well as the increase of technological innovations (Vermylen, 2019) related to this type of training will assist in the development of high-fidelity simulations which allow for healthcare profession students to practice communication skills, as well as principles of teamwork and collaboration (Cleland et al., 2009). Facilitating and implementing healthcare simulation with standardized patients, healthcare profession students can practice in a highly realistic and immersive environment, while receiving direct and targeted feedback from their faculty as well as the opportunity to self-reflect and self-evaluate using audio-visual playback, as well as opportunity for repeated practice toward mastery of skills. Therefore, the significance of this study is merited in the need to determine the exact effects of simulation on the standardized patients involved in the context of difficult topic scenarios, to ensure that all participants of this valuable learning activity are kept safe and free from unwanted or dangerous side-effects (Henricksen et al., 2017).

Recent studies have indicated a strong correlation between trauma simulation and increased patient quality and safety outcomes (Barleycorn & Lee, 2018). Additionally, simulation learning, specifically geared toward trauma training and the preparation of healthcare professionals allows for repeated training and re-training of professionals and future professionals (Barleycorn & Lee, 2018). However, while some beginning qualitative research indicates a potential correlation between difficult topic simulation-based learning activities and an increase in anxiety related to the participants in simulation (Philippon et al., 2015) there are few studies which discuss this topic in quantitative terms. This study added to the literature through the exploration of a quantitative analysis on the effects of difficult topic simulation-based learning activities on standardized patient anxiety levels.

In our quest to offer realistic and immersive simulation-based learning activities to students, we cannot risk creating other patients, and therefore the experience of the standardized patient must be examined, to ensure that risk is reduced for all participants. A potential increase in anxiety of standardized

patients could lead to long term effects and risk to the standardized patients in simulation-based learning activities (Sarikoc et al., 2018) supporting the significance of further research into this topic. Currently little to no quantitative research exists related to identifying a link between difficult topic simulation and increased anxiety in standardized patients (Jarosinski & Webster, 2016). Therefore, the significance of this study would be to provide a quantifiable effect of the anxiety levels in standardized patients in difficult topic simulation-based learning activities, in comparison to non-difficult topic simulation-based learning activity.

Research Questions

RQ1: Is there a difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

RQ2: Is there a difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Definitions

1. *Difficult Topic Simulation Based Learning Activity* – Simulation based learning activities which involve the simulation of difficult topics, such as death and dying, suicidal ideation, mental health issues, post-traumatic stress disorder, eating disorders, terminal illness, end of life care, grief, etc… (Park et al., 2017).
2. *Healthcare Simulation Based Learning* – An educational learning methodology utilized in healthcare profession student training, where students participate in evidenced based practices related to providing them with immersive training environments where cognitive, psychomotor, and affective domain skills and knowledge can be applied, evaluated, reflected upon, and repeated until mastery of skills and learning is obtained (Dunn, Dong, Zendejas, Ruparel, & Farley, 2017).

3. *Standardized Patient* - A lay person who has been trained to portray a patient with a specific condition in a realistic way (Cleland, Abe, & Rethans, 2009, p. 478).

CHAPTER TWO: LITERATURE REVIEW

Overview

The purpose of this literature review is to present essential elements related to the methodologies and learning theories of healthcare-based simulation learning activities, while seeking to identify the use of difficult topic healthcare simulation-based learning activities, and to review the relationship between anxiety and participants in healthcare-based simulation. The beginning of this literature review will provide a discussion of the learning theories and theoretical frameworks related to the central phenomenon. This study is grounded in the principles of Pavlov (1997) and Skinner's (1938) behavioral learning theories, which focus on the change of behaviors based upon internal and external conditioned experiences. Additionally, Jeffries (2005) NLN simulation is foundational to this study. A complete review of the literature pertinent to healthcare-based simulation learning activities, standardized patients, simulation participant anxiety, and difficult topic simulation-based learning completes the chapter which ends with a summary.

Theoretical Framework

The inclusion of a theoretical framework provides the appropriate construct and support by which we can understand the methodology behind the examined phenomenon. The purpose of this chapter will analyze Behaviorism and the contributions of Ivan Pavlov (1997) and B.F. Skinner (1938). This support will assist in the continued development and understanding of the healthcare-based simulation learning environment as it pertains to ensuring participant safety. Specifically, as it relates to ensuring that standardized patients can continue as the supportive and evidenced based educational learning resources within the simulation environment.

A comprehensive and thorough review of the research related to the effect of difficult topic simulation-based learning activities for participants was conducted to identify research studies that elucidate potential risks to standardized patients before, during, and post difficult topic simulation-based learning activities, specifically related to participant anxiety. Healthcare based simulation learning is a

tool which is utilized in the training and preparation of healthcare profession students (Aebersold, 2016). Using this valuable learning tool, students can train in the same way they will later practice, with the added benefit of completing training in a safe learning environment, which includes targeted feedback and reflection (Lewis et al., 2017). Additionally, students can repeat this practice until mastery of skill is gained (Block et al., 2018). This in turn prepares healthcare profession students to transition from student to practice, and increases overarching student satisfaction levels (Witt et al., 2018).

A common practice in simulation-based learning is to utilize standardized patients as actors who portray the role of patient, client, or family member and allow the students to practice the knowledge, skills, and attitudes in a highly realistic and immersive setting (King et al., 2019). However, while this is a common practice, little research exists related to ensuring that the standardized patients do not suffer from stress or other negative effects post highly realistic and immersive simulation-based learning activity (Sarikock et al., 2018). Specifically, those simulation-based learning activities which require simulating difficult topics, such as suicidal ideation, sexual assault, death and dying, domestic violence, verbal abuse, etc. (Williams-Reade, 2018). However, the findings of this literature review merit further examination into the topic of the quantitative effect on the anxiety levels of standardized patients who participate in these highly immersive and realistic difficult topic simulation-based learning activities, as there is currently little research which views the topic from this lens.

Behaviorism

While few standardized conceptual or theoretical framework are currently available for simulation-based learning activities (Shepherd & Burton, 2019) the theoretical framework of behaviorism aligns well with the best practice standards currently in use (McGaghie & Harris, 2018). Behaviorism, centers around the idea that behavioral changes occur due to external stimuli which is experienced by the learner or individual (Skinner, 1938). Skinner (1938) believed that individuals are shaped by both their personal and historical environments combined with their interactions with society. From an educational lens behaviorism requires that the educator provide students with feedback, external rewards, and opportunity to experience various stimuli (Skinner, 1938). In turn upon encountering these experiences

students begin to formulate behavioral changes which in turn become behavioral norms and change the way the student will interact with their external environment. Essential to this theory is the differentiation between operant and conditioned behaviors (Skinner, 1938). Operant behaviors are those behaviors which an individual utilizes to interact with their environment, versus conditioned behaviors which are the conditioned response based on the positive experiences received through the application of the operant behavior.

To cultivate a standardized environment that directly and realistically mirrors best practices in simulation-based learning, the concept of mastery learning has recently been adopted by simulation-based learning practitioners and facilitators (McGaghie & Harris, 2018). Mastery learning is a concept of standardizing the teaching practices and methodologies across the program, to ensure that students can benefit from consistent, clear, logical, and efficient learning methods and activities (Dunn et al., 2017). Programs which focus on the implementation of simulation-based learning activities, with an additional emphasis on mastery learning techniques, provide healthcare profession students with the support they need to successfully transition from practice to profession (Dunn et al., 2017). The key here is the understanding that supportive simulation-based learning must be standardized across the program.

Mastery learning and behavioral changes are a key component of the development of an effective simulation-based learning activity (Dunn et al., 2017). The standardization of the learning experience is a significant component of the simulated environment, as it allows for a variety of learners at different levels to participate in these learning activities with an environmental control in place, in turn allowing educators to provide students with more targeted feedback and adjust for levels of competence across groups (Dunn et al., 2017). Additionally, some simulation programs are utilizing the concepts contained within simulation-based mastery learning (SBML) to guide them in their endeavor to provide evidenced based and best practice standards simulation-based learning activities (Vermylen et al., 2019). Standardized patients are a valid component of this process of ensuring standardization within the learning environment; however, the increase of standardized patient anxiety could cause a disruption in the cultivation of a learning environment which allows alignment with principles of behaviorism as

promoted by Skinner (1938) and Pavlov (1997), and as it relates to the effective training of standardized patients within the context of mastery learning (Vignoli, 2017).

Discussion of Pavlovian classical conditioning and its relationship to anxiety appears to be a predominant aspect of the development of anxiety disorders and thus bears examination (Armstrong & Olatunji, 2017). Responses in individuals related to the development of anxiety or potential avoidance can be related directly to the theoretical foundation of classical conditioning as proposed by Pavlov (1997), individuals can be at risk for the development of learned responses correlating to the environments they participate within (Andreatta & Pauli, 2017). Fear learning relates directly to human fear conditioning and can be a strong underlying factor in the display of preparation of generalized fear and or avoidance of feared activities (Mertens et al., 2018). This fear or threat of shock of fear can induce Pavlovian-instrumental interactions between participant and participants environment, in turn causing maladaptive behaviors (Mkrtchian et al., 2017). This fear conditioning can in turn cause lack of attention to social cues and ability to function within common environments of the participant (Ferreira De Sa et al., 2018).

Fear conditioning could additionally cause or contribute to a learned response and potential development of an anxiety disorder (Haesen et al., 2016). As human beings we are natured to avoid threat's to our existence and anxiety, according to Pavlovian conditioning, is an aspect of changes in our behavioral responses (Dymond, 2019), potential application and correlation between the portrayal of difficult topic simulation based learning activities over a period of time by standardized patients, could indicate a risk for the development of an anxiety disorder (Rattel et al., 2016), and could provide support for the evidence of lasting effects after these simulation based learning activities on standardized patients and the student participants they support (Block et al., 2018).

Jeffries Simulation Framework

In conjunction with the frameworks of experiential, mastery learning, and behaviorism Pamela Jeffries (2005) National League of Nursing (NLN) simulation framework provides us with an important theoretical framework by which we can frame our understanding of simulation methodology as well as standardized patient methodology (Cowperthwait, 2020). Jeffries (2005) outlines 7 aspects of simulation-

based learning activities, which include the context, background, design, simulation experience, facilitator and educational strategies, participant, and outcome frames and design of simulation as an instructional methodology.

Context of simulation-based learning activities according to Jeffries (2005) includes the contextual factors which provide the appropriate clues and methods for the simulation settings (i.e. academic, in-situ, etc...). The background of simulation refers to the appropriate settings of course and or curricular goals and or benchmarks by which the simulation-based learning activities can be evaluated (Jeffries, 2005). Design refers directly to the physical and conceptual fidelity of the simulation as well as the alignment with the simulation objectives and goals (Jeffries, 2005). Simulation experience refers to the relationship between the simulation facilitator and student and their shared responsibility for maintaining the simulation environment and experience (Jeffries, 2005). Facilitator and educational strategies refers to the experience and expertise of the simulation facilitator as the guiding force behind the completion of the simulation-based learning activity (Jeffries, 2005). Participant factors include the participant age, gender, level of anxiety, self-confidence, and preparedness as they directly relate and become an ever-changing component of the simulation-based learning activity (Jeffries, 2005). Outcomes from simulation-based learning activities refer directly to cognitive and behavioral (knowledge, skills, and attitudes) changes related to student participants within the simulation-based learning activities (e.g. transfer of learning to practice, longitudinal knowledge retention and achievement, etc...) (Jeffries, 2005).

Related Literature

Healthcare Based Simulation Learning

Simulation-based learning is not just a pedagogy but an immersive learning experience where future healthcare professionals can train in accordance with a current system or process, and receive targeted feedback and reflection on how to appropriately function within that system or process (Erlam, 2017). Healthcare based simulation learning provides future healthcare professionals with the opportunity to practice providing safe healthcare to the patients, clients, and or family members they will serve (Dunn

et al., Farley, 2017). Without this emphasis on safe training, healthcare profession students who transition to practice will be at risk of causing more harm than good. This emphasis on providing safe care (Dunn et al., 2017) is key to the future of healthcare profession student training. Dunn et al. (2017) discuss the importance of not only providing this training for students but ensuring that the programs which utilize this type of training are doing so in a manner which aligns with mastery learning.

Simulation based learning as a common practice in healthcare education is continuing to trend upward, specifically in non-traditional healthcare education settings. Traditionally, simulation based learning as an educational resource and methodology has mostly been found in healthcare profession education in the disciplines of medicine and nursing; however, a national survey by Dudding and Nottingham (2017) indicate that out of 69 responses from Speech and Language Pathology disciplines in institutions across the United States, 51% of those who responded, indicated that they were using some form of healthcare-based simulation learning which included standardized patients.

High-fidelity simulation is a common term in simulation-based learning activities and captures the push for highly immersive or realistic simulation-based learning activities, which allow the learner to suspend disbelief and receive targeted and applicable feedback from content experts/faculty (Abram & Forbes, 2019). This type of highly immersive simulation has been promoted by practitioners and content experts in terms of its ability to assist students in the transfer of knowledge from the classroom to practice (Abram & Forbes, 2019). This type of contextually accurate environment assists students in the repeated practice and application of psychomotor, cognitive, and affective domain skills, knowledge, and attitudes (Cant & Cooper, 2017).

In addition to assisting students in obtaining valuable knowledge, skills, and attitudes related to the transfer of learning from classroom to clinical practice, is the relationship between participation in healthcare-based simulation learning activities and an increase in overarching student confidence in said knowledge, skills, and attitudes of their discipline (Almeida, 2019). Success in this area most closely relates to the use of simulation-based learning activities in conjunction with clinical learning, where students participate in a certain percentage of clinical time in high-fidelity simulation lab experiences, and

the remaining percentage in the clinical setting (Raman, 2019). In addition, this type of supplemental and conjunctive learning provides students with the opportunity to develop and perfect important quality and safety practices within healthcare.

The use of simulation-based learning can provide students with the opportunity to make mistakes that could potentially cause harm to a patient, client, or family member without risk to said patient, client, or family member, and then in turn receive valuable targeted feedback related to these potential mistakes, with the additional opportunity to re-direct and self-direct behavioral changes in a repeat simulation, in turn providing greater opportunity for a reduction in errors and risk to the patients, clients, and or family members they will serve and support in practice (Brazil et al., 2019). In this type of learning environment students can additionally participate in simulation-based learning activities which simulate real lie distractions and events in a safe manner, which allows them to respond to said events in real-time, with the addition of targeted feedback from faculty and content expert support. For example, using simulation-based learning activities in a highly realistic environment, students can practice high level critical thinking skills while learning how to manage interruptions and other distracting events without risk to real life clients, patients, and or families (Johnson & Alhaj-Ali, 2017).

Bearman et al. (2018) supports the need to determine the quantifiable benefits of simulation-based learning, as it relates to the overarching phenomenon of learning. Three hundred and twenty-seven journal articles on the topic of simulation-based learning, and its overarching effect on the phenomenon of learning, were analyzed to determine a relationship between the practice of healthcare-based simulation learning and the overarching phenomenon of learning (Bearman et al., 2018). Results of this analysis indicate a strong identification of simulation-based learning as a holistic learning experience rather than separate activities where a student can apply multiple modalities of learning, and receive targeted and effective feedback, toward the goal of changing a behavior (Bearman et al., 2018). While these simulation-based learning, activities were not identified as being fully transformative experiences, the key realization is the recognition of the success of simulation-based learning, as providing students with the increased opportunity to learn from their mistakes, and then make cognitive, affective, and psychomotor

corrections both during, and after the experience, through debriefing, reflection, and targeted feedback (Bearman et al., 2018).

Simulation based learning is an evidenced based and effective teaching strategy for healthcare profession students related to training in realistic and experiential learning environments, with the added additional benefit of direct and targeted feedback both from faculty and standardized patients within the simulation (Block et al., 2018). Simulation allows for the development of knowledge, skills, and attitudes related to supporting healthcare students in their transition from student to practice (Block et al., 2018). A large emphasis on simulation-based learning is the cultivation of a safe learning environment for participants (Rossler, 2019).

Barleycorn and Lee (2018) discuss the effectiveness of simulation-based learning as a beneficial teaching strategy for healthcare profession students as it relates to trauma training. Healthcare profession education requires an emphasis on training that is realistic and applicable to the healthcare professional, or future healthcare professionals' transition to practice (Barleycorn & Lee, 2018). This need for applicable and high-fidelity training has generated the utilization of healthcare-based simulation learning in the world of trauma care and trauma training. A systematic review of the literature related to the effectiveness of simulation-based learning in trauma training was implemented by Barleycorn and Lee (2018). Results of this systematic review of the literature indicate that non-technical skills and overall ability to perform in a team increased post simulation-based learning activity (Barleycorn & Lee, 2018).

Standardized Patients

Standardized patients have become a vital and effective component of the simulation-based learning environment as they allow students to practice communication skills while advocating for the overarching fidelity of the simulation (Witt et al., 2018). This type of integration allows students to additionally train in a manner which supports consistency between the training environment and the professional environment (King et al., 2019). Additionally, this simulation-based training allows for students to practice in a manner which is consistent with current and increasing trends in healthcare student and professional training (Dunn et al., 2017). Standardized patients are a commonly accepted and

widely utilized resource within simulation-based learning activities; however, more research needs to be conducted in relation to the context, use, and supportive practices of standardized patients within the simulated learning environment (Rutherford-Hemming et al., 2019).

Standardized patients are defined as trained individuals who have been standardized to portray the role of the patient, client, or family member, to increase the overarching fidelity of the simulation-based learning activity, while providing applicable and beneficial training for healthcare profession students in simulation-based learning activities (McNaughton, & Anderson, 2017). Standardized patients are real life individuals, who contrary to mannequins within the simulation based learning environment, provide students the opportunity to practice, apply, repeat, and receive targeted feedback as it relates to the knowledge, skills, and attitudes, which are vital to the successful transition of healthcare profession students to clinical practice, while additionally allowing students to participate in a highly realistic and immersive manner that more directly represents the realities and setting of the clinical practice environment, thus promoting a decrease in negative transfer of learning (McNaughton & Anderson, 2017).

Plaksin et al. (2016) examined the benefits and risks of being a standardized patient in simulation-based learning. Literature was reviewed from sixty-seven articles based on the topic of benefits and risks to standardized patients (Plaksin et al., 2016). Initial results indicate that both benefits and risks to standardized patients do exist (Plaksin et al., 2016). Benefits include increased understanding of the role of healthcare professionals, a feeling of purpose and meaning related to the participation in the training of a healthcare profession student, as well as positive feelings associated with performing in a positive and safe work environment (Plaksin et al., 2016). Research indicates additional benefits of standardized patients within the context of simulation-based learning activities including an increase in student sense of worthiness, increased authenticity and realism in the simulation environment, as well as decreased anxiety and increased confidence on the part of the student patients (Dennis et al., 2019). Risks to standardized patients include both physical and psychological risks, with standardized patients stating that they experienced short term effects after participation in simulation, including headaches, back aches, negative

dreams, embarrassment, rumination on the topics in simulation, and a decreased ability to separate from the role they were portraying (Plaksin et al., 2016). Continued studies need to be designed to determine more quantifiable long term and short-term effects of simulation-based learning on standardized patients (Plaksin et al., 2016). The overarching goal of these studies would be to ensure the safety of simulation participants during simulation-based learning activities.

Standardized patients allow healthcare profession students to practice valuable skills in the context of a safe learning environment. One of the most common skills related to standardized patient utilization is the opportunity for students to practice their communication skills and gain confidence in this important aspect of their professional training (Chang et al., 2019). Providing healthcare profession students with opportunities to build confidence and knowledge in the area of communication between their patients, clients, and or family members, specifically in difficult topic simulation-based learning activities where the healthcare professional students anxiety can be high due to fear of saying the wrong thing or making a mistake, is an important aspect of the support for utilizing standardized patients to provide healthcare profession students with an opportunity to practice these skills in a safe learning environment (Kaiser et al., 2019), research indicates strong support for this type of training and its ability to increase said student confidence in these areas (Shorland et al., 2018). Additionally, healthcare profession students indicate that the use of standardized patients in simulation-based learning activities is supportive of their overarching transition from student to practicing professional (Bush et al., 2019). In conjunction healthcare profession students indicate that the use of standardized patients is an important aspect of providing quality, safe, and effective care to the patients, clients, and or family members they serve in practice (Sims-Koenig et al., 2019).

Standardized patients can additionally provide students with the opportunity to practice skills outside of their normal setting such as skills related to ever increasing telehealth related healthcare skills; research, within this context indicates a strong correlation between telehealth simulation-based learning and a decrease in student anxiety related to lack of experience in telehealth encounters, as well as overall improved clinical reasoning, communication effectiveness, opportunity for real world practice and

application to clinical practice (Powers et al., 2020). Contextually unique opportunities for simulation based learning such as the opportunity for simulation educators and facilitators to utilize standardized patients to teach valuable skills and knowledge related to the spiritual care of their patients and clients (Schmidt et al., 2017) is an additionally important aspect of simulation based learning and the utilization of standardized patients to increase student confidence, knowledge, skills, and attitudes related to these unique and often challenging scenarios (Desmond et al., 2018). Additionally, within the context of simulation-based learning as a means for students to practice, repeat, and receive targeted feedback during simulated difficult real-life scenarios in a simulation lab, research indicates these activities are supportive of student transition to practice and the increase of patient, client, and or family member quality and safety outcomes, and in turn provide students with the opportunity to increase their understanding of the needs of multiple types of patients, clients, and or family members (McIntosh et al., 2018). This level of opportunity for healthcare profession students indicates strong support for the use and continued data collection of best practices related to standardized patient use, training, and facilitation within the context of simulation-based learning activities (Coleman & McLaughlin, 2019).

Standardized patients utilized within the context of psychiatric simulation-based learning activities is a current and upward trending practice in simulation-based learning (Aydın et al., 2018). Research indicates that standardized patients utilized in psychiatric simulation-based learning, can provide students with an opportunity to practice, repeat, and receive targeted feedback in the area and context of the knowledge, skills, and attitudes related to caring for the mental health of the patients, clients, and or family members they will serve in practice (Aydın et al., 2018). Standardized patients can be realistically and effectively trained to simulate mental health disorders which provide healthcare profession students with an opportunity to address these potentially challenging and anxiety producing scenarios in the context of a safe learning environment where feedback can be given, and behavioral changes can occur prior to practice (Himmelbauer et al., 2018).

In addition, research indicates that student confidence and a decrease in student anxiety related to these real-life psychiatric scenarios is supportive of best practices related to the training and education of

future healthcare professionals and the transition from student to practice (Vandyk et al., 2017). This type of training for psychiatry and mental health education with students is becoming increasingly more common (Goodman & Winter, 2017) however, little research exists related to standards of best and safe practice for standardized patients involved in this type of role play (Himmelbauer et al., 2018). Additionally, many of these simulation-based learning encounters can be challenging and difficult to portray, and little documentation on how to appropriately train standardized patients for psychiatry related scenarios and cases exists (Himmelbauer et al., 2018). Further research still needs to be conducted regarding the effect on standardized patients related to participation and simulation of these challenging and emotionally complex scenarios, roles and the anxiety and stress they may cause (Witt et al., 2018).

While for many years the utilization of standardized patients in the healthcare simulation-based learning environment and context was widely un-examined many new researchers are beginning to look at the common experience of standardized patients and their use (Holtschneider, 2017), facilitation, and training across programs, to determine, define, and monitor best practice standards within this valuable learning resource and methodology (Rutherford-Hemming et al., 2019). One of the most common purposes of utilizing standardized patients in the simulation-based learning environment is the opportunity for students to practice communication skills, which has been identified as a cornerstone of healthcare professions student education (Lippe & Hudson, 2018) standardized patients can provide healthcare profession students with an opportunity to practice speaking in layman's terms with no risk to real-life patient, client, and or family member.

Additionally, the care of the geriatric patient is an important aspect of a healthcare profession students training, often managing these complex patient cases with multiple morbidities can be a challenging scenario to healthcare profession student who is transitioning from student to practice, and could potentially in turn present risk to said patients and or their family members; however through the utilization and training of geriatric standardized patients students can train to address these complex patient cases with better success and reduced risk to the patient and or their family members (Thompson et al., 2017). According to the geriatric standardized patient these types of role play scenarios can be

extremely rewarding and can provide the standardized patients with a sense of purpose and appreciation for the work they are doing and the valuable first-hand perspective they can bring to the encounter (Thompson et al., 2017).

Difficult Topic Simulation Based Learning Activities

Difficult topic simulation-based learning activities often involve the simulation or role play of complex psychiatric scenarios or case studies. Common difficult topics in simulation include but are not limited to death and dying, palliative care, managing a hostile work environment and incivility, victims of sexual and non-sexual violence, and or mental health disorders; however, additionally, through the use of difficult topic simulation-based learning activities healthcare profession students can participate in complex scenarios which are rare but may occur in practice including but not limited to dealing with transgender patients and management of situations such as an oncology emergency (Ozkara San et al., 2019) and or how to handle difficult patients which are defined as those patients who elicit negative emotions or feelings from the healthcare professionals caring for them (Shikino et al., 2019). However, the standardized patients who participate in these scenarios are at risk for experiencing latent trauma related to the difficult topics being simulated (Goh et al., 2016). To ensure that standardized patients are appropriately protected, continued examination of trauma related to participation in difficult topic simulation-based learning activities needs to be identified.

All healthcare professionals must develop knowledge, skills, and attitudes related to caring for patients with mental illness, and thus simulation-based learning environments often simulate mental health encounters for students (Piot et al., 2018). One such common simulation activity is a difficult topic simulation-based learning scenario known as “hearing voices” (Ozelie et al., 2018) where students are required to complete various tasks while listening to a recording that simulates the reality of a patient diagnosed with schizophrenia having active auditory hallucinations (Ozelie et al., 2018). The purpose of this simulation-based learning activity is meant as an exercise in empathy and to combat stigma related to mental health patients and or clients, on the part of healthcare professionals both in practice and in educational settings (Ozelie et al., 2018). Additionally, through simulation-based learning the difficult

topic of mental health in pediatric patients can be appropriately addressed and supported prior to work with these complex patient cases in practice (Felton et al., 2013). Through the simulation of this difficult topic, students can apply knowledge, receive feedback, and repeat the activity in a safe learning environment, in such scenarios or case studies, including but not limited to; pediatric self-harm, depression, and suicidal ideation (Felton et al., 2013). An additionally, common psychiatric related simulation-based learning activity deals with the mental health of veterans, and training healthcare profession students to be able to effectively and appropriately care for the mental health of veterans, in the effort to decrease healthcare disparities and increase overarching access to support services (Regan et al., 2019).

Death and dying is another common and required topic in healthcare education and simulation-based learning activities can provide a supportive environment for students to learn how to appropriately support patients, clients, and or family members during the difficult topic of death and dying in practice (Webster & Carlson, 2020). The topic of death and dying is a difficult topic to address for students and can produce feelings of anxiety and unpreparedness on the part of the student and developing healthcare professional; however, simulation-based learning activities can provide a safe environment for students to practice the development of therapeutic communication, phenomenological empathy, and a sense of coherence with simulated patients and or family members prior to addressing this difficult topic in real life (Webster & Carlson, 2020). Additionally, through simulation-based learning healthcare profession students can utilize the knowledge, skills, and attitude they gain from these practice scenarios to assist them in building therapeutic connections with patients and or clients who are terminally ill (Webster & Carlson, 2020).

Further research indicates that simulation of the difficult topic of death and dying scenarios or case studies, can play a major part in providing junior doctors with the skills, knowledge, and attitudes they need to successfully transition from medical student to junior doctor, specifically in relation to the use of algorithms and non-technical skills needed in these scenarios (Marker et al., 2019). Additionally, the difficult and complex topic of palliative care involves the process of providing specialized care for

patients diagnosed with a serious illness, where the focus of care is the management of pain, optimization of quality of life, and reduction of suffering (Wallerstedt et al., 2018). According to the American Association of Colleges of Nursing (AACN) students need to be provided with opportunities to address and learn about palliative care; in conjunction, the Institute of Medicine indicates that simulation-based learning activities can be an innovative way for students to train in knowledge, skills, and attitudes related to providing safe and quality palliative care (Kirkpatrick et al., 2017).

Dealing with death and dying is a common aspect of a healthcare professionals' practice (Harder et al., 2019). Providing healthcare professionals with training that is related to helping develop confidence in dealing with death and dying in a professional setting, is an essential aspect of healthcare profession training, and is commonly supported through the development, integration, and facilitation of these difficult topic simulation-based learning scenarios (Barber & Kardong-Edgren, 2019). However, the effect of this category of difficult topic simulation-based learning scenario was evaluated by Alexander (2019) related to nursing student anxiety during a simulated end of life scenario. Results of this study indicated that simulation of these scenarios can greatly improve nursing student skills related to caring for patients and their families during their final moments (Alexander, 2019).

In general, pediatric death and dying or the care of critically ill patients is a complex and difficult situation which healthcare professionals must be ready to meet with the skills, knowledge, and attitudes they need to be supportive of the patients, clients, and or family members involved in these situations. Research indicates that simulating scenarios which address this topic can provide students with the knowledge, skills, and attitudes they need to support a grieving parent or family member of a lost child (Akers et al., 2017); however, these simulations can be highly emotionally charged and more research needs to be conducted regarding their psychological effect on simulation participants.

During simulation-based learning activities Spivack et al. (2016) indicates a correlation between increased student anxiety and difficult topic simulation, as it specifically relates to a death and dying simulation scenario, where the effects of the patient's death on a medical student's ability to effectively understand the components of advanced cardiac life support training were analyzed. Results of this study

indicate that students, while experiencing increased stress and heart rate both during and after the simulation-based learning experience, do not appear to experience any long-term loss of ability to apply concepts learned during the scenario (Spivack et al., 2016). Healthcare profession students must be taught how to support patients, clients, and or family members during times of crisis, and often death of a loved one or family member. Aldridge (2017) conducted a study examining the effects of an end of life simulation scenario involving the parents of a pediatric patient who had died. Results indicated that this type of simulation-based learning activity is supportive of the healthcare profession students overall understanding and ability to illustrate effective and appropriate therapeutic communication skills (Aldridge, 2017).

Healthcare profession students participate in training related educational activities which are meant to provide them with Adverse Event Disclosure training, the simulation-based learning environment is becoming an ever increasing common place to train students in this type of difficult topic simulation-based learning activity, where students work with standardized patients to learn how to utilize appropriate and therapeutic communication to disclose adverse events such as medical or nursing errors and or mishaps (Yeung, 2019). Preparing students to deliver this type of bad news along with other types of bad news to patients, clients, and or family members, is a critical aspect of their preparation; however, this can be an emotionally heavy task for standardized patients who are often required to portray these emotionally complex roles multiple times and potentially over the course of several hours and days (Gold & Gold, 2018). Some initial research on this subject indicates that virtual standardized patients could be utilized in place of live standardized patients to take on these emotionally complex roles; however, student participants indicate that the virtual standardized patients are not as immersive, authentic, and as realistic as the real standardized patients, making it harder for them to truly immerse themselves into the experience (O'Rourke et al., 2019).

Violence as it relates to the healthcare profession, whether that be in terms of violence toward patients or the care of patients who have experienced violence, ranging from, but not limited to, domestic violence and sexual assault, as well as violence experienced in the workplace by healthcare professionals,

can all be considered difficult topics that a healthcare professional may at some time have to address in their effort to provide quality and safe care to the patients, clients, and or family members they serve (Blumling et al., 2018). In the case of intimate partner violence (IPV) involving either non-sexual or sexual violence toward an intimate partner, the World Health Organization indicates that 35% of women worldwide have experienced some type of IPV, indicating a need for the training and preparation of healthcare professionals to address and support the needs of these patients (Blumling et al., 2018). Further research indicates that the use of simulation-based learning to provide students with opportunities to address the difficult topic of IPV, may increase overarching student confidence level and knowledge related to assessing and intervening on behalf of IPV patients and or Victims of sexual assault (Babanazari et al., 2017).

Additionally, related to this topic many providers indicate that the care and support of sexual assault patients can be difficult and complex, as many of these patients may not want to disclose information related to their medical needs (Lee et al., 2019). Further research indicates that providing interprofessional simulation-based learning activities which provide students with an opportunity to practice in a simulation-based learning activity with a standardized patient portraying the role of a sexual assault victim, increases student scores related to patient interview competence, communication skills competence, and improved student confidence (Lee et al., 2019), further indicating that while simulating these difficult topics can be emotionally distressing, they are a necessary part of the education and preparation of a healthcare professional; however, more quantitative research is still missing related to assessing the quantitative effect on the standardized patient portraying this emotionally charged character/role.

Incivility in the healthcare workplace is unfortunately a common and upward trending occurrence, indicating a need to train future healthcare professionals on how to address, reduce, and prevent these types of inappropriate events from occurring (Bar-David, 2018). Additionally, a hostile work environment in a healthcare setting has been linked to decreased quality and safety of care for patients, clients, and or family members (Katz et al., 2019). Simulation-based learning can provide

students with an opportunity to practice how to address a hostile work environment in a safe and effective setting, where they can receive feedback and an opportunity for repetition (Martinez, 2017). In conjunction research indicates that utilizing simulation-based learning to simulate this difficult topic can increase students overarching confidence level and knowledge related to addressing hostile or incivility in the workplace (Martinez, 2017). However, little research exists related to the effect on the standardized patient within these types of difficult topic simulation-based learning character/role plays.

Participation in life threatening simulation scenarios is a necessary component of simulation-based learning (Park et al., 2017). Students must learn in the same way they will later practice. Without this emphasis on training, students will be at risk of causing more harm to patients. However, the participation in life threatening simulation scenarios can be psychologically distressing to both the student and the standardized patient (Henricksen et al., 2017). Participation in these scenarios indicates an increase in student's ability to learn effective techniques during difficult or highly stressful experiences in the healthcare profession; however, further research needs to be completed as it relates to these type of training activities and the effect and or risk they pose to simulation participants, specifically related to increased participant anxiety levels (La Cerra et al., 2019).

Post-traumatic stress disorder is classified as response by the brain after experiencing a traumatic event, symptoms range from flashback type events, increased anxiety, inability to sleep, as well as more severe symptoms ranging from blindness, and inability to hear (Spivack et al., 2016). Current studies related to analogue PTSD, which is defined as post-traumatic stress disorder experienced from the viewing of trauma rather than actual experience, has indicated a strong correlation between increased PTSD and the viewing of traumatic films or images (Holz et al., 2016). Individuals who were exposed to traumatic films or images identified an increased post traumatic response to these films specifically claiming experiencing increased anxiety, heart rate, cortisol levels, and lack of ability to separate themselves from the traumatic films and images (Miedl et al., 2018). Additionally, standardized patients have indicated feelings of increased emotion during intense scenarios where delivering bad news is part of the content and objectives of the simulation-based learning activity (Dawson et al., 2021). Themes

emerge from these types of simulation-based learning activities including the following; SPs rely often on personal experiences to portray difficult topic simulation roles, the manner in which the student communicates with the SP, in terms of utilizing good communication vs. poor communication, can affect the SPs overall emotional state, and finally that these types of scenarios can lead to increased SP emotional distress post encounter (Dawson et al., 2021).

Further studies indicate a correlation between viewing of traumatic films and an inability to appropriately process the trauma, due to a quantifiable effect on the stages of REM sleep cycles (Sopp et al., 2019). Individuals who viewed these traumatic films had difficulty sleeping, and did not advance to the final two stages of REM sleep cycles, as those individuals who did not view the traumatic films, indicating a correlation between analogue PTSD and risks related to realistic experiences, without exposure to actual trauma (Sopp et al., 2019). In turn this indicates strong support for the examination of quantifiable risks to standardized patients as it relates to participation in difficult topic of traumatic simulation-based learning experiences. More studies need to be designed to target these types of risky simulation-based learning activities to determine the quantifiable effects and risk factors.

Simulation-Based Learning and Anxiety

While little research has been conducted specifically related to standardized patients and increased anxiety during simulation, a focus of some research studies over the course of the past 15 years has been the concept of simulation-based learning and its effect on student anxiety levels (Mano et al., 2019). For simulation centers and academic programs who do not have the ability to train or facilitate standardized patients, healthcare profession students are occasionally utilized to portray the role of the patient (Dias & Scalabrini-Neto, 2017). Initial research related to the effect of this role portrayal on the student indicates that these learners experience increased stress when portraying these rules (Dias & Scalabrini-Neto, 2017).

Additionally, researched indicates that immersive simulation-based training corelates with higher stress levels in simulation participants post simulation-based learning activity (Ferrandini Price et al., 2018). Quantitative research indicates that psychophysiological stress in Medics participating in live

highly realistic simulation-based learning activities can be evidenced by data collection related to significant increases in stress related biological markers, including salivary amylase, plasma catecholamines, and neuropeptide Y (Peng et al., 2018). Factors related to increased anxiety are of import, and initial research indicates that learners feel higher levels of stress and or anxiety based upon the simple fact that they are being filmed or watched during simulation, as compared to the clinical environment where they may feel more autonomy (Deinzer et al., 2019).

Much attention is paid to the setting and or environmental fidelity of a simulation-based learning activity which can often depend on the level of learner and purpose and objectives of the simulation; based on said factors this setting can change from simulation to simulation. However, to understand the concept of stress and its relationship to simulation-based learning a thorough discussion must include an examination of stress inducing factors related to the environment and setting of a simulation-based learning activity. In the case of adding additional stressors to the simulated environment; such as having standardized patients cause purposeful stress, (i.e. adding in a family member who is scripted to ask stressful questions and portray stressful emotions), we see a significant increase in participant anxiety as compared to the same simulation when using a manikin in place of a standardized patient (Allen, 2018). Additionally, of import is the concept of pre-preparation and its relationship to stress and simulation-based learning. In terms of pre-preparation some simulation-based learning may either be announced or unannounced to participants; in the latter case some simulation educators have proposed the concept that unannounced simulation-based learning activities may induce higher levels of stress or anxiety in participants; however, initial findings have reported that there is no significant difference between the stress levels of announced vs. unannounced simulation-based learning activities (Freund et al., 2019).

Research has indicated a potential correlation between high participant anxiety and less then optimal performance by students in simulation-based activities (Al-Ghareeb et al., 2019); however, further research is needed to determine effect on clinical performance related to high anxiety in simulation-based learning activities; however, research does indicate a potential correlation between long term memory retention and strategies implemented in simulation-based learning meant to reduce stress

and anxiety in simulation participants (Lilot et al., 2018). Additional, research related to the development of coping strategies related to reducing stress in simulation, indicates that debriefing is an important aspect of de-escalation of healthcare professionals who have experienced highly stressful or traumatic events (Harder et al., 2019). Mental rehearsal strategies utilized to reduce stress in simulation additionally is indicated as a potentially beneficial coping mechanism for reducing stress and anxiety in simulation-based learning activities (Ignacio et al., 2017). However, more research needs to be completed related to the effect of highly immersive simulation-based learning on participants.

Difficult Topic Simulation and Participant Anxiety

Simulation-based learning scenarios are key to providing healthcare profession students with the highly applicable and realistic training they need to successfully transition from student to practice (Sarikoc et al., 2018). Participation in these scenarios has illustrated support for student development of increased self-efficacy of related skills, with long-term retention of said skills (Williams-Reade et al., 2018). Williams-Reade (2018) conducted a study where medical students who participated in a difficult topic simulation scenario self-reported higher levels of skill confidence with longitudinal effects over the course of 6-months. A common difficult topic simulation activity in simulation-based learning is related to the topic of receiving bad news. Receiving bad news scenarios are simulated cases where a healthcare profession student must deliver bad news to a standardized patient in the effort to assist the student in the development of therapeutic communication, related to the delivering of bad news to patients and clients they will serve (Sarikoc et al., 2018). Sarikoc (2018) conducted a study which examined the effects of receiving bad news on standardized patients' anxiety pre and post difficult topic simulation participation. Results from this study illustrated that standardized patient's anxiety increased at a moderate level (mean STAI score, 47.89 +- 8.95) post participation (Sarikoc, 2018).

Mental health based clinical learning has been known to increase participant anxiety (Ok et al., 2019). Mental health is an important aspect of healthcare profession student training; however, this type of training in simulation-based learning activities can often fall into the category of difficult topic simulation as the topics can be emotionally and mentally rigorous, and can often leave lasting effects on

participants (Jarosinski et al., 2016). Jarosinski et al. (2016) briefly examined the negative effects or potential psychological harm to standardized patients in these types of difficult topic simulation scenarios as well as in other difficult topic simulation-based learning activities, as well as indicating a further need for more current research related to this topic. All participants in simulation-based learning, especially facilitators and faculty, when utilizing difficult topic simulation scenarios must be aware of the effects of these type of simulation scenarios and should be prepared to handle strong emotions that can occur before, during, and or after the simulation-based learning activity (Janzen, 2016).

Death and dying as well as psychologically stressful events are a common occurrence and experience for healthcare professionals who work in the emergency department (Basu et al., 2019). To support these professionals in their development of skills and psychologically stress-reducing practices related to addressing and reducing anxiety in these type of environments, simulation of these events becomes a necessary and common practice in healthcare professional and healthcare profession student training. A study by Judd et al. (2019) examined the effects of three difficult topic high stress emergency simulation-based learning activities on participants. Results indicated that participant state-anxiety increased during simulation but began to decrease over the course of repeated simulation participation (Judd et al., 2019).

Live disaster training is becoming a more common practice in healthcare education, as first responders and healthcare professionals are being called upon to prepare to respond to these ever more commonly occurring large-scale disaster's (Crystal, 2019). These simulation exercises merit the definition of difficult topic simulation scenarios. In turn there has been some initial attention paid to the effect of these difficult topic simulation scenarios on participant anxiety. Farra (2019) specifically addressed the question of what the anxiety level of nursing students would be post live disaster preparedness training. Results indicated that significant state-anxiety levels were found pre and post live disaster preparedness training; however, no major changes occurred in trai*t-anxiety* (Farra, 2019). Further research related to a greater level of effect on all participants is merited.

While few research articles have explored the quantitative effect of portraying difficult topics in simulation on the standardized patient, some initial qualitative research related to the lived experience of a standardized patient illustrates a correlation between difficult topic or highly emotional simulation scenarios and increased anxiety and other psychologically negative implications and effect on standardized patients (Webster & Jarosinski, 2017). In interviews with standardized patients, post difficult topic simulation based learning scenarios, standardized patients indicate lasting psychological effects, including difficulty in separating from the role post encounter, a negative effect on their mood for the remainder of the day, feelings of loneliness and isolation, frustration, and the stigmatization of portraying the role and conversely experiencing the dehumanizing feelings of this stigmatization toward the character/role they were portraying (Webster & Jarosinski, 2017).

A common practice in the utilization and recruitment of standardized patients is to utilize drama students within the institution's theater department/discipline; however, these standardized patients are often young drama students and are called upon to portray difficult topic simulation-based learning activities that cover highly stressful or deeply immersive role/character portrayal (Jacobs & Van Jaarsveldt, 2016). Some initial research related to the use of drama students as standardized patients has been explored in a qualitative research study which focuses on the experience of drama students in the role of standardized patients (Jacobs & Van Jaarsveldt, 2016). Study results indicate that drama students express feelings of having difficulty separating themselves from the character after simulation, that it can be a straining experience, emotionally exhausting and frustrating at times, feelings of irritability for the rest of the day, and or generalized feelings of heaviness (Jacobs & Van Jaarsveldt, 2016), researchers from this study indicate that further research needs to be conducted related to the ethical implications of portraying difficult topic simulation based learning activities on the standardized patient.

As stated little research has been conducted related to trained standardized patients and the effect on their stress and anxiety levels in difficult topic simulation-based learning activities; however, some research has been conducted on the effect of difficult topic simulation-based learning activities on healthcare profession students participating in the simulation as the interim standardized patient, if trained

standardized patients are unavailable. In this situation a study was conducted which indicated that the concept of appropriate training is an important aspect/factor of increased standardized patient anxiety related to portraying a role or character in a simulation based-learning activity, initial researched indicates that standardized patients who have not been trained appropriately or who have not received appropriate instruction and training identify feelings of embarrassment or feeling like they were being placed on the spot, especially in emotionally intense simulation based learning scenarios where the pressure to perform was high (Abelsson, 2019).

Some research indicates a correlation between the standardized patient's level of satisfaction in the simulation experience with their ability to positively and accurately portray the case or role they are given (Jin & Choi, 2018), which in turn directly relates to supporting the authentic portrayal of the case. Authentic portrayal by the standardized patient and entirety of the simulation-based learning activity, is key in providing healthcare profession students with a supportive and equitable learning environment. Research has indicated that if the standardized patient is not authentic in their portrayal of the role/character according to the case study in the simulation-based learning activity, they risk training the student to think that the reality of the simulation is the authentic reality of the environment they are training to practice within (Webster & Jarosinski, 2017). In turn to provide and cultivate the authentic role-portrayal of standardized patients, simulation facilitators and educators must be aware of the three-dimensional needs of the standardized patient in the simulation-based learning environment. Initial research indicates that some of these needs include understanding that standardized patients have serving, learning, and interpersonal needs during simulation, which in turn directly effects the cultivation of a supportive and authentic simulation-based learning experience for the healthcare profession student participant (Jin & Choi, 2018).

Workplace anxiety has indicated some correlation between absenteeism, exhaustion, and work engagement (Vignoli, 2017). Research additionally indicates a correlation between high stress environments such as in a hospital emergency department where employees often indicate high levels of employee burnout, which relates to job satisfaction levels which in turn directly relates to employee

retention (Schneider & Weigl, 2018). Training standardized patients and retaining them is an important aspect of ensuring continued success and support within the simulation-based learning environment, as training standardized patients can take many hours, and the use of trained and experienced standardized patients who know how to navigate the complicated simulation-based learning environment can contribute to a more authentic and supportive learning environment for student participants (King et al., 2019). Therefore, key to the successful training and retention of a standardized patient is their ability to participate in simulation-based learning activities which support high levels of workplace satisfaction, as well as those programs which include strategies to decrease standardized patient anxiety both before, during, and after simulation-based learning activities (Schlegel et al., 2016). Schlegel et al. (2016) indicate that standardized patients need both positive and corrective feedback during simulation-based learning activities to ensure that they feel satisfied in the role they are portraying. Other indicators of success and the decrease of anxiety for standardized patients, includes the utilization of breathing techniques post simulation activity, as well as opportunities for standardized patients to debrief the encounters post simulation-based learning activity (Schlegel et al., 2016). Additional, studies need to be designed to discover more effective tools for decreasing standardized patient anxiety and risk.

Acting and Anxiety

Research has indicated a higher prevalence of mental health disorders in highly creative individuals. While little research exists related to determining the exact cause, effect, or correlation between mental health disorders in creative personalities, some evidence exists related to a strong correlation between creative professionals and a higher risk for mental health disorders including but not limited to depression, suicidal ideation, and other psychophysiological characteristics (Thomson & Jaque, 2016). Reports by Thomson and Jaque (2016) that approximately 10% of professional singers attempted suicide, 59.5% of individuals who were classified as entertainment industry workers were treated or sought help for mental health issues, and 40% were officially diagnosed with a mental health disorder. Reports also indicate that there is a strong tendency for suicidal ideation in highly creative performance industry professionals (Thomson & Jaque, 2016).

Method acting is a process by which the actor places themselves in a position to feel the emotions and experiences of the character they are portraying (Allison, 2017). This type of acting, while popularized and utilized by many actors, can present dangerous implications for the individual utilizing this methodology. For example, as the person is placing themselves in the shoes of various individuals, the brain can have difficulty in sorting through what is real and what is imaginary (Allison, 2017). The brain experiences this type of acting experiences in the same manner as if the experiences were really happening, very little distinction exists between what is imaginary and what is real (Eken, 2019). This in turn could cause the actor to experience latent forms of trauma, similar to if they had encountered these experiences in real life (Eken, 2019). Careful attention to the effect of portraying difficult topics, and its effect on the individual's brain, as well as the individual's ability to process these experiences, must be paid, specifically as relates to the type of highly immersive and realistic acting which standardized patients experience during simulation-based learning activities.

To re-state while little research exists related to the experience of acting and its psychological effects the research that does exist indicates that actors can suffer from negative effects such as boundary blurring, dissociation, trauma, fantasy proneness, and absorption (Panero, 2019). Boundary blurring in acting occurs when the actor begins to experience changes in their own personality which mirror the character or role personality traits that they are portraying (Panero, 2019). According to the *Diagnostic and statistical manual of mental disorders* (American Psychiatric Association, 2013) dissociation is defined as an interruption in the normal integration of consciousness, memory, identity, emotion, perception, motor control, and or behavior of an individual. Trauma in actors often occurs when actors during a traumatic role call upon prior traumatic experiences to help increase the accuracy and authenticity of this role play; however, initial research indicates that this could place the actor at risk for effects related to their mental health (Panero, 2019). Fantasy proneness in actors can at times be so intense that actors have described feeling physical effects from the highly realistic and or immersive scenarios they are fantasizing about during acting (Panero, 2019). Finally, research indicates that absorption in actors can occur when they begin to absorb themselves so fully in the role that reality and

the role play absorb with one another and cause a sense of boundary blurring within the actor's environment (Panero, 2019). While research is limited initial studies indicate that there is psychological risk to actors within the realm of highly realistic and or immersive acting scenarios, characters, and or role plays, further indicating the need to explore the risk to standardized patients and the relationship between increased anxiety and highly immersive difficult topics simulation-based learning activities.

Summary

Healthcare profession training requires that healthcare profession students be prepared to appropriately and successfully transition from their time as a student to professional. This level of preparation requires that students benefit from the valuable educational tool known as healthcare-based simulation learning activities. Healthcare based simulation learning supports the principles of andragogy as it provides adult learners with the appropriate opportunity to apply their background knowledge in a real-life context, within the frame of a highly supportive and feedback driven environment. Through this practice healthcare profession students can repeat the activity until a behavioral change has occurred which aligns with the principles of behaviorism as defined by Skinner. Additionally, healthcare-based simulation learning allows students to explore experiential learning activities to apply the knowledge, skills, and attitudes toward mastery.

Within this realm of healthcare-based simulation exists a gap in the literature related to ensuring that the participants within the simulation-based learning activity are safe, including the standardized patients. Standardized patients are standardized and trained actors who portray the role patient, client, or family member so that students can learn to communicate and support the needs of their future patients, clients, and or family members. To create a realistic experience for students which supports them in their transition to practice, difficult topics are simulated to provide students with a safe learning environment which allows them to make mistakes and learn from those mistakes. However, special care needs to be taken when considering the standardized patients who are often required to simulate difficult topics for

many hours. Research illustrates a correlation between the participation in, acting out, or viewing of traumatic events and an increase in anxiety.

Special attention needs to be paid to protecting standardized patients so that they do not suffer from negative effects related to the simulation-based learning activity. Initial research has identified that some standardized patients report negative symptoms such as headaches, difficulty in their ability to separate from the character or role they were portraying, restlessness and sleeplessness, and increased anxiety. Additional research illustrates a correlation between traumatic film viewing and analogue PTSD and increased anxiety as well as an effect on hormonal levels and REM sleep cycles. Research also indicates a correlation between the actor and proneness to mental health disorders and or psychological risks related to highly immersive and realistic role-play and or character portrayal. However, much of this research related to this topic is qualitative and does not relate directly to the topic of quantifiable data related to increased anxiety in standardized patients post difficult topic simulation-based learning activity.

A gap in the literature exists. Little to no studies exist directly related to quantifiable data and the effect on standardized patients after participating in difficult topic simulation-based learning activities. The purpose of this study would be to utilize validated tools to identify quantifiable data as it relates to identifying a significant correlation between an increase of state and trait anxiety levels of standardized patients post difficult topic simulation-based learning activity. This study would increase awareness related to appropriately supporting the needs and safety of standardized patients in simulation and may provide a foundation by which to define a new manner to appropriately prepare, train, and ensure the safety of standardized patients in simulation-based learning activities.

CHAPTER THREE: METHODS

Overview

The purpose of this chapter is to introduce the research methodology for this quantitative study regarding the effects of difficult topic simulation on the anxiety levels of standardized patients in healthcare-based simulation learning activities. The methods additionally includes the design, research questions, hypothesis, participants and setting, instrumentation, procedures, and data analysis.

Design

For this study, a quantitative experimental, post-test only control group, with random assignment design was used to examine the effect of difficult topic simulation-based learning activities on standardized patient anxiety levels. According to Bloomfield and Fisher (2019) an experimental quantitative research design is appropriate when examining the relationship between independent and dependent variables. The purpose of this experimental quantitative post-test only control-group research design is to examine the difference between an identified intervention group and a control group related to the effects of anxiety in standardized patients who participate in difficult topic simulation-based learning activities. Random assignment is allowed in experimental research as addressed by Bloomfield and Fisher (2019). The utilization of this experimental research design where a post-test is utilized to assess the state and trait anxiety levels of participants, will allow for an analysis of the covariance across groups, which will in turn assist in making the groups more equal (Bloomfield & Fisher, 2019). State anxiety is defined as the level of anxiety based upon the situational circumstances of the participant, whereas trait anxiety is defined as the affinity level of anxiety based upon the participants personality type or genetic makeup (Spielberger et al., 1983).

The dependent variables in this study will be the *t-anxiety and s-anxiety post-test scores* of the standardized patients in difficult topic simulation-based learning activities. Difficult topic simulation-based learning can increase anxiety levels in participants, however, little evidence related to the effect on standardized patients in difficult topic simulation-based learning activities has been studied (Alexander,

2019). The independent variables of this study will be *type of simulation-based learning activity*. Difficult topic simulation-based learning activities can provide healthcare profession students with the support and skills they need to face these same difficult topics in their professional careers and practice (Park et al., 2017). The covariate for this study will be standardized patient *years of experience,* this will be collected as a continuous variable. The covariate for this study will be controlled as some initial evidence related to anxiety levels illustrates that coping mechanisms can be developed to address anxiety and could potentially affect the results of the study (Baratta & Maier, 2019). A parallel design in groups allows for the random assignment of participants within the experimental and control group (Bloomfield & Fisher, 2019).

Research Question(s)

RQ1: Is there a difference in *T-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

RQ2: Is there a difference in *S-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Hypotheses

The null hypotheses for this study are:

$H_0$1: There is no difference in *T-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience.

$H_0$2: There is no difference in *S-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience.

Participants and Setting

The participants for this study were drawn from a convenience sample of standardized patients located nationally and internationally. A convenience sample has been chosen for this study as the research being conducted requires access to standardized patients across the globe. Standardized patients are actors who are trained to simulate a set of realistic symptoms to provide healthcare profession students with the opportunity to practice skills in the psychomotor, affective, and cognitive domains of learning (Witt et al., 2018). The higher education institutions healthcare profession education programs include Nursing, Athletic Training, Medical Degree, Physical Therapy, Speech and Language Pathology, Physician Assistant, Social Work, Marriage and Family Therapist, Licensed Professional Clinical Counselor, Pharmacist, Paramedic, and Emergency Medical Technician. Sampling procedures will be blinded, participant names, work and educational locations will not be disclosed, and pseudonyms will be granted for all participants, locations, and institutions of the research study.

For this study, the number of participants sampled will be 66, which is appropriate when assuming a medium effect size with statistical power of .7 and an alpha set at .05 according to Gall et al. (2006). The population of standardized patients is small and thus the sample size of 66 will be chosen to meet the adequate minimum sample size of 63 according to Wiersma and Jurs (2009). The sample will come from institutions across the United States. The standardized patients will all have gone through training at their institutions regarding how to portray a standardized patient role, as well as having participated in simulation's prior to completing this activity. Appropriate training for standardized patients consists of a thorough overview of the following topics (case portrayal, security and safety, methodology of SPs, and providing feedback to students). These training techniques are standard practice in institutions who utilize standardized patients (Lewis et al., 2017). Participants who have not participated in training at their institutions did not qualify for the study. Ages ranged from 18 to 84 years old. Gender's represented included both 20 male and 45 female 1 non-binary. Ethnicities included White, Asian, Black, Hispanic, and Jewish.

The treatment group consisted of 8 males and 25 females, ranging in age from 18 to 84 years. Participants were selected, and all identifiers were removed from the research materials. Participants in the treatment group represent 20 SPs with 1-5 years of experience as an SP, 6 SPs with 5-10 years of experience as an SP, and 2 SPS with 10-15 years of experience as an SP, 2 SPS with 15-20 years of experience as an SP, 3 SPS with 15-20 years of experience as an SP (See Table 1)

Table 1

Participant Information (Treatment Group)

Gender	**Male**	**Female**	**Non-Binary**
	08	25	00

1-5 yr. Exp.	**5-10 yr. Exp.**	**10-15 yr. Exp.**	**15-20 yr. Exp.**	**20+ yr. Exp.**
20	06	02	02	03

The control group consisted of 12 males, 20 females and 1 non-binary, ranging in age from 18 to 84 years. Participants were randomly selected, and all identifiers were removed from the research materials. Participants in the control group represented 21 SPs with 1-5 years of experience as an SP, 8 SPs with 5-10 years of experience as an SP, and 4 SPS with 10-15 years of experience as an SP, 0 SPS with 15-20 years of experience as an SP, 0 SPS with 15-20 years of experience as an SP (See Table 2)

Table 2

Participant Information (Control Group)

Gender	**Male**	**Female**	**Non-Binary**	
	12	20	01	
1-5 yr. Exp.	**5-10 yr. Exp.**	**10-15 yr. Exp.**	**15-20 yr. Exp.**	**20+ yr. Exp.**
21	08	04	00	00

The total sample consisted of 20 males, 45 females and 1 non-binary, ranging in age from 18 to 84 years.

See figure 1 (gender) and figure 2 (years of experience)

Figure 1

Pie Chart Total Sample Gender

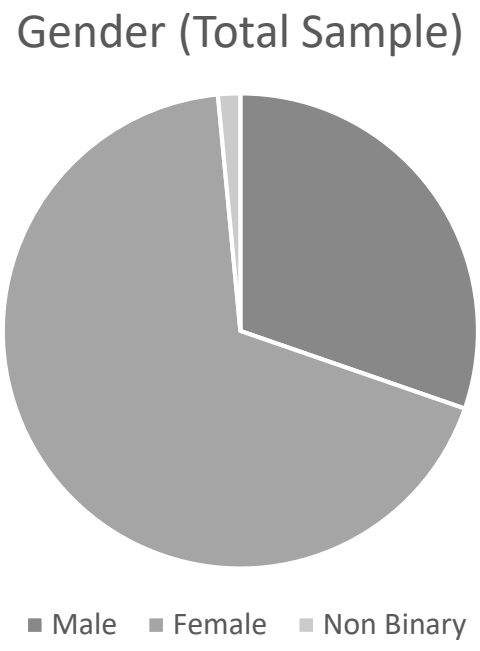
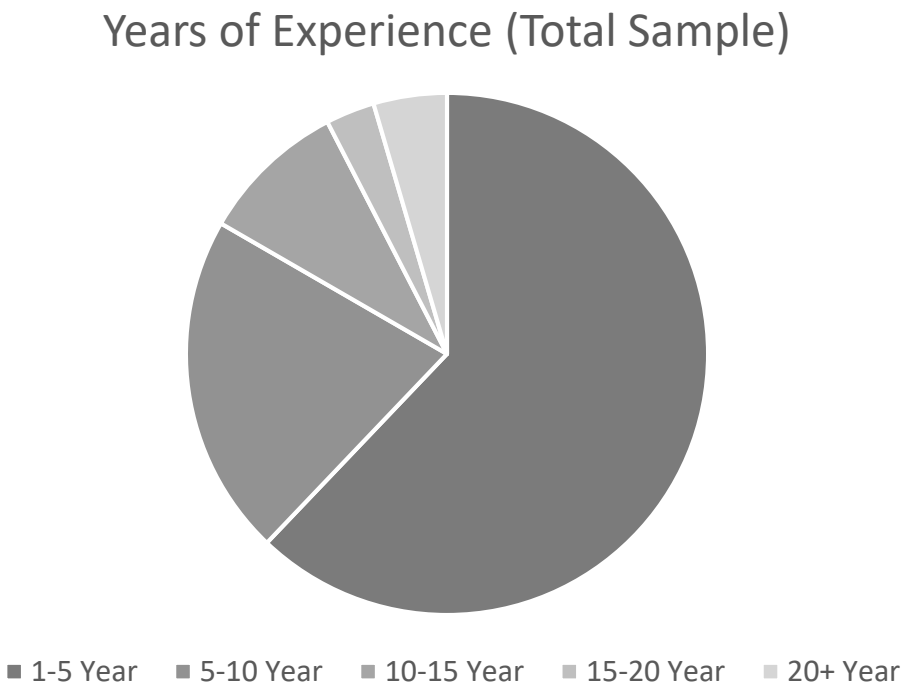


Figure 2

Pie Chart Total Sample Years of Experience



Instrumentation

The instruments of this survey include a demographic survey, which was utilized to collect demographic information of participants along with the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1983) as the main instrument. To collect information regarding participant state and trait anxiety the STAI was utilized. The STAI has been validated (Spielberger et al., 1983) and determined to be reliable (Spielberger et al., 1983). Internal consistency coefficients range from .86 to .95, and the test-retest reliability coefficients range from .65 to .75 over a 2-month interval for the STAI (Spielberger et al., 1983). Content validity was assessed by Okun et al. (1996) who stated that five of the eight domains were addressed from the DSM-IV in the STAI. Factorial validity for the *S-anxiety* and *T-anxiety* scales typically range in correlations from 0.7 to 0.8 (Spielberger et al., 1983). Convergent validity ranges according to Spielberger et al. (1983) during three studies from 0.79 to 0.83. Additionally, Sarikoc, Sarmasoglu, Tuzer, Elcin, and Burn (2018) utilized the State-Trait Anxiety Inventory (STAI)

(Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) to identify interventions for standardized patients post "receiving bad news" simulation-based learning scenario. Farra and Smith (2019) utilized the STAI (Spielberger et al., 1983) to measure the intensity of the emotional response of simulation participants after a difficult topic simulation-based learning activity.

The STAI (Spielberger et al., 1983) will allow for participant self-report scores both in the treatment and control group and will allow for a further analysis of covariance across the treatment and control group (Bloomfield & Fisher, 2019). Analysis of anxiety between groups will be assessed at the level of state anxiety and trait anxiety of the participants (Spielberger et al., 1983). The STAI was developed by Spielberger, Gorusch, and Lushene (1983) to develop a toll which would allow for the assessment of anxiety in individuals at different levels. At the time of the development of this inventory this tool was unique in the fact that it was the only tool that allowed for the assessment of more than one measure for anxiety (Spielberger et al., 1983).

The STAI is a commonly used validated measure to assess and diagnose anxiety. Form Y of the STAI will be utilized for this study, which addresses anxiety in adults. Form Y includes 20 items which assess for trait anxiety (*T-anxiety*), and 20 items which assess for state anxiety (*S-anxiety*). A 4-point scale is utilized to assess all items on the inventory. The *S-anxiety* scale ranges from 1 = not at all, 2 = somewhat, 3 = moderately so, 4 = very much so. The *T-anxiety* scale ranges from 1 = almost never, 2 = sometimes, 3 = often, 4 = almost always. The STAI requires a sixth-grade reading level or above. The minimum score for both the STAI-T and STAI-S is 20 with a maximum score of 80 (Spielberger et al., 1983). The STAI is a self-report questionnaire that can be administered in an individual format by either paper and pencil or in digital format (Spielberger et al., 1983). The entire questionnaire can be completed by most adults within 10-20 minutes (Spielberger et al., 1983). Scoring for the STAI from a minimum score of 20 to a maximum score of 80 (Spielberger et al., 1983). Scores classifications range from no anxiety to low anxiety (20-37) moderate anxiety (38-44), and high anxiety (45-80). Permission to use this instrument was gained from the publisher (Appendix A)

The STAI continues to be a widely utilized validated measure for assessing state and trait anxiety (Spielberger et al., 1983). In a study by Sarikoc et al. (2018) the STAI was utilized to measure anxiety levels in standardized patients post simulation-based learning activity, where healthcare profession students were practicing the giving of bad news to the standardized patients. The STAI was utilized by Farra and Smith (2019) during a study which looked at the anxiety levels of healthcare profession students after a live disaster exercise/simulation. In a study by Alexander (2019) the implications of sudden death simulation-based scenarios on nursing student anxiety was analyzed using the STAI in a study by Ok et al. (2019) nursing study anxiety was analyzed using the STAI (Spielberger et al., 1983) during a pre-clinical standardized patient mental health simulation-based learning activity. Rossler (2019) utilized the STAI to examine the anxiety levels of baccalaureate nursing students preparing to state licensure examinations, and the effect of simulation-based learning examinations (SBLE) on these anxiety levels.

Procedures

Permission was obtained to collect data for analysis. Permission was obtained from the standardized patients using an informed consent form (Appendix B). Participants were elicited by sending emails to simulation institutions and simulation educator's which utilize standardized patients across the United States, asking for them to please email the study information to their standardized patients (Appendix C) requesting for volunteer participation. Those participants who agree to be a part of the study then completed an online demographic survey (Appendix D) and an informed consent form (Appendix E). Once the participants had completed the online demographics form, they were randomly assigned into either the treatment group or control group. Upon assignment into a group the research participants were sent the simulation case for either the treatment group (Appendix F) or control group (Appendix G), along with a video which included case portrayal instructions, as well as instructions regarding the date and time of the study. Approval was obtained from Liberty University and the IRB to begin this quantitative study see (Appendix I).

A letter of interest (Appendix B) was composed and sent to the institutions and simulation educator's across the United States who train and utilize standardized patients. This email letter requested that these institutions send an email to their standardized patients (Appendix C). The email included a link to a survey where the standardized patients could complete a demographic survey (Appendix D), as well as the informed consent from (Appendix E). Once the participants had completed the consent form and demographic survey they were officially scheduled for participation in the research, and randomly assigned into either the treatment or control group, and sent details, related to the date, time, information regarding how to login remotely for the simulation, and case materials (e.g. simulation case for either the treatment or control group, and a video training of the case (Appendix H)).

Upon arrival to the simulation experience the standardized patients participated in a simulation of the case they had been sent based upon their random assignment into either the treatment or control group. Upon completion of the simulation-based learning activity the participants then completed the STAI (Spielberger et al., 1983). Upon completion of this final survey participants were dismissed. A non-equivalent post-test study according to Bloomfield and Fisher (2019) allows for the administration of the experience and post-test analysis within the experimental group as well as the control group, where the experimental group participates in the selected difficult topic simulation based-learning experience and the control group participates in a non-difficult topic simulation-based learning experience (Bloomfield & Fisher, 2019).

The simulation-based learning scenario for the treatment group covers the difficult topic of receiving the news that they have been diagnosed with stage 4 pancreatic cancer (Appendix F) and in this scenario the standardized patient were provided with end-of-life care instructions. The control group simulation-based learning scenario consisted of a non-difficult topic diagnosis of an upper respiratory infection (Appendix G).

All data collection was kept confidential, and surveys were securely kept by the researchers using a password protected computer and file folder. The surveys were scored according to the STAI authors instructions (Spielberger et al., 1983). No photography or recording of any kind was permitted during the

research. The researcher will securely and anonymously keep all the survey data for the three-year period following the study's conclusion as mandated by Liberty University's IRB. The list of research participants will be destroyed immediately following the collection and completion of all survey data. All other documentation will be destroyed following the mandatory three-year period.

Data Analysis

Data analysis for this quantitative, experimental research study consisted of 2 one-way ANCOVA's. The first one-way ANCOVA was used to determine if there was a significant difference between the independent variables of *type of simulation-based learning activity* where the groups are difficult topic and non-difficult topic, and the dependent variable of *t-anxiety post-test scores* with a covariate of standardized patient *years of experiences*, which was collected as a continuous variable. The second one-way ANCOVA was used to determine if there was a significant difference between the independent variables of standardized patient *type of simulation-based learning activity* where the groups were difficult topic and non-difficult topic, and the dependent variable of *s-anxiety post-test* scores with a covariate of standardized patient *years of experience*, collected as a continuous variable. Descriptive statistics was used to analyze the participants scores on the STAI to determine measures of central tendency such as means, and standard deviations, while also including the minimum and maximum scores. These descriptive statistics for the STAI were analyzed using the Statistical Packages for the Social Sciences (SPSS) for both the *s-anxiety* and *t-anxiety* scores.

The rational for utilizing a one-way ANCOVA exists due to the inclusion in this study of two independent variables that are categorical in nature, the dependent variables and covariate that can be measured on a continuous scale, thus the utilization of two one-way ANCOVA's allowed the researcher to make appropriate comparisons between groups (Gall et al., 2006). Felton et al. (2017) used an ANCOVA to analyze the participants anxiety levels following an orientation-based activity prior to completion of the simulation-based learning activity to determine state and trait anxiety levels post-

treatment. Self-reported scores were utilized to analyze the effect of the orientation activity on state and trait anxiety levels post simulation-based learning activity (Felton et al., 2017).

The dependent variables of standardized patient *post-test t-anxiety and s-anxiety,* and the independent variables of *type of simulation-based learning activity* were measured on a continuous scale. The covariate was measured on a continuous scale.

Data was sorted and screened for unusual scores and inconsistencies using visual analysis. A scatter plot was used to examine for extreme outliers. There was a linear relationship between the control and treatment group's *s-anxiety* scores for each intervention type but no linear relationship was found for the *t-anxiety* scores for each intervention type and therefore the researcher was unable to continue with the one-way of Analysis of Covariance for the *t-anxiety* scores, as assessed by visual inspection of a scatterplot. The researcher continued with the one-way of analysis of covariance for the *s-anxiety* scores for each intervention type and conducted post-hoc analysis on the *t-anxiety* scores using an independent samples t-test.

For the *s-anxiety* scores it was determined that there was homogeneity of regression slopes as the interaction term was not statistically significant, $F(1, 62) = .256$, $p = .614$. The assumption of normality was tested by using a Shapiro-Wilk's test of normality. Standardized residuals for the interventions were not normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$). However, since the sample sizes are equal and the one-way ANCOVA is a robust test, the decision was made to carry on with the one-way ANCOVA. The assumption of linearity in the dependent variables at each level of the independent variable was tested using a grouped scatter plot of the covariate between the years of experience for each group. There was homoscedasticity, as assessed by visual inspection of the standardized residuals plotted against the predicted values. The assumption of homogeneity of slopes was tested by looking for interactions in the data. The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances ($p = .002$). Therefore, the decision to transform the variable was made. The data was deemed strongly positively skewed and a log10 transformation was utilized. The assumption of equal variance was tested by using the Levene's Test of Equality of Error Variance. After

transforming the data there was homogeneity of variances, as assessed by Levene's test of homogeneity of variance (p = .136). There were no outliers in the data, as assessed by no cases with standardized residuals greater than ±3 standard deviations.

State Scores were greater in the treatment group (M = 1.60, SD = 0.16) compared to the control group (M = 1.45, SD = 0.13) respectively. After adjustment for years of experience of standardized patients, there was a statistically significant difference in state scores between the interventions, F(1, 63) = 14.878, p < .001, partial η2 = .191. Adjusted mean are presented, unless otherwise stated. State scores were not statistically significantly greater in the treatment group (M = 1.59, $S.E.$ = 1.64) compared to the control group (M = 1.45, $S.E.$ = 1.50), a mean difference of 0.134, 95% CI [-0.218, -0.069], p < .001.

The eta squared statistic (η^2) was used to calculate effect size and was interpreted in terms of Cohen's d (Warner, 2013). The significance testing was set at alpha < 0.025 given the need for the Bonferroni correction (Warner, 2013, 98-99). The Bonferroni correction is a conservative test which consists of a multiple-comparison correction, which is to be utilized when conducting multiple dependent or independent statistical tests which are being completed at the same time (Warner, 2013). The Bonferroni correction reduces the risk for a type 1 error and risk related to receiving a false positive, and causing a rejection of the null hypothesis, when the null should not be rejected (Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

Upon receipt of approval from the Institutional Review Board (IRB) at the evaluating institution, participants were recruited by reaching out to various simulation center directors and administrators, who then sent the information to standardized patients within their institution. In addition, participants were collected by posting on social media in various simulation interest groups and organizations. Data was collected and then analyzed. A linear relationship was tested using a scatter plot. Homogeneity of regression slopes was tested by consulting the group*years of experience interaction terms in the tests of between-subjects' effects. Normality was tested using the Shapiro-Wilk test. The standardized residuals normal distribution was tested. Homoscedasticity was tested bey creating a scatterplot. Homogeneity of variances was assessed using the Levene's Test of Equality of Error Variances. Outliers were tested for by inspecting the data for any standardized residuals which were deemed greater than ±3 standard deviations. Post hoc analysis was determined to be appropriate due to inability to conduct an ANCOVA analysis on the *t scores*.

Research Question(s)

RQ1: Is there a difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

RQ2: Is there a difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Null Hypothesis(es)

$H_0$1: There is no difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience as measured by STAI.

$H_0$2: There is no difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience as measured by STAI

Descriptive Statistics

Data obtained for the dependent variable of s-*anxiety* scores of standardized patients on the State Trait Anxiety Inventory with independent variable te difficult and non-difficult topic control and treatment groups can be found in Table 3. The mean and standard deviation for control and treatment group *s-anxiety* scale scores is 29.46 (10.23) and 42.64 (16.18) respectively.

Table 3

Descriptive Statistics: Dependent Variable (s-anxiety) Scores on STAI

	N	Min	Max	Mean	Median	Std. Dev.	Skewness	Kurtosis	
									Std. Error
CG *T-scores*	33	20	58	29.46	25	10.23	1.39	.409	1.38
TG *T-scores*	33	20	75	42.64	38	16.18	.572	.409	-.848
Valid N (Listwise)	33								

Data obtained for the dependent variable of *t-anxiety* scores of standardized patients on the State Trait Anxiety Inventory with independent variable the difficult and non-difficult topic control and treatment groups can be found in Table 4. The mean and standard deviation for control and treatment group *t-anxiety* scale scores is 35.07 (11.26) and 34.91 (9.42) respectively.

Table 4

Descriptive Statistics: Dependent Variable (t-anxiety) Scores on STAI

	N	Min	Max	Mean	Median	Std. Dev.	Skewness	Kurtosis	
									Std. Error
CG *T-scores*	33	21	64	35.07	34	11.26	.848	.409	.354
TG *T-scores*	33	20	54	34.91	35	9.42	.152	.409	-.767
Valid N (Listwise)	33								

Transformed data obtained for the dependent variable of log10_*s-anxiety* scores of standardized patients on the State Trait Anxiety Inventory with independent variable the difficult and non-difficult topic control and treatment groups can be found in Table 5. The mean and standard deviation for control and treatment group transformed log10_*s-anxiety* scale scores is 35.07 (11.26) and 34.91 (9.42) respectively.

Table 5

Descriptive Statistics: Dependent Variable (log10_t-anxiety) Scores on STAI

	N	Min	Max	Mean	Median	Std. Dev.	Skewness	Kurtosis	
									Std. Error
CG *T-scores*	33	-.77	2.19	.00	-.261	.741	1.39	.409	1.54
TG *T-scores*	33	-1.56	2.38	.00	-.424	1.19	.569	.409	-.890
Valid N (Listwise)	33								

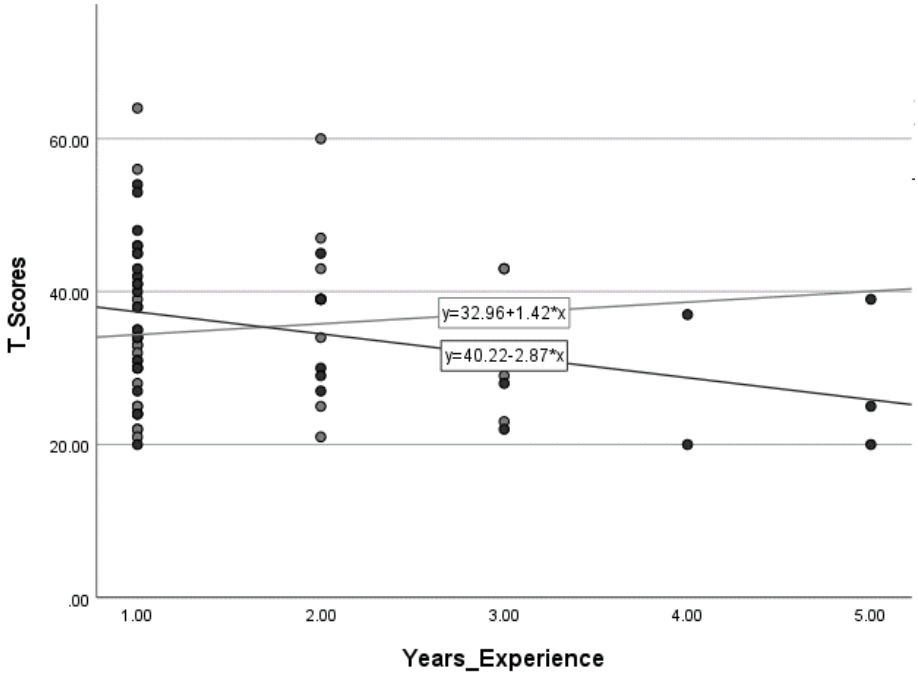
Results

Null Hypothesis One

The first null hypothesis states that there is no difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience. A scatter plot was created to assess for linearity. It was found that there was not a linear relationship between the control and treatment group's trait scores for each intervention type, as assessed by visual inspection of a scatterplot see figure 3.

Figure 3

Scatter plot for years of experience and t-anxiety scores on STAI.



Due to the violation of the assumption of homogeneity of regression slopes, the ANCOVA was not appropriate. Therefore, an independent samples *t* test was run.

Post-Hoc Analysis NH 1:

Due to the need for an independent samples t test analysis, research questions one and null hypothesis one were modified.

Modified Research Question

RQ1: Is there a difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities?

Modified Null Hypothesis

$H_0$1: There is no difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities.

Descriptive Statistics

Descriptive statistics were obtained on the dependent variable, for each group. Descriptive statistics can be found in Table 1.

Table 6

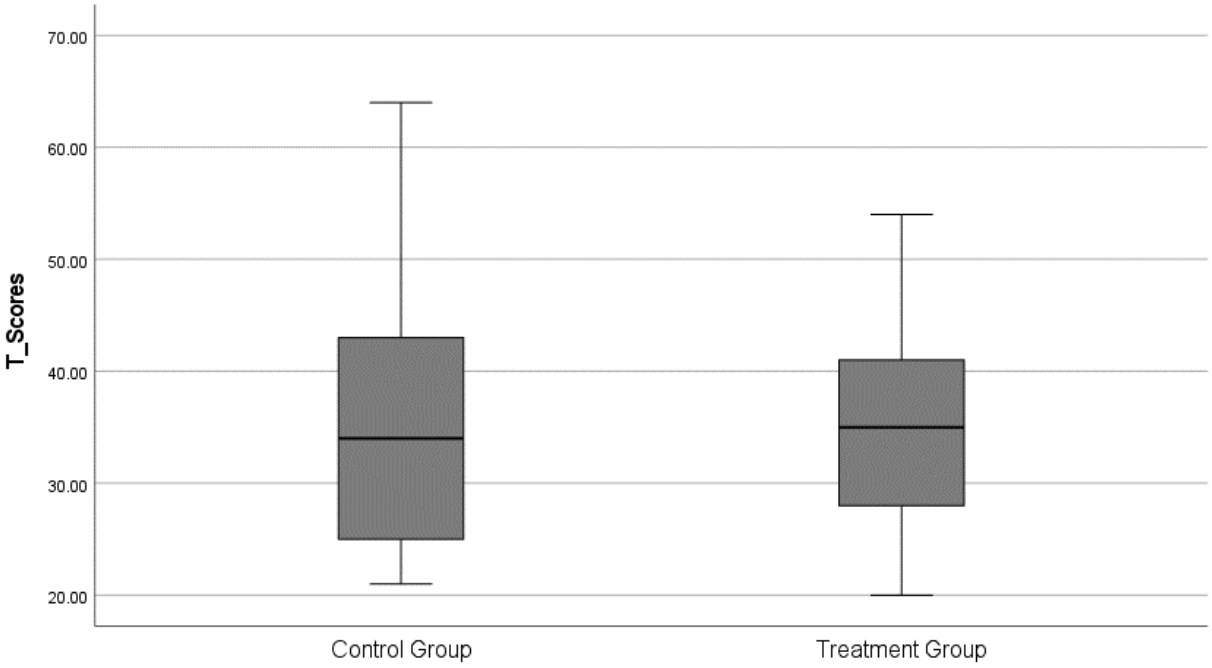
Descriptive Statistics Modified Null Hypothesis One

Group	N	Mean	Std. Deviation
Control	33	35.06	11.26
Treatment	33	34.91	9.42

Data screening was conducted on each group's dependent variable. The researchers sorted the data on each variable and scanned for inconsistencies. No data errors or inconsistencies were identified. Box and whiskers plots were used to detect outliers on each dependent variable. No outliers were identified. See Figure 1 for box and whisker plots for traditional and senior learners.

Figure 4

Box and whisker plots for NH1 Control and Treatment Groups



Assumptions

An Independent Samples *t* test (*t* test) was used to test the null hypothesis. The *t* test required that the assumptions of normality and homogeneity of variance are met. Normality was examined using a Shapiro-Wilk test. Shapiro-Wilk was used because the sample size was less than 50. A violation of normality was found. See Table 7 for Tests of Normality.

Table 7

Tests of Normality and Equality of Variances for Modified NH1

	Shapiro-Wilk			Levene's	
Group	Sig.	Statistic	df	F	Sig.
Control	.024	.924	33	.378	.541
Treatment	.374	.966	33		

The assumption of homogeneity of variance was examined using the Levene's test. No violation was found where $p = .541$. The assumption of homogeneity of variance was met.

Results for Null Hypothesis One

A *t* test was used to test the null hypothesis regarding differences in trait anxiety levels among standardized patients completing a difficult topic (treatment group) or non-difficult topic (control group) simulation-based learning activity. Equal variance was assumed. The null hypothesis was not rejected at a 95% confidence level were $t(33) = 0.59$, $p = .541$, $\eta^2 = 0.5$. The effect size was very large. Treatment group ($M = 34.91$, *S.D.* = 9.42) had moderately lower scores than the trait anxiety scores of the control group ($M = 35.06$, *S.D.* = 11.26).

Research Question(s)

RQ2: Is there a difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Null Hypothesis(es)

$H_0$2: There is no difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience as measured by a one-way ANCOVA.

Descriptive Statistics

Descriptive statistics were obtained for the covariate (years of experience), dependent variable (state anxiety scores), and the adjusted dependent variable (adjusted means for state anxiety scores) for each group. Descriptive statistics can be found in Table 8 and 9.

Table 8

Descriptive Statistics State Anxiety Scores

Dependent Variable: State Scores

Group	Mean	Std. Deviation	N
Control	29.45	10.23	33
Treatment	42.64	16.18	33

Table 9

Descriptive Statistics State Anxiety Scores (Adjusted Means)

Dependent Variable (Adjusted Means): State Scores

Group	Mean	Std. Deviation	N
Control	1.45	1.34	33
Treatment	1.60	1.64	33

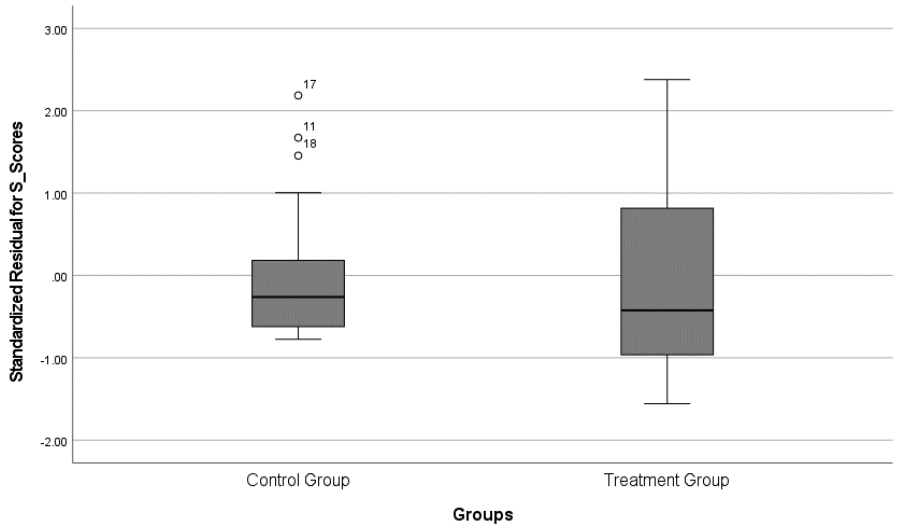
Results

Data screening

Data screening was conducted on each group's covariate and dependent variable. The researchers sorted the data on each variable and scanned for inconsistencies. No data errors or inconsistencies were identified. Box and whiskers plots were used to detect outliers on each dependent variable. No outliers were identified for the treatment, however, outliers (data point 11, 17, & 18) were denoted with an asterisk on the box and whisker plot. The researcher converted the data point to a z-score and it fell within +3 and -3 standard deviations of the sample mean (Warner, 2013, p. 153). Thus, the data point was not considered an extreme score and was maintained in the data set. See Figure 5 for box and whisker plots.

Figure 5

Box and whisker plots for State Anxiety Scores



Assumptions

An Analysis of Covariance (ANCOVA) was used to test the null hypothesis. The ANCOVA required that the assumptions of normality, assumption of linearity and bivariate normal distribution, assumptions of homogeneity of slopes, and the homogeneity of variance, are met.

Normality was examined using a Shapiro-Wilk test. Shapiro-Wilk was used because the sample size was less than 50. ANCOVA is robust no violations of the assumption of normality, so the researcher continued with the ANCOVA analysis. See Table 10 for Tests of Normality.

Table 10

Tests of Normality and Equality of Variances for (s-scores)

	Shapiro-Wilk			Levene's	
Group	Statistic	df	Sig.	F	Sig.
Control	.832	33	<.001	10.59	.002
Treatment	.925	33	.026		

The assumption of linearity and bivariate normal distribution where tested using of scatter plots for each group. Linearity was met and bivariate normal distributions were tenable as the shapes of the distributions where not extreme.

Figure 6

Scatter plot for Control Group (S-Scores)

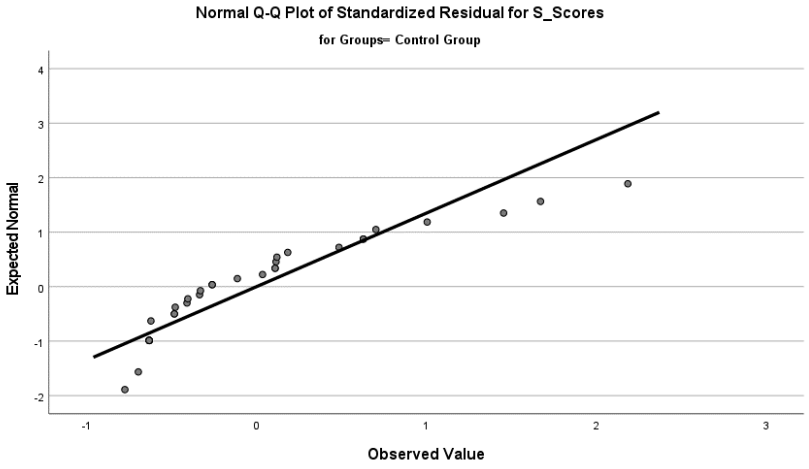
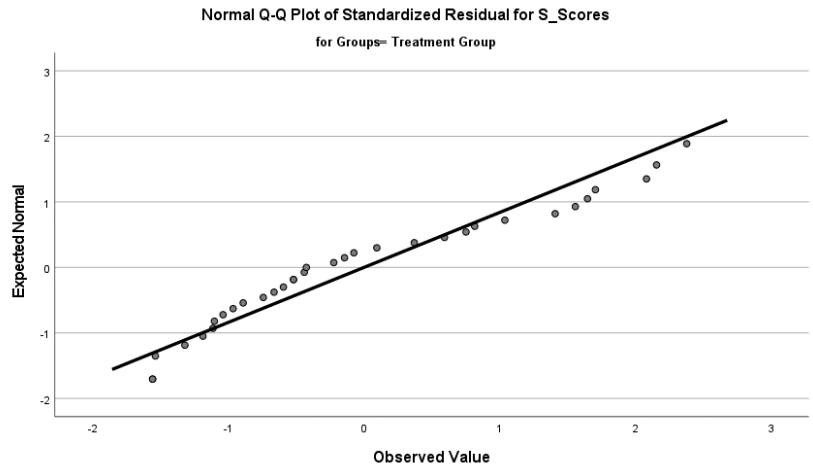


Figure 7

Scatter plot for Treatment Group (T-Scores)



The assumption of homogeneity of slopes was tested and no interaction was found. Therefore, the assumption of homogeneity of slope was met. The assumption of homogeneity of variance was examined using the Levene's test. Violation was found where p = .002. The assumption of homogeneity of variance was not met. ANCOVA is robust to some violation and therefore the researcher continued with the analysis.

Results for Null Hypothesis

An ANCOVA was used to test the null hypothesis regarding the state anxiety scores of standardized patients based on participation in a difficult topic (treatment group) or non-difficult topic (control group) simulation-based learning activity, while controlling for years of experience. The null hypothesis was rejected at a 95% confidence level were $F(1,63) = 13.722$, $p < .001$, $\eta 2 = .2$. The researcher rejected the null hypothesis there is a significant difference in *s-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience. See Table 11 for Multiple Comparisons of Groups.

Table 11

Multiple Comparisons of Groups State Scores

Pairwise Comparisons
Dependent Variable: State Scores

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
CG	TG	- 12.49*	3.369	<.001	-19.212	-5.784
TG	CG	12.49*	3.369	<.001	5.748	19.212

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni

CHAPTER FIVE: CONCLUSIONS

Overview

This study explored the relationship between difficult topic simulation-based learning activities and standardized patient anxiety levels, while considering years of experience as a potential correlating factor. This chapter will include a summary of the data analysis, trends and findings of the study. Standardized patients are an important part of simulation-based learning activities as they provide students with the ability to practice cognitive, affective, and psychomotor skills which can then be translated to clinical practice; therefore, implications of this research were explored. Additionally, a discussion of limitations and potential future research based on the study findings were identified and discussed. Additional, further research on the topic from the last year has been noted in the literature review, therefore this present dissertation adds to the current body of literature and represents current trends in research relate to the topic.

Discussion

The purpose of this study was to examine a potential link between the anxiety related effects of difficult topic simulation-based learning experiences on standardized patients participating in these scenarios. The findings of this study failed to reject the null hypothesis for the trait scores of standardized patients for both groups, where the treatment group represented the difficult topic simulation, and the control group represented the non-difficult topic simulation. Trait anxiety is defined as one's own propensity toward anxiety (Spielberger et al., 1983). The results of this study illustrate that there is no difference in *t-anxiety* scores of standardized patients who participate in difficult topic simulation-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience.

The study did reject the null hypothesis for state scores of standardized patients illustrating a significant relationship between standardized patient's level of state anxiety and difficult topic and non-difficult topic simulation-based learning activities. State anxiety is defined as anxiety which occurs due to

an experience or event (Spielberger et al., 1983). The study illustrated that the mean scores for the treatment group, those standardized patients who participated in the difficult topic simulation-based learning activity were higher than the scores of those standardized patients who participated in the non-difficult simulation-based learning activity, illustrating that there is there a difference in state anxiety scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience. The literature related to standardized patients and anxiety does discuss similar results to the above.

Mano et al. (2019) illustrated strong correlations between heightened participant emotions (fear and anger) and difficult topic simulation-based learning activities, with score frequency of anger at 23.45 and fear 7.38. Stress levels tend to increase during simulation role playing according to Dias and Scalabrini-Neto (2017) where participants in immersive roles in simulation had higher cortisol levels and illustrated more acute stress markers at lvels of U = 91.5, p=0.27; cortisol: 35.3% (IQR: 22.2-83.5). Higher levels of salivary α-amylase (sAA) additionally are correlated to highly immersive simulation-based training scenarios according to Price et al. (2018) with scores of participants at their base rates of sAA at 103.26 (*SD*=79.13) and post simulation participation levels at 182.22 (*SD*=148.65).

Thomas and Jacque (2016) state that approximately 10% of professional singers attempted suicide, 59.5% of individuals who were classified as entertainment industry workers were treated or sought help for mental health issues, and 40% were officially diagnosed with a mental health disorder's, and initial reports indicate that there is a strong tendency for suicidal ideation in highly creative performance industry professionals. Panero (2019) point out that additional psychological effects exist indicating that actors can suffer from negative effects such as boundary blurring, dissociation, trauma, fantasy proneness, and absorption, where boundary blurring is where actors start to mirror the character or role personality traits that they are portraying. According to the *Diagnostic and statistical manual of mental disorders* (American Psychiatric Association, 2013) dissociation is defined as an interruption in

the normal integration of consciousness, memory, identity, emotion, perception, motor control, and or behavior of an individual.

The use of standardized patients is considered a standard of best practice in simulation-based learning education and is frequently utilized as a means of providing students with optimal opportunities to practice skills in a safe learning environment. However, a pillar of success when utilizing standardized patients in simulation-based learning is to ensure that the standardized patients feel safe and are able to return to simulation-based learning activities without compromise. Higher levels of anxiety and stress in standardized patients could correlate to potentially unsafe learning outcomes for students or translate to further mental health complications for standardized patients. The work standardized patients do is important to ensuring healthcare profession students have a safe learning environment to practice cognitive, affective, and psychomotor domain skills within and thus the work that standardized patients do must be protected.

Research Question 1

The first research question considers the possibility that there is a correlation between trait anxiety and levels of anxiety in standardized participants who participate in either a difficult or non-difficult topic simulation-based learning activity while controlling for years of experience. Research question 1 asked**:** Is there a difference in t-*anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Sarikoc et al. (2018) reported only moderate level increases in standardized patient anxiety levels using the STAI after participation in a difficult topic simulation activity. Jarosinski et al. (2016) reported that while difficult topic mental health simulation-based learning activities can cause lasting negative effects on participants, the stimuli must occur and is not innate to the participant, which is consistent with low level increases in trait anxiety of the participant. Farra (2019) reported that while state scores after participation in a live disaster simulation did increase there were not changes to trait anxiety levels. Webster and Jarosinski (2017) additionally report an effect on the state anxiety of participants post

difficult topic simulation-based learning activity but report no findings related to one's own personal propensity to anxiety also known as trait anxiety.

Behaviorism (Skinner, 1938) illustrates the ability for learners to participate in learning activities which induce a behavioral change through various external and internal stimuli. Correlations additionally exist between not only learners in simulation and behavioral changes but also in the context of a highly immersive and stimulating environments ability to effect behavioral changes in all participants including standardized patients. Dunn et al. (2017) illustrates the importance of highly immersive environments role in the cultivation of strong behavioral changes which produce longitudinal outcomes and higher retention rates amongst participants. Therefore, a correlation does exist between theory and results of this study as they relate to a highly immersive environment and its external stimuli and effect on internal behavioral changes and thusly external responses.

Research Question 2

The second research question considers the possibility that there is a difference in *S-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience. Research question 2 asked**:** is there a difference in *S-anxiety* scores of standardized patients who participate in difficult topic simulations-based learning activities and those who participate in non-difficult topic simulation-based learning activities, when controlling for years of experience?

Basu et al. (2019) found that when participants are immersed in highly stressful or high anxiety producing environments over a long period of time they tested in a higher stress tier. Judd et al. (2019) discussed the implications that state-anxiety increased during simulation-based learning activities showing a strong correlation between anxiety and stress scores (r=0.904, $p < 0.001$). Abelsson (2019) state that feelings of embarrassment or pressure to perform are high in standardized patients during simulation-based learning scenarios. Jin and Choi (2018) state that job satisfaction can be correlated to standardized patient's ability to perform and high intensity or difficult topic simulation-based learning

scenarios can be job dissatisfiers, this factor is additionally discussed and supported by Schneider and Weigl (2018).

Behaviorism (Skinner, 1938) supports the correlation between high anxiety levels of learners and external negative stimuli, whether real or perceived. In addition Jeffries (2005) indicate that participant age, gender, level of anxiety, self-confidence, and preparedness are ever-changing components of a standardized patient and can play an active role in simulation-based learning outcomes. Participant factors include the participant age, gender, level of anxiety, self-confidence, and preparedness as they directly relate and become an ever-changing component of the simulation-based learning activity and its learning outcomes. This correlation between participants and their experience in simulation indicates a strong possibility for the standardized patient to affect the student's ability to successfully complete the objectives of the simulation-based learning activity. Standardized patients' anxiety in simulation can be said to have a direct effect on students, and similarly the environment can have a direct effect on standardized patient anxiety and stress.

Implications

The available literature on standardized patient's anxiety levels in difficult topic simulation-based learning activities is limited. While much focus has been placed on student participant anxiety levels in simulation-based learning (Goh et al., 2016) there has been little quantitative focus on standardized patients and their experience with anxiety in highly immersive difficult topic simulation-based learning activities (Webster & Jarosinski, 2017). There are currently no published studies which focus on standardized patients state and trait anxiety levels in difficult topic versus non-difficult topic simulation-based learning activities. Current relatively related studies have indicated the need to research the topic of standardized patient anxiety levels in difficult topic simulation-based learning activities (King et al., 2019). The initial research findings of this study as a baseline can provide future researchers with a starting point for continuing to research methods of safe simulation training and practice for standardized patients.

The lack of effect in this study on the trait anxiety scores of standardized patients in both difficult and non-difficult topic simulation-based learning activities could be indicative of a few factors. Farra (2019) identified little change in trait anxiety levels after a post disaster simulation training activity and contributed this to the understanding that one's own personal level of anxiety should not and does not frequently change based upon extrinsic circumstances. Trait anxiety is often a more static number which rarely changes as the genetic and societal experiences of the individual determine one's typical trait anxiety level's (Spielberger et al., 1983). One could further posit that since a difficult topic simulation-based learning activity is more of an infrequent occurrence and does not relate to the individual's personal psyche there will not be a change in trait anxiety.

The high level of state scores in this study could be indicative of a few factors. Research has initially indicated a correlation between mental health disorders and creative personalities (Thomson & Jaque, 2016) as well as a higher risk for mental health disorders such as depression and suicidal ideation. Additionally, according to Allison (2017) method acting a style of acting popularized and commonly used by actors needing to role play within more immersive roles can cause the brain to have difficulty sorting through what is real and what is imaginary. Eken (2019) discusses the implication that there is very little distinction between what is imaginary and what is real, which in turn could cause the actor in the role play to struggle with latent forms of trauma from higher levels of anxiety. Panero (2019) indicates a relationship between actors and boundary blurring where the actor has difficulty separating reality from the role play, if the role play is required to place themselves in high anxiety producing settings the actor will most likely experience this anxiety as if it is their own reality, contributing to an increase in state anxiety levels.

According to standards of best practice in simulation methodology (Lewis et al., 2017), safety in training and the learning environment is an ever-evolving standard. Research such as the study represented can provide more bases for future best practices in standardized patient training and methodology as it relates to increasing the safety of the learning environment for all participants of simulation. Conversely, this base in understanding of increased state anxiety levels and little to no change

in trait anxiety levels of standardized patients after difficult topic simulation-based learning can provide for further understanding of the types of anxiety which are more frequent after difficult topic simulation-based learning activities, and how to better support standardized patients post encounter.

Limitations

The primary limitation of this study is the limited amount of time in the difficult topic or non-difficult topic simulation-based learning activity experienced by participants in the treatment and control groups. The simulation for this study lasted on average from 5-10 min for both the difficult topic and non-difficult topic simulation-based learning activities. Long term exposure to highly immersive experiences could play a contributing role in increased anxiety levels. Panero (2019) indicates that boundary blurring, and dissociation can occur in actors who participate in method role play type acting. Therefore, there is some evidence that longer term exposure might have a greater effect on state anxiety levels of participants.

An external limitation of this study is that while standardized patient methodology is continuing to evolve and grow as simulation educators across the globe are working to define standards of best practice in training and standardized patient methodology (Lewis et al., 2017) there is still much that needs to evolve related to more consistent and standardized training across simulation programs. Currently most simulation programs develop, define, and refine their own training programs based on various educational and simulation methodologies picked up from other programs and simulation conferences. While appropriate for an emerging methodology in simulation education this could contribute to a high level of variability in the training of the standardized patient. This high variability means that some standardized patients might not be taught how to debrief and be aware of concerning factors in difficult topic simulation-based learning activities, while others might be taught coping mechanisms within this type of simulation, causing further variability amongst participants. This study included participants from 30 different simulation programs across the United States, all with different training methodologies and practices.

While difficult topic simulation-based learning is emerging as an important part of preparing healthcare profession students (Shikino et al., 2019) for transition to clinical practice there are some simulation programs which may have not yet integrated these types of simulation-based learning activities. Therefore, another external limitation of this study is that some standardized patients may have never experienced a difficult topic simulation-based learning activity at this level while other standardized patients involved in the study may have been through many difficult topic simulation-based learning activities prior to the study. This high variability amongst participants could contribute to an inaccurate understanding of how those exposed to difficult topic simulations versus those not as exposed vary in state and trait anxiety levels.

An internal limitation of this study is the lack of collection of data related to standardized patients' prior exposure to trauma in their personal lives. Simulation based learning can cause participants to experience a re-dress of latent trauma (Goh et al., 2016), which could play a larger role on standardized patient state and trait anxiety levels prior to and post simulation-based learning activity. No information was collected related to standardized patient's past experiences with the difficult topic chosen for the treatment group of this study. Past experiences related to this simulation could either cause an increase or decrease in the state and trait anxiety levels of participants, and although while not likely to be a contributing factor there could be some argument for latent trauma playing a role in the ability to cope or lack of ability to cope with the difficult topic addressed in the simulation.

Recommendations for Future Research

In regard to future studies, recommendations are as follows. More qualitative studies related to the topic of perceived experience in difficult topic simulation-based learning activities by standardized patients would help to add to the overall body of knowledge on standardized patients and their thoughts and feelings related to simulating difficult topics in simulation (Abelsson, 2019). This qualitative examination would allow researchers to continue to develop more quantitative studies related to this topic

and therefore develop better training and the cultivation and facilitation of safer learning environments for all participants of simulation-based learning activities.

One of the barriers to assessing anxiety levels in standardized patients is the lack of research related to standardized patient's experience in simulation-based learning activities (Jarosinski et al., 2016). While much research has been geared toward addressing the anxiety levels of student participants in simulation there is little research both qualitative and quantitative on the anxiety of standardized patients and simulation. Future research should include factors that influence increased anxiety levels in standardized patients and how to address these factors. If we can identify why anxiety is higher in difficult topic simulation-based learning activities for standardized patients (Sarikoc, 2018), then we can work to create practices which address and reduce the anxiety pre and post difficult topic simulation-based learning activity. Considering these references, the following ideas should direct future related research:

- Factors that influence increased state and trait anxiety levels in standardized patients.
- Why trait anxiety in standardized patients post difficult topic simulation-based learning activity does not seem to be as affected as state anxiety levels post encounter.
- What factors decrease both state and trait anxiety and how to mitigate these higher state and anxiety levels prior to simulation based learning activities as well as post encounter.
- How to better prepare standardized patients in difficult topic immersive simulation-based learning activities to deal with any long-term negative effects to standardized patients.
- How much difficult topic sim is responsible for causing an increase in anxiety amongst standardized patients and in turn find quantitative measures for this.
- Better knowledge of how to train and prepare standardized patient educators to train standardized patients in safe practices and coping mechanisms as well as how to appropriate debrief standardized patients post difficult topic simulation encounter.

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APPENDIX

Appendix A

Permission to Use Instrument

State-Trait Anxiety Inventory for Adults™

Instrument and Scoring Key

Developed by Charles D. Spielberger
in collaboration with R.L. Gorsuch, R. Lushene, P.R. Vagg, and G.A. Jacobs

Published by Mind Garden, Inc.

info@mindgarden.com
www.mindgarden.com

Appendix B

Letter of Interest (Institution and Simulation Educators)

[Insert Date]

[Recipient]
[Title]
[Company]
[Address 1]
[Address 2]
[Address 3]

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The title of my research project is Anxiety in Healthcare Actors Post Difficult Topic Healthcare Simulation-Based Learning Activity, and the purpose of my research is to provide a quantitative examination of the anxiety related effects of difficult topic simulation-based learning activities on standardized patients.

I am writing to request your permission to contact standardized patients within your organization to invite them to participate in my research study. Participants must be 18 years of age or older and have been a standardized patient for at least 1 year. Participants, if willing, will be randomly placed into either an experimental or control group for the simulation they will complete. After being sorted randomly into either the experimental or control group, participants will be asked to complete a demographic survey (5-min), learn a simulation case (30-min), participate in a telehealth simulation (15-min), and complete a final survey (10-20-min). It should take approximately 1hr and 20 minutes to complete the procedures listed. Participants' email and phone number will be requested as part of this study, but the information will remain confidential.

Participants will be asked to click on the link provided (click here) to sign up to participate in the research study. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please respond by email to spearce1@liberty.edu.

Sincerely,

Sarah E Pearce
Doctoral Candidate
School of Education Liberty University

Appendix C

Letter of Interest (Standardized Patients)

Dear Standardized Patient,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to examine the effects of simulation-based learning activities on the anxiety levels of standardized patients, and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older and have been a standardized patient for at least 1 year. Participants, if willing, will be randomly placed into either an experimental or control group for the simulation they will complete. After being sorted randomly into either the experimental or control group, participants will be asked to complete a demographic survey (5-min), learn a simulation case (30-min), participate in a telehealth simulation (15-min), and complete a final survey (10-20-min). It should take approximately 1hr and 20 minutes to complete the procedures listed. Your email and phone number will be requested as part of this study, but the information will remain confidential.

In order to participate, please click here

A consent document is provided after the screening questions and prior to the study survey. After you have read the consent form, you will be asked to sign the consent form by typing your name in a box to indicate that you agree to participate in the study. Doing so will indicate that you have read the consent information and would like to take part in the survey. Please click the link above to proceed to the screening questions.

Participants will be entered in a raffle to receive a $250 visa gift card.

Sincerely,

Sarah E Pearce
Doctoral Candidate at Liberty University

Appendix D

Demographic Survey Questions

Q3 Please place the name of the institution where you have been most active as a standardized patient below:

_____

Q4 Please select from the ranges below the answer that most accurately represents your years of experience as a standardized patient:

- ○ 1-5 years of experience (1)
- ○ 5-10 years of experience (2)
- ○ 10-15 years of experience (3)
- ○ 15-20 years of experience (4)
- ○ 20+ years of experience (5)

Q5 Please select your gender from below:

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer not to say (4)

Q9 Please select your ethnicity from below:

- ○ White (1)
- ○ Black or African American (2)
- ○ American Indian or Alaska Native (3)
- ○ Asian (4)
- ○ Native Hawaiian or Pacific Islander (5)
- ○ Other (please specify) (6) _____

Q6 Please enter your age in years below:

- ○ 18 - 24 (1)
- ○ 25 - 34 (2)
- ○ 35 - 44 (3)
- ○ 45 - 54 (4)
- ○ 55 - 64 (5)
- ○ 65 - 74 (6)
- ○ 75 - 84 (7)
- ○ 85 or older (8)

Q7 So that we may contact you and schedule a time for your participation in the research as well as send you the appropriate materials please provide the information below:

- ○ Email (1) _____
- ○ Phone Number (2) _____

Appendix E

Informed Consent

Title of the Project: Anxiety in Healthcare Actors Post Difficult Topic Healthcare-Simulation Based Learning Activity
Principal Investigator: Sarah E Pearce, M.S. Ed. CHSE, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age, have been trained as a standardized patient, and completed at least 2 simulation scenarios. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The purpose of the study is to determine anxiety levels in standardized patients who participate in simulation-based learning activities that involve difficult topics, such as death and dying, suicide, bad news, and violence.

What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Take a demographic survey that will collect information related to your age, gender, ethnicity, institutional affiliation, and years of experience as a standardized patient. This will take approximately 5 minutes to complete.
2. Upon completion of step 1 above, you will be randomly assigned into a control or experimental group.
3. Based on the group you have been assigned to, you will be sent a scenario to memorize as well as a video to watch regarding the case you are to memorize. It will take approximately 30 minutes to watch the video and to memorize the case.
4. You will then complete your simulation scenario. The simulation will take approximately 15 minutes to complete. You will not be recorded during the simulation.
5. After the survey, you will fill out a final digital survey. This survey will take approximately 10-20 minutes to complete.
6. Upon completion of the last survey, you will be released. The entire experience should take approximately 1.20 hrs.

How could you or others benefit from this study?

The direct benefit to participating in this study is the opportunity for you to gain continued experience as a standardized patient.

Benefits to society include the identification of procedures to assist standardized patients in reducing anxiety during difficult topic simulation-based learning activities, as well as the longevity of healthcare education acting as a best practice method of training healthcare profession students to care for the patients and clients they will serve.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential using pseudonyms and codes. Surveys and the simulation will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Does the researcher have any conflicts of interest?

The researcher serves as the Director of Simulation and the Standardized Patient Program at California Baptist University College of Nursing. To limit potential or perceived conflicts, participants will be randomly sorted into either the control group or treatment group based upon time of sign up. This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on his or her decision to participate in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or California Baptist University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please inform the researcher that you wish to discontinue your participation, and do not submit your study materials. Your responses will not be recorded or included in the study.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study Sarah E Pearce. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at [redacted] You may also contact the researcher's faculty sponsor, Dr. D. J. Mattson, at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu

Your Consent

By typing your name below, you are signing this document and as such you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. By typing my name below I consent to participate in the study.

[typed name]

Appendix F

Treatment Group Difficult Topic Simulation Case

Standardized Patient Simulation Case Study 1	
Physical Traits and Demographics	
Case Author:	Sarah E. Pearce
Patient Name:	Ryley Morris
Patient DOB:	1/15/XX
Patient Age:	30-60 *(Case adjusted based on declared age of SP)*
Patient Gender:	Male or Female *(Depending on declared gender of SP)*
Patient Clothing:	SP can wear normal everyday clothing
Vital Signs	
Heart Rate:	100 and irregular
Respiratory Rate:	22
O2Sat:	96% on room air
Blood Pressure:	98/58
Temperature:	99.1 F
Height:	TBD *(Based on SP)*
Weight:	TBD *(Based on SP)*
Patient [Standardized Patient] Opening Statement	
Potential Provider Statement: "What brings you here today" or "How can I help you today" **Patient Response: "**I am here to get the results of my last labs and to check in regarding my cancer treatment for Stage IV Pancreatic Cancer."	
Emotional State	
During the simulation you will be highly emotional. When the provider goes over your terminal diagnoses with you, you will need to cry and become heavily distraught at what they are saying.	
Presenting Problem	
Six months ago, you were informed that you had Stage IV Pancreatic Cancer. You have been going through aggressive chemotherapy treatments in an attempt to fight the rapidly spreading cancer. Chemotherapy has been hard on you as you have been dealing with constant nausea, vomiting, and diarrhea. 2-weeks ago you were admitted to the hospital and were diagnosed with acute renal failure and were discharged 3 days ago. You are here today to follow up with your primary care provider to discuss your next options and to check in regarding your latest labs and the progress of the chemo in fighting the cancer.	
History of Complaint	
Six Months Ago: You were diagnosed with stage 4 Pancreatic Cancer after having an exploratory laparotomy where they took a tissue sample of your pancreas and found that the biopsy was positive for stage 4 Pancreatic Cancer. Your primary care provider immediately set you up with an appointment to speak with an oncologist who recommended you for aggressive chemotherapy as the cancer was too advanced for surgical removal as an option.	

You were referred to a cancer clinic and started receiving chemo once a week.

Two-Weeks Ago:
Even though you have been nauseated, tired, had a loss of appetite and vomiting almost constantly during chemo treatments, you noticed that your symptoms of nausea and vomiting were increased so you went to the ER (Emergency Room) where they admitted you into the hospital and diagnosed you with acute renal failure.
You were in the hospital for a total of 11 days.

Current:
You were discharged from the hospital 3 days ago with acute renal failure.
You have been receiving chemo treatments once a week for the past 6-months
You have finished your final chemo treatment and now you are following up with your primary care provider to discuss your lab results and the progress of the chemo and your next steps.

Past Medical History

Six-Months Ago:
Exploratory Laparotomy to take a biopsy of the pancreas.
Diagnosed with Stage 4 Pancreatic Cancer after Exploratory Laparotomy.

Two-Weeks Ago:
Diagnosed with Acute Renal Failure after being admitted to the hospital with extreme nausea, vomiting, and diarrhea.

Family History

Mother: High blood pressure managed with medication.
Father: Healthy.
Siblings: You are an only child.
Children: You have 2 daughters. Ella (age 7) and Christine (age 8). They are both healthy.
Maternal Grandparents: Died in a car accident before you were born.
Paternal Grandparents: Your dad's father died of a heart attack 2 years ago. Your dad's mom is healthy other than sciatica and lives in Florida in a retirement community.

Social Profile

Marital Status: Married
Sexual Relationship: Significant Other
Sexual Orientation: Heterosexual
Sexual Activity: You are sexually active with your significant other, but since starting chemotherapy you have not been sexually active.
Religious Views: No Preference
Level of Education: Master's Degree in Education
Occupation: You used to be a high school math teacher before chemo treatments
Socioeconomic Level: Middle Class
Living Situation: You currently live in your house with your significant other and daughters.
Allergies: No allergies
Tobacco: You don't smoke.

Illegal or Illicit Drugs: You don't use any illegal or illicit drugs.
Alcohol: You gave up drinking when you started chemo, but you used to enjoy 1 glass of red wine every evening.
Prescription Medications: Ativan (2 mg pill at bedtime for anxiety). Avinza (30 mg pill every 23 hours). Bisacody (10 mg suppository every other day). MS Contin (60 mg pill every 8 hours).
LMC (If Female): Your last menstrual cycle was 2 weeks ago and it was normal.

Special Instructions

When the primary care provider tells you that unfortunately the cancer is not responding to the chemotherapy and that you only have a few months left to live and that at this point they would like to refer you to hospice care, you will begin to cry and ask the following questions:
"What does this mean?"
"Are you sure there are no more options?"
"I am not ready to go, I have a [husband/wife] and two daughters, does this mean that I will never get to see them graduate college or get married."
"How am I supposed to tell my family?"
"I just don't understand how this happened...Are you sure there is nothing else I can do, I still want to fight this..."

***Please Note**: You can ask other questions at this point that may occur naturally to you based on your own understanding of this patient, and their emotional response to the news from the provider.*

Treatment Group Difficult Topic Simulation Case Provider Script/Outline

Provider:
Hello my name is Dr. Johnson and I will be your provider today. Can you tell me your name and date of birth?
Patient:
Responds based on case
Provider:
So I see that you are here today to receive the results of your labs related to your treatment for your diagnosis of Stage 4 Pancreatic Cancer is that correct?
Patient:
Responds based on case
Provider:
The results came back and I am very sorry to give you this news but the treatment is no longer working, and unfortunately the cancer has progressed to a point where it is no longer treatable.

Provider answers if they ask the following questions:
Patient: What does this mean?
Provider Response: What this means is that the cancer has spread too far and is too aggressive and is not responding to the chemotherapy, and at this point we would like to refer you to hospice care.
Patient: How long do I have to live?

Provider Response: It is hard to say but our best estimate is 3-4 months.
Patient: Are you sure there are no more options?
Provider Response: Unfortunately at this time our best option is to refer you to hospice care, who can get you set up with options for pain management and can assist you with this transition.
Patient: I am not ready to go, I have a husband/wife and two daughters, does this mean that I will never get to see them graduate college or get married?
Provider Response: I am so sorry, I know this was not the news you were hoping for, there are resources through hospice and some that we can give you before you leave today to help you and your family process this difficult news.
Patient: How am I supposed to tell my family?
Provider Response: Again I am so sorry, I know this is very difficult and there must be so many emotions and thoughts going through your head, the agency we are going to refer you to will be able to, if you want, help you set up a time to break this news to your family with counselors present, who can assist you all in processing this, as well as answering any questions you might have about next steps.
Patient: I just don't understand how this happened...Are you sure there is nothing else I can do, I still want to fight this...
Provider Response: At this point we have exhausted all of our options, and the team has decided that there are no further treatment paths we can take.

For any unanticipated questions:
The general purpose of the provider is to help console the patient as they receive this bad news. As the patient asks questions the provider should continue to console the patient and let them know that they completely understand how difficult this is, but that the referral to hospice will provide them with helpful resources during this difficult time.
At the end of the encounter the provider should ask the patient if they have any further questions and then answer those questions
The provider should end the visit by saying that they will be giving hospice their information and that hospice will be contacting them regarding next steps, but that they can reach out to the clinic at any time should they have any other questions.

Appendix G

Control Group Non-Difficult Topic Simulation Case

Standardized Patient Simulation Case Study 1	
Physical Traits and Demographics	
Case Author:	Sarah E. Pearce
Patient Name:	Adrian Johnson
Patient DOB:	1/15/XX
Patient Age:	30-60 *(Case adjusted based on declared age of SP)*
Patient Gender:	Male or Female *(Depending on declared gender of SP)*
Patient Clothing:	SP can wear normal everyday clothing
Vital Signs	
Heart Rate:	76 and regular
Respiratory Rate:	12
O2Sat:	99% on room air
Blood Pressure:	142/89
Temperature:	98.6 F
Height:	TBD *(Based on SP)*
Weight:	TBD *(Based on SP)*
Patient [Standardized Patient] Opening Statement	
Potential Provider Statement: "What brings you here today" or "How can I help you today" Patient Response: "I have had a bad sore throat and a dry cough as well as a stuffy nose over the last week, and it's just not going away."	
Emotional State	
During the simulation you will behave normally. You are not stressed you just don't like the sore feeling you have in your throat. You can hold a tissue during the simulation and dry cough a couple of times, nothing major, just like a normal mild cold.	
Presenting Problem	
5 days ago you started getting a sore throat and then the past day you felt like you were getting a fever because you felt your head and it felt warm. You have noticed that you have been having some body chills and aches at night as well as a stuffy nose and a dry cough.	
History of Complaint	
5-Days Ago: You woke up with sore throat. (3/10 on the pain scale) You didn't have any trouble swallowing or eating food your throat was just sore. You didn't take anything you just tried to sleep it away, but you went to work that evening because you didn't want to take a sick day, because you figured it would go away soon. You also noticed that you had a stuffy nose. **3-Days Ago:** You still had the sore throat but you also noticed that now you had a dry cough (when you cough nothing comes up) – your cough is not painful You still didn't take anything for it because you try to avoid taking medication.	

You decided to take the day off to hopefully sleep some extra hours and beat the cold.

Current:
You started noticing yesterday that you felt like your sore throat was a little better but your cough was more often, and now you had a runny nose.
You came in today because you started feeling like you were getting a fever as you felt your forehead and it felt warm, as well as having some body aches and chills during the night.
You just aren't getting better and you were hoping that you could get some antibiotics so that you could get feeling better and get back to work, because you can't really afford to be off of work anymore.

Past Medical History

No histories of any past surgeries or medical problems.

Family History

Mother: Healthy
Father: Your dad has bad allergies to pollen and dust but other than that he is healthy.
Siblings: You are an only child.
Children: You don't have any children.
Maternal Grandparents: Your mom's dad has diabetes type 2 and high blood pressure. Your mom's mom had a stroke 3 years ago and now lives in an assisted living facility.
Paternal Grandparents: Your dad's father died of lung cancer 10 years ago. Your dad's mom died of a heart attack 3 years ago.

Social Profile

Marital Status: Single
Sexual Relationship: Single
Sexual Orientation: Heterosexual
Sexual Activity: You are not sexually active
Religious Views: No Preference
Level of Education: High School Diploma
Occupation: You work as a late-night shelf stocker in a grocery store.
Socioeconomic Level: Middle Class
Living Situation: You currently live in an apartment by yourself.
Allergies: You are allergic to pollen and dust but you don't take anything for it.
Tobacco: You don't smoke.
Illegal or Illicit Drugs: You don't use any illegal or illicit drugs.
Alcohol: You will drink on the weekends with your friends (maybe have a 1 or 2 beers)
Prescription Medications: No prescription medications.
LMC (If Female): Your last menstrual cycle was 2 weeks ago and it was normal.

Exam Results/Instructions

Palpation:
They may feel around your neck and head, as well as your abdomen. You can allow them to do this. – You can state that there is no swelling or pain when you push on your neck, head, throat, or any other areas on your head.

Eyes, Ears, Nose, and Throat:
They may ask you to take out your phone and shine it up your nose and you throat you can allow them to do this.

Special Instructions

You just want to get your medications and get off of the call so you can watch TV and sleep.

Control Group Non-Difficult Topic Simulation Case Provider Script/Outline

Provider: Hello my name is Dr. Johnson and I will be your provider today. Can you tell me your name and date of birth?
Provider: What brings you here today?
Provider: Okay can you tell me when you started getting the sore throat and dry cough?
Provider: If you had to rate the sore throat on a scale of 0-10, 0 being no pain at all and 10 being the worst pain you have ever felt what would you rate it at?
Provider: When you cough does anything come up?
Provider: Are you having any trouble swallowing or eating food due to your sore throat?
Provider: Have you taken anything for your throat or your cough?
Provider: Any other symptoms other than the sore throat and cough?
Provider: Is the cough painful?
Provider: Have you had a fever at all?
Provider: What is your mom's health like?
Provider: What is your dad's health like?
Provider: Do you have any siblings?
Provider: Do you have any children?
Provider: Can you tell me about your grandparent's health history on both sides?
Provider: What is your occupation?
Provider: What is your current living situation?
Provider: Do you have any allergies?
Provider: Do you take anything for your allergies?
Provider: Do you smoke any Tobacco products?
Provider: Do you use any illegal or illicit drugs?
Provider: Do you consume alcohol?
Provider: Are you on any prescription medications?
Provider (If Female and of appropriate age): When was your last menstrual cycle?
Provider (If Female and of appropriate age): What was your last menstrual cycle like?

Provider Physical Exam Guide:
Provider: I am going to go ahead and do a physical exam, and since this is a telehealth visit I am going to ask you to help me out with that okay?
Provider: Can you please take your hands and fill all around your neck and let me know if you notice any swelling or pain.
Provider: Can you take out your phone and use your flashlight and get as close to the camera and shine it up your nose so I can see.

Provider: Okay can you shine the light in your throat and get as close to the camera so I can see as well.

Provider answers if they ask the following questions:

Patient: I was hoping to get some antibiotics because this is affecting my work schedule.
Provider Response: So once we finish the full exam based on what we find we will determine if antibiotics are the best course of treatment for you.

End of Encounter:

Provider: Okay so I have concluded my physical exam and from what I can see you do have some redness in the back of your throat from the post nasal drip you are experiencing. At this point I do not see anything of concern that merits you coming in for any further labs or exams, so I am going to prescribe you rest, lots of fluids, as well as recommending that you purchase some throat lozenges for your sore throat which should help to soothe the area. If your symptoms worsen please feel free to contact us at the clinic to schedule another appointment. I will also email you an off-work order for the next 3 days so that you can get some rest.
Provider: Do you have any further questions for me? – *answer questions as needed*
Provider: Have a nice rest of your day and I hope you feel better soon.

Appendix H

Simulation Training Video Transcript's

Transcript of video instructions for Difficult Topic Simulation

Hello, thank you for agreeing to be part of this research study. The following video will provide you specific instructions regarding the portrayal of the patient you will be simulating. When portraying the character for this simulation your goal is to portray a high emotional level, the character for this simulation requires that you appear to be distraught regarding your diagnoses. You should cry when receiving the news regarding the terminal diagnoses and express strong feelings of dismay. You can also appear to be tired and generally not feeling well. Please refer to the case for more specifics regarding questions related to your case.

Transcript of video instructions for Non-Difficult Topic Simulation

Hello, thank you for agreeing to be part of this research study. The following video will provide you specific instructions regarding the portrayal of the patient you will be simulating. When portraying the character for this simulation your goal is to portray it in a straightforward manner, the character for this simulation does not require any specific intense emotions. You can cough several times during the simulation for the addition of realism. You may also blow your nose in a tissue 1-2 times during the simulation. Your pain is minimal and should not be exaggerated. You are simply here to share your symptoms and receive treatment for the symptoms you share. Please refer to the case for more specifics regarding questions related to your case.

Appendix I

IRB Permission/Approval Letter

Date: 2-5-2022

IRB #: IRB-FY20-21-539
Title: ANXIETY IN HEALTHCARE ACTORS POST DIFFICULT TOPIC HEALTHCARE SIMULATION-BASED LEARNING ACTIVITY
Creation Date: 1-20-2021
End Date:
Status: Approved
Principal Investigator: Sarah Pearce
Review Board: Research Ethics Office
Sponsor:

Study History

Submission Type Initial	Review Type Exempt	Decision Exempt

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