Is Video-Playback in Simulation, after Verbal Debriefing, Associated with Changes in Nursing Students' Reflection, Communication and Anxiety Level?

by

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ABSTRACT

Educational activities such as simulation, that promote the transfer of knowledge from theory to practice, are recognized as effective learning strategies by nursing educators. Debriefing that takes place after a simulation session contributes to the knowledge gained by students and can include video-playback review. Very few studies have examined the impact of video-playback review following the simulation and debriefing session. This quasi-experimental study asked the following question: Is video-playback in simulation, after verbal debriefing, associated with changes in nursing students' reflection, communication and anxiety level? Kolb's experiential learning theory provided the lens for this research. Findings from this study suggest that oral debriefing alone from a facilitator might have an impact in relation to students' perceptions of their reflection, communication skills and anxiety levels.

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DEDICATION

I would like to thank my parents who, from the start of my nursing career, have encouraged me to continue to learn. Their work ethic guided me through this arduous but fulfilling work. To my family, who were always encouraging and cheered me on. To my friends and neighbors who lent a hand whenever I needed to work “a few more hours” on a paper. Lastly, to my husband Dave who never complained when I left on many weekends to finish homework, took great care of our kids and reread many papers for me. It was a long journey and could not have gotten though this without you. Thanks for putting up with me! To my children, Dominique and Jonas, who won’t need to ask anymore “Are you still doing homework?” I hope I set a good example.

I would like to dedicate this work to my brother Claude, a devoted teacher with a big heart and a funny guy. I would have loved to share this with you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Chapter One: Introduction to the problem

Today's healthcare environment demands that nurses be competent in caring for acutely ill patients in a variety of settings. Increasingly, new graduate nurses need to have the knowledge and skills to care for patients with complex medical problems earlier into their careers (Benner, Sutphen, Leonard & Day, 2010; Goode & Williams, 2004). The healthcare environment is further troubled by national nursing shortages, increased patient acuities as well as reports of increased medication errors, and consequent concerns for patient safety. This situation demands that nursing educational facilities prepare nursing students for an ever changing and challenging workforce (Neill & Wotton, 2011; Norman, 2012).

Shinnick, Woo and Mentes (2011) describe the gap between "…nursing practice and the education of nurses for that practice" (p. 65). Others concur and recognize the weaknesses in the current models of healthcare education to address this gap (Benner et al., 2010; Herm, Scott & Copley, 2007). In addition, competing and increased demands for clinical placement sites which have fueled the need to find alternate teaching modalities that better prepare nursing students for the workforce (Grant, Moss, Epps & Watts, 2010; Swenty & Eggleston, 2010).

This situation has provided the opportunity for nurse educators to recognize and embrace simulation as an effective and established pedagogy (Cantrell, 2008; Issenberg, Ringstead, Ostergaard & Dieckman, 2011; Jeffries, 2012; Neill & Wotton, 2011). Its importance as a teaching strategy has been further reinforced by the National Council of State Boards of Nursing's recent study which revealed that simulation can replace up to 50% of clinical time. The study demonstrated that "…learning that occurs in simulation does transfer to the clinical setting" (Hayden, Smiley, Alexander, Kardong-Edgren & Jeffries, 2014, p. S37). Within

Canada, simulation as a teaching strategy is further supported by the Canadian Association of Schools of Nursing (CASN, 2014) and the Canadian Nurses Association (CNA, 2013). Both support the use of simulation as an integral part of the training of students to ultimately improve patient outcomes.

Background

Simulation is described as "…involving a student or group of students providing care for a patient who is represented by a manikin, an actor, or an SP [standardized patient], depending on the clinical situation" (Jeffries, 2007, p.3). Meakim et al. (2013) describe simulation as "A pedagogy using one or more typologies to promote, improve, or validate a participant's progression from novice to expert" (p. S9). Bland, Topping and Wood (2010) state that simulation engages the student in an active learning environment, promotes creative thinking and integrates practical and theoretical learning within the simulation activity. The simulation experience is meant to provide a safe learning milieu where mistakes are corrected and discussed all while mimicking real clinical experiences. Students should engage with the patient, be it a mannequin or SP, and provide care without exposing real patients to risks. This technique calls for a more learner centered approach that includes participation and interaction (Bland et al., 2011, Dreifuerst & Decker, 2012).

The International Nursing Association of Clinical Simulation in Learning (INACSL Standards of Best Practice: Simulation ^{SM}, 2015) has developed standards of best practice for simulation activities. These guidelines provide the most current evidence on how to best implement simulations activities within nursing curricula. Within these standards, the importance of debriefing has been well documented (Dreifuerst, 2009; Dreifuerst, Horton-Deutsch, & Henao, 2014; Lasater, 2007; Neill & Wooton, 2011; Reed, Andrews & Ravert,

2013; Waxman, 2010; Waznonis, 2015) as it promotes both critical and reflective thinking (Dufrene & Young, 2014). Shinnick, Woo, Horwich and Steadman (2011) maintain that debriefing brings the biggest contribution in terms of knowledge gain for students.

Fowler (2008) describes debriefing as a teaching strategy. Following a simulation, educators who act as facilitators, ask participants to reflect on their performance as well to provide feedback to one another. Jeffries (2014) states that debriefing should not become a "…teacher centered lecture" but utilized to transfer theory to practice (p.45). Facilitators who have participated in the simulation provide a safe environment for learners that supports open communication and self-reflection (Decker et al, 2013).

Dreifuerst (2009) contends that the main attributes of debriefing include reflection, having emotional release, receptivity to the feedback given, integration of the experience and assimilation, and maintains that the attributes of assimilation and accommodation are the ultimate goals of debriefing. Primarily, these attributes seek to promote insight, which leads to the uncovering of new knowledge that can subsequently be applied to new situations (Dreifuerst, 2015; Herm et al., 2007). Students value the debriefing process as facilitators can guide them through meaningful discussions of their previous actions and decision making (Thidemann & Söderhamm, 2013).

Reflection is inherently tied to the debriefing process (Grant et al., 2010). A first endeavor to define the concept of reflection was undertaken by philosopher John Dewey. According to Rogers (2001), Dewey's interpretation is that reflection is a cognitive process, an active engagement, as well as an exploration of beliefs and assumptions that may affect how one responds to a situation. Schön further examined the importance of the concept of reflection within professional education (Kolb, 1984). Coining the terms "reflection-in-

action" and "reflection-on-action", he recognized that reflection takes place during an activity as well as after an activity. Within nursing education, Scanlan and Chernomas (1997) differentiated the two by likening reflection-in–action to reflection that takes place in the clinical setting, whereas reflection-on-action is more applicable to a classroom setting. Reflection–in-action and reflection-on-action work hand in hand as an opportunity to reexamine the experience within a simulation session. Students are asked to make decisions during their simulation session and then subsequently contemplate and openly discuss the reasons for those decisions.

Research confirms that students who demonstrate better reflective qualities are able to provide better patient-centered care (Dreifuerst & Decker, 2012; Scanlan & Chernomas, 1997). Murphy (2004) also writes that: "…reflection enhances learning by reducing error rates, correlates with self-regulation and positively affects learning" (p.227). These positive outcomes of reflection on nursing practice reinforce the importance of the integration of this concept within simulation activities. As Olson (2013) maintains, debriefing uses reflection to develop learning.

Within the simulation-based literature, the optimal format for debriefing continues to be debated and explored (Grant, Dawkins, Molhook, Keltner & Vance, 2014; Sawyer et al., 2012). In a systematic review by Levitt-Jones and Lapkin (2014) on the effectiveness of debriefing methods in healthcare education, findings are not yet conclusive in relation to the best method to debrief. This may be partly attributed to the reporting of insufficient details of the debriefing such as the length of the debriefing, and the number of participants involved in the simulation or the debriefing session. Cheng et al. (2014) found similar results in their

systematic review and meta-analysis. Debriefing characteristics are poorly described within the literature.

While there are many forms of debriefing methods, much attention has been on video-assisted debriefing (VAD). Historically, VAD has been used immediately following the simulation. In contrast, Couper and Perkins (2013) cite that debriefings can occur post-event and much later. They refer to this as cold debriefing. Jiang, Zhao, Chen, Chen, and Yang (2010) debriefed weekly utilizing videos to assess CPR skills in emergency rooms. They found that there were significant improvements in the quality of CPR provided. Shellenbarger and Hagler (2015) also point that students should have the opportunity to watch their video even if it cannot be done during debriefing. They suggest that other methods of reflection, such as journaling, can be incorporated while watching the video.

Videos provide accurate and valuable information to assess certain behaviors or competencies such as student performance, when accompanied with verbal discussion (Megel, Bailey, Schnell, Whiteaker & Vogel, 2013). Uses of VAD include assessing technical and nontechnical skills (Couper & Perkins, 2013; Jiang et al., 2010; Teherani, Hauer & O'Sullivan, 2008), communication and team skills (Brimble, 2008; Cheng et al., 2014) and student satisfaction (Tosterud, Hedelin & Hall-Lord, 2013). Waznosis (2015) discovered that less than 50% of baccalaureate nursing programs utilize VAD and that there are substantial differences in VAD application. There does not seem to be a standardized approach according to Gore, Van Gele, Ravert and Mabire (2010). They discovered that video recording and mandatory student reviewing of their videos occurs much less frequently in the United States than other countries.

Interestingly, the literature reports variable findings on VAD as an effective teaching tool to enhance learning in simulation (Byrne et al., 2002, Cheng et al., 2014, Levitt-Jones & Lapkin, 2014). Some studies have shown that VAD has been effective in knowledge retention (Chronister & Brown, 2012), improved skill performance (Hamilton et al., 2012) and performing desired safety behaviors (Grant et al., 2010). In contrast, other studies have demonstrated negligible effects when comparing VAD during debriefing versus oral debriefing (Cheng et al, 2014; Savodelli et al., 2006). Both Sawyer et al. (2012) in their study which evaluated neonatal resuscitation and Savodelli et al. (2006) which evaluated non-technical skills among anesthesia students, demonstrated that the addition of video during the debriefing did not improve technical or non-technical skills.

A common learning outcome within a simulation experience is the assessment of communication skills. Communication skills play an integral part in providing quality nursing care (Mullan & Kothe, 2010). There is considerable literature that questions the effectiveness of nursing students' communications skills and how well this skill is being explained and evaluated (Foronda, Gattamorta, Snowden & Bauman, 2014; Kameg, Howard, Clochesy, Mitchell & Suresky, 2010; Mullan & Kothe, 2010; Peterson, Calhoun & Rider, 2014; Rosenzweig et al., 2008). Development of communication skills can now be effectively taught using methods other than lecture and theory modalities. Videos can offer a means to effectively assess this skill by nursing students and simulation facilitators. For example, the literature has provided evidence that student self-efficacy skills in assessing communication skills have improved with VAD (Alinier, Hunt, Gordon & Harwood, 2006). McKenna, Innes, French, Steitberg and Gilmour (2011) evaluated history taking skills of first year nursing students by reviewing video recordings. Students expressed satisfaction with

the video-recording process as it provided great insight into the mistakes being made, allowing them to reflect on their performance.

Anxiety continues to play a role in how students perceive the simulation experience and its impact on learning. Nielson and Harder (2013) tell us that "The simulation experience provokes varying levels of anxiety in participants" (p.e1). They indicated that being video recorded appeared to be the most anxiety provoking activity for students. In contrast, Gordon and Buckley (2009) disclosed that students valued being videotaped and reviewing their performance. These reflections demonstrate how videos can enhance or diminish performance and the need for further studies.

Substantial research has been devoted to VAD and its impact on student learning. Despite the literature providing many examples of how debriefing and videos have been utilized, there is a paucity of research on the possible effects of having students watch their performance video after the debriefing session has occurred and if it would improve learning outcomes. It has been suggested that other ways of debriefing such as "…Self-debriefing … alongside multimedia resources…" might become a more effective way to debrief (Levett-Jones and Lapkin, 2014, p. e63). In view of the current literature, the influence of video-playback after debriefing, on the outcomes of communication, reflection and anxiety was the focus of the present study.

Purpose of the study

The purpose of this quasi-experimental design study was to address the following question: Is video-playback in simulation, after verbal debriefing, associated with changes in nursing students' reflection, communication and anxiety level? The learning outcomes of communication, reflection, as well as anxiety levels were measured.

Hypothesis

The hypotheses addressed were as follows:

Hypothesis 1: Video-playback, after verbal debriefing, will increase students' perception of their reflection abilities versus debriefing alone.

Hypothesis 2: Video-playback, after verbal debriefing, will increase students' perception of their communication skills versus debriefing alone.

Hypothesis 3: Video-playback, after verbal debriefing, will increase students' anxiety versus debriefing alone.

Significance of the study

The use of simulation to support nursing students has grown exponentially in the last ten years (Tiffany & Hoglund, 2014). Simulation provides the opportunity to acquire essential skills in a safe learning environment. The integration of video-playback during debriefing offers many opportunities for learners to reflect on their practice, to re-frame their learning and apply newly learned concepts to the clinical settings. However, it is unclear how to best integrate videos within debriefing (Levett-Jones & Lapkin, 2014). The results of this study will add to the body of simulation research on the use of video- playback after the debriefing and its effectiveness as a teaching and learning strategy among undergraduate nursing students. The results will contribute to the body of literature on the development of best practice guidelines for effective debriefing techniques.

Guiding Framework

Kolb's experiential learning theory (ELT) provided a lens for this study and is often referenced within nursing simulation education (Bland et al., 2011; Davis, Josephson &

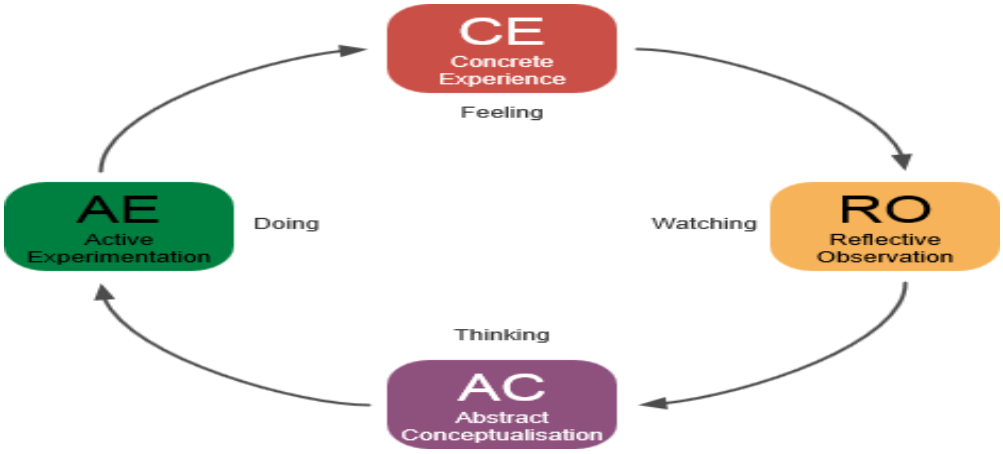
Macy, 2012; Gardner, 2013; Jeffries, 2012). Kolb's (1984) defines learning as "… the process whereby knowledge is created through the transformation of experience" (p.38). A core component of Kolb's ELT model includes the learning circle which demonstrates that you must grasp and transform an experience to learn (*Figure 1).* The learning circle consists of four different kinds of abilities that are required from learners, if they are to be effective. These are termed concrete experiences, reflective observation, abstract conceptualization and active experimentation abilities (Kolb, 1984).

Jeffries (2012) provides a sound analysis of how the application of the learning circle complements simulation activities. She indicates that concrete or real-life experiences require reflective examination. This reflection requires the learner to look for meaning and understanding of the experience that can be applied to future actions. Simulation can provide the concrete experiences whereas the debriefing allows the learners to reflect on their performance (Zigmont, Kappus & Sudikoff, 2011).

From an experiential perspective, Kolb (1984) describes learning as a process that involves more than learning a set of facts. It requires a continual process of learning and relearning. As Wang (2011) writes, "The ability to understand how past experiences affect future practice is necessary for individuals to effectively improve their performance" (p.673). Kolb believes students need to play an active role in their learning. Kolb (1984) assumed as did Paulo Friere, an educator, that depositing knowledge, as you would money in a bank, controlled students and limited their own creative process. Friere posits that students must not be passive or act as spectators in a classroom but actively participate so that they become more aware and reflective about what they are learning (Friere Institut, 2016).

For this study, Kolb's ELT theory informed the process of reflection as the necessary action that must take place in order to learn from one's experiences. Through reflection and experience, one can apply new knowledge and develop frames of reference. This process is cyclical and must occur if one is to continue to expand their learning (Jeffries, 2014).

Figure 1: Guiding Framework- The four steps of Kolb's cycle



Source: https://en.wikipedia.org/wiki/File:The_Four_Steps_in_Kolb_Cycle.svg

Definitions

According to Meakim et al. (2013), consistent terminology allows for knowledge and ideas to be clearly communicated. Polit and Beck (2011) also encourage researchers to provide clear definitions of the terms and/ or constructs of the study. The key terms are defined in the following section.

Simulation. A pedagogy that allows clinical situations to be mimicked without the potential of harming patients, allowing the students to make decisions and reflect on their practice (McAllister et al., 2013).

Debriefing. An activity, led by a facilitator, which follows a simulation experience. It is described by Dreifuerst (2009) as a process whereby students re-examine the clinical encounter. In order for effective debriefing to occur, the author assigns the following attributes to the process of debriefing must occur: reflection, facilitating emotional release, reception to the feedback, integration and assimilation.

Video assisted debriefing (VAD). Debriefing that occurs with the playback of videos to review student performance. VAD usually occurs directly following a simulation (Chronister & Brown, 2012).

Communication. For the purpose of this study, communication refers to all skills, verbal and nonverbal that can be utilized by nursing students to promote therapeutic care. McCorry and Mason (2011) state that this type of communication is essential in order "…to advance the patient's well-being and care" (p.4).

Reflection. According to Rogers (2001) and Atkins and Murphy (1993), reflection is described as a process which includes: awareness of uncomfortable feelings or identification of a problem, collecting data or critically analyzing the situation, and lastly, taking action or developing a new perspective.

Anxiety. This concept has been described as varying degrees of uneasiness or discomfort (Szpak & Kameg, 2013).

Conclusion

Although there is much empirical research concerning debriefing, it is still unclear what the best format is for debriefing and if utilizing videos during debriefing improves learning outcomes. Specifically, there has been limited research in the area of video-playback after a debriefing session. Chapter one provided a background and rationale for the study as well as

explaining key constructs. The following chapters will include a literature review, an explanation of the methodology, analysis of the data, discussion of the results and a conclusion.

Chapter two: Literature review

This chapter summarizes theoretical and empirical literature surrounding the major concepts of this study which include: simulation, debriefing, video-assisted debriefing, communication, reflection, and anxiety. The literature review for this study comes from the following respective databases and focused on data within the last five to ten years: Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCOhost, PubMed, Scopus, Google Scholar and ProQuest Dissertation and Theses. Key search terms included "simulation", "debriefing", "oral debriefing", "video debriefing", "video assisted debriefing", "video-playback", "reflection", "anxiety", "communication", "nurs*" and "nursing education". A manual search of published books on simulation as a pedagogical strategy was also performed within education, nursing education and its use.

History of Simulation

The origins of simulation are deeply rooted in the field of the aviation industry. The need for a flight simulator was developed in 1910, a year following the first fatal plane crash (Gardner, 2013). The purpose of simulation at that time was to bridge the gap between knowledge and the application of skills to limit further errors and loss of life. In 1911, at Hartford Hospital Training School, Mrs. Chase made her appearance as the first mannequin to be utilized within a nursing program (Hyland & Hawkins, 2009, Skrable & Fitzsimmons, 2014). This life sized mannequin served to provide students with an opportunity to practice clinical nursing skills. In the 1960s, the introduction of Resusci-Anne followed to assist students in learning cardiopulmonary resuscitation.

Increasingly, technological advancements have led to the inception of low, mid and high-fidelity mannequins (Hyland & Hawkins, 2009). Low fidelity mannequins are considered

static and are used primarily for skill acquisition within the nursing laboratory. They do not provide any physiological feedback but are anatomically correct. Mid fidelity mannequins provide a higher level of realism, yet are still limited in their capacity. They can, for example, provide heart and lung sounds however the chest wall does not rise. High fidelity mannequins provide students with the most realistic scenario where they have physiological components that mimic real life such as eyes that can blink and a chest wall that rises (Jeffries, 2007). According to Tosterud et al. (2013), students appear more genuinely interested when high fidelity simulators (HFS) are utilized. Students are more enthused and invested when the simulation is lifelike, which HFS can mimic better. Similarly, Anderson and Nelson (2014) suggest that high fidelity simulations offer more complex environments, where students can potentially develop more effective communication skills. The inclusion of high fidelity simulations in nursing curricula continues to grow and fits well with a generation of students who navigate technology easily (Harder, 2010).

Simulation and Nursing Education

The need for simulation within nursing education arises from several factors which include increased incidences of patient safety and medical errors, a lack of clinical placement sites (Swenty & Eggleston, 2011), and fewer clinical hours and faculty shortages (Norman, 2012). Benner et al. (2010) have outlined the importance of "…connecting the classroom and clinical through integrative teaching and learning" (p.155) and have documented that there is a divide between theory and practice. These authors propose that simulation offers students a controlled and safe environment suitable for developing critical thinking skills and reasoning.

Over the last 10 years, nursing schools have embraced simulation and continue to do so (Shinnick et al., 2011; Waxman, 2010; Waznosis, 2015). Simulation offers many advantages which include providing students with different clinical experiences, becoming familiar with the equipment used in the clinical setting (Swenty & Eggleston, 2011), and employing scaffolding activity throughout the curriculum (Kuiper, Heinrich, Matthias, Graham & Bell-Kotwell, 2008), as well as evaluating learning outcomes (Fay-Hillier, Regan and Gordon, 2012). These examples demonstrate how simulation can be applied within nursing curricula, however, nursing educators also question teaching and learning practices related to simulation (Hyland & Hawkins, 2009). Therefore, more research should focus on the pedagogy surrounding simulation and best ways to integrate this tool, specifically concerning debriefing practices (Gore, Van Gele, Ravert & Mabire, 2012) as well as the integration of video recordings.

Debriefing

Historically, debriefing practices originated in the military. In its inception, debriefing had a negative connotation whereby the focus was on errors and unconstructive feedback (Gardner, 2013). Missions were scrutinized for what went wrong. This led to feelings of resentment and therefore debriefing was poorly received by the military personnel. Since that time, the military has transformed this practice to a more reflective and non-punitive exercise whereby personnel can openly discuss their actions (Gardner, 2013) and are better able to strategize and prepare for future operations (Pearson & Smith, 1986). Similarly, the aviation industry has integrated debriefing practices into their training programs as a way to assess crew performances to not only include pilots but other personnel such as flight attendants, air traffic controllers and maintenance personnel (Gardner, 2013).

In the 1980s, debriefing the critical incident was first developed by Mitchell, a paramedic, who assisted in a deadly car crash. Realizing this situation caused him much distress, he sought to develop a debriefing model that would assist in processing and overcoming these highly traumatic events. This special type of debriefing seeks to assist those suffering with specific psychological symptoms related to their critical incident (Mitchell, Sakraida, & Kameg, 2003). Critics of this model question if more than one debriefing session is required considering the events are highly emotional (Fanning & Gaba, 2007). These early beginnings of debriefing have laid the foundation for debriefing practices within simulation and nursing education (Jeffries, 2012).

Debriefing and Nursing Education

Within nursing education, debriefing is a highly valued part of simulation (Dreifuerst, 2009; Lasater, 2007; Savodelli et al, 2006). Debriefing provides the learner with the opportunity to revisit the experience and reflect on their actions. Cantrell (2008) posits that without debriefing, learners cannot fully integrate what they have learned as they have not effectively reflected on their practice, as a step that is essential for professional development.

Fanning and Gaba (2007) questioned the role of debriefing and discovered common structural elements involved within most debriefing models. These structural elements include: the debriefer, the participants, the simulation experience, the recollection, the report and the time when the debriefing takes place. As well, both Fanning and Gaba (2007) and Jeffries (2012) affirm the importance of a briefing session. The briefing session has been recently adopted as an accepted component of INACSL Standards of Best Practice: Simulation guidelines (Lioce et al., 2015). The briefing session allows the learner to be made aware of the environment, the objectives, and the expectations during and after the simulation

including the type of debriefing that will occur. This will in turn allow the learner to be more prepared to engage in the debriefing phase of the simulation (Page –Cutrara, 2015).

In her concept analysis, Dreifuerst (2009) goes further to present specific attributes pertaining to the debriefing process itself. These attributes consist of the following terms: reflection, emotion, reception, integration and assimilation. Reflection allows for the learner to re-examine the experience. Emotional responses indicate how the learner has framed the experience as either good or bad. Acknowledging intense emotions pertaining to the experience may assist in better reflective practices (Dreifuerst, 2009) which can contribute to long-term learning (Fanning & Gaba, 2007). Reception to the feedback allows the learner to be open to correctly assess their actions. This requires that the learners feel safe within the learning environment, an essential element according to Meakim et al. (2013). Neill and Wotton (2011) highlight the need for the facilitator to provide this environment to promote active engagement. Integration of the content allows the learner to analyze the concepts and develop frames of references. Rudolph, Simon, Raemer and Eppich (2008) refer to frames as "…internal images of external reality" (p.1011). Learners apply meaning to their experience through framing which can ultimately lead to assimilation. Assimilation allows the learner to apply this new knowledge to the future experiences (Dreifuerst, 2009).

Debriefing Methods

In a study of national debriefing practices within baccalaureate nursing programs, 44% of nursing educators identified utilizing a type of structured debriefing but, only 18% identified the exact type of debriefing model (Waznosis, 2015). Although not an exhaustive list, examples of structured debriefing models include Debriefing for Good Judgment (DGJ), Debriefing for Meaningful Learning (DML), Gather-Analyze-Summarize (GAS), Advocacy

inquiry, National League for Nursing three phase process, Plus- Delta, 3D model and the less common Outcome Present State-test model (OPT) (Jeffries, 2012; Jeffries, 2014; Waznosis, 2015). Although these models contain similar elements, they each differ in their structure. In the same study, semi-structured debriefing examples were presented and included the use worksheets, personal notes, and scripts with the goal to follow the guidelines of debriefing (Waznosis, 2015). However, these semi-structured practices are not evidence-based and have not been evaluated.

In their literature review, Neill and Wotton (2011) looked at high fidelity simulation debriefing methods in nursing education. A total of nine articles were reviewed which included both quantitative and qualitative designs, literature reviews and a concept analysis. Six themes emerged and consisted of "…(a) structured and unstructured debriefing, (b) faculty debriefing demeanor, (c) a safe and trusting environment, (d) use of probing and cuing questions, (e) the best time to debrief, and (f) the allocation of adequate time for debriefing" (p. e163). Findings indicated that structured debriefing was preferred over unstructured debriefing and should be accompanied by a framework.

Dufresne and Young (2014) also assessed the literature on the best ways to achieve learning outcomes through debriefing. In their findings, all forms of debriefing were effective for student learning. However, Levett-Jones & Lapkin, (2014) state that although facilitated debriefing continues to be the recommended format, alternate methods of debriefing should be explored to increase efficiencies within simulation activities and to optimize student learning. Facilitated learning refers to assisting participants to meet the objectives of the simulation and should provide opportunities for the student to problem solve throughout the simulation (Franklin et al., 2015).

Generally, the literature supports the use of debriefing (Dufrene & Young, 2014; Jeffries, 2012; Lasater, 2007; Levett-Jones & Lapkin, 2014; Reed, 2012). In her retrospective qualitative study, Lasater (2007) set out to find out how students experienced a high fidelity simulation and the effect of those experiences on their development of clinical judgment. A total of 39 students participated in the study and in focus group discussions. Important themes were identified from the focus group discussions. Video performances were also reviewed by the researcher and when combined with student perspectives, many more themes emerged. Of those themes, debriefing was considered the most important phase of the simulation session whereby students wanted more direct feedback from the simulation facilitator. Interestingly, several students felt they learned more during the debriefing when they were not the primary nurse as this allowed them to "step back to think more about what [they] would have done" (Lasater, 2007, p.274).

Shinnick et al. (2011) conducted a study to assess where in the process of a simulation knowledge is attained. Their experimental study used a two-group repeated measures design and included 162 pre-licensure nursing students from three different nursing schools who were all in the same year and taking the same course. Students were randomized to experimental or control groups. Each group completed three multiple choice questionnaires related to a heart failure scenario at different intervals of the simulation experience to assess where knowledge gains were most evident. The control group took the pretest and post-test one before the simulation experience which was then followed by the debriefing session. The experimental group took the pretest prior to the simulation followed by post-test 1 before the debriefing session. Both groups then took post-test 2. Results showed that knowledge gains were greater after the post-test 2 after debriefing had occurred for both groups. It

should be noted that one group had more simulation experience than others. Also, they were not able to control the fact that students were discussing the simulation experiences with each other which could have contaminated the results.

Raemer et al. (2011) reviewed the literature regarding debriefing as part of the learning process and discovered that there is a lack of reporting pertaining to who is debriefing, the time spent on debriefing and if there should be time allowed in between the scenario and the debriefing, the theoretical framework that guides debriefing and the use of videos. Similarly, in their systematic review and meta-analysis, Cheng et al. (2014) discovered that debriefing characteristics were poorly described within studies and specifically that video review or playback offered little advantage over non video assisted review. The following pages will discuss the use of video recordings within debriefing and the literature findings.

Video Recordings

As indicated earlier, debriefing methods can incorporate the use of videos. Video assisted debriefing (VAD) combines verbal discussion with the use of video clips. VAD allows the learner to reflect on his or her practice and with a more realistic perspective. According to Gore et al. (2012), the majority of students do not watch their videos during or after debriefing. This was attributed to the lack of training by nursing faculty on how to work the audio-visual equipment and a lack of time allocation to debriefing. Nonetheless, it was suggested that students have the opportunity to review their performance video at a different time. In her national survey of simulation debriefing practices, Waznosis (2015) also discovered that video recording playback in debriefing was limited to only 43% of those surveyed although no other details were provided. Wickers (2010) suggests that two to four segments of a video be reviewed during a debriefing session. According to INACSL

Standards of Best Practice: Simulation guidelines (2015), video-playback should be utilized during the debriefing process based on the student learning objectives.

Megel et al. (2013) contended that video recordings provide important information and should be used for more than one purpose. These include a) debriefing, b) review in search of behaviors c) scoring for analysis of behaviors and d) evaluation of nursing curricula. McKinley, Fraser and Baker (2001) stress that video capture should not be an assessment technique in itself, but should be used in conjunction with specific assessment criteria. Initially thought to be the gold standard within debriefing practices, the use of video recordings during debriefing continues to be investigated and evaluated. The time, training and costs associated with integrating videos within debriefing sessions can be high. There are however, several studies in nursing and medical education that suggest the value of video recordings as part of debriefing.

Video Recording Research

Hammoud, Morgan, Edwards, Lyon and White (2012) researched the effectiveness of video review of patient encounters among medical students. Their literature review included 67 studies that dated as far back as 1968. The authors reported great variation in the designs utilizing videos, the number of students and whether or not a control was included, or if a simulator was used. However, a large percent of preclinical and over half the clinical medical students in these studies felt that video review was a positive learning aid, specifically in assisting in self-reflection and self-assessment processes.

In a comparative crossover design, Chronister and Brown (2012) compared the effects of verbal debriefing (VD) and video-assisted debriefing (VAD) versus VD alone. Nursing students (n=37) from a critical care course were randomly assigned to one of two groups

participating in a cardiopulmonary arrest simulation. A pretest was given prior to the first simulations for both groups. The first week, group one received VAD and VD whereas group two received only VD. The second week, prior to simulation, each group received the post-test. Following the next simulation, group 2 received VAD and VD and group one received only VD to ensure each group had a chance to have the same experiences. Utilizing a two-tailed *t* test, knowledge retention improved with group two (VD) whereas a paired dependent-independent *t* test established that the students in group one(VAD and VD) performed skills faster. As noted by Chronister and Brown (2012), skill performance improves with repeated exposure and opportunities to review the technique. Knowledge retention may have been higher in group two as there was less time to verbally debrief with group one because they were watching the video.

Reed et al. (2013) explored the difference between debriefing verbally versus debriefing using a video with baccalaureate nursing students as part of a critical care course. This quasi-experimental design utilized the Debriefing Experience Scale for data collection. The tool rates the experience for the student during debriefing and its importance of the experience to the student. Only the portion of the scale referencing the experience of the student was utilized. Groups of eight students participated in four high-fidelity critical care scenarios where four students participated in two simulations and the other four observed. Students then switched where the four who observed now became the participants and the other four become the observers. Student groups were then randomized to debriefing orally versus debriefing with video. A total of 63 students participated in the study. An independent sample *t* test comparing the two types of debriefing demonstrated that except for three items on the questionnaire, there was no statistical difference between debriefing orally versus

debriefing with a video. It was noted that the study was underpowered limiting the generalizability. As well, the facilitators had received no formal training in debriefing which likely affected the quality of debriefing.

Similarly, Sawyer et al. (2012) assessed VAD versus VD during a neonatal resuscitation simulation. The prospective randomized study consisted of 38 pediatric and family medicine residents who were randomly paired. Each team then had to complete a total of three neonatal resuscitation simulations followed by a facilitated debriefing session. The Debriefing for Good Judgment model was utilized in this study. Each team was randomly assigned to either the VAD or VD session. Blinded video review of their performance and measurements of neonatal performance were compared on the first pretest, the second and the third post-test sessions. Findings did not indicate any significant benefits of VAD over VD alone. No control group was utilized in the study and the sample was underpowered.

Byrne et al. (2002) conducted a study with anesthesia students to assess if their performance would improve by reviewing their video. Thirty two students participated in the study and were randomly divided into two groups (video and no video). Each group completed five simulation sessions over one day. Each student had the responsibility to enter blood pressure, oxygen saturation and end-tidal carbon dioxide concentrations on a chart. Comparisons were made with the data from the simulator. As well, with each simulation, a patient condition arose, for example: a low blood pressure. Time to solve the problem was recorded to measure when the last significant intervention took place. The first group went through each session and was debriefed at the end of the day. The second group was allowed to view their video performance after each simulation. Results demonstrated that the video review group took less time to identify a condition and perform an intervention however the

no video group had fewer chart errors. However, the difference was not statistically significant. Limitations of the study include the difficulties in record keeping during a crisis which might have impacted data entry for the study. As well, the subjects were tested right after the simulation and did not have time to integrate what they had just learned in their practice.

Grant et al. (2014) utilized a pre and post-test two-group randomized quasi-experimental design to compare VAD and VD on behaviors related to patient safety, communication, assessments, care and interventions, and lastly, delegation. Scenarios included the care of patients with either pulmonary or cardiac issues. Both groups performed the same scenarios. Nursing students (n=48) were randomly assigned to one of the roles which included team leader, airway manager, crash cart manager, medication nurse and recorder. The Clinical Simulation Tool was utilized to record the occurrence of behaviors related to patient care. Points were assigned through observation by facilitators. Findings demonstrated that VAD and VD yield similar results when comparing behaviors. However, when combining group scores, airway managers, recorders and team leaders had higher mean scores than the crash cart managers and medication nurses. The authors conclude that the simulation experiences varied for each student based on the roles that were assigned. They conclude that the instrument utilized may not have captured these differences. As well, the study was underpowered and cross-sectional. By increasing exposure to both oral debriefing alone and video-assisted oral debriefing throughout the semester, differences between groups may be revealed in future studies.

Savoldelli et al. (2006) sought to compare two types of debriefing: oral feedback and video-asssisted oral feedback. The prospective, randomized, control study utilized repeated

measures to assess anesthesia students' non-technical skills. Students were asked to participate in a first scenario (pretest) and then were either assigned to a control group (no debriefing), an oral debriefing group and lastly, the video-assisted oral debriefing group. All groups were then asked to assist in a post-test scenario. A total of 42 students participated in the study. Evaluators reviewed videos at random utilizing the Anesthesia Non-Technical Skills scoring tool. Findings demonstrated that participants' performances improved with debriefing versus no debriefing. However, there were no benefits to incorporating video-playback. Limitations of the study included that the researchers did not control the duration of the debriefing time (differences may have been with more time watching video). As well, participants were tested immediately after and therefore it is difficult to assess the long-term effects of their learning.

Cantrell (2008) conducted a quantitative study with eleven senior level students enrolled in a pediatric clinical course. Students were required to assist in three video recorded simulations that were developed based on pediatric diseases. Students all received a verbal debriefing session and later, received a structured debriefing session with video review during a focus group. Results indicated that the timing of the debriefing session was more important than the medium of debriefing. As well, students strongly indicated that the demeanor of the faculty influenced their performance and anxiety levels.

To summarize, two studies (Chronister & Brown, 2012; Hammoud et al., 2012) supported the use of videos as valuable for student learning. Contrarily, six studies (Byrne et al., 2002; Cantrell, 2008; Grant et al., 2014; Reed et al, 2013; Salvodelli et al., 2006; Sawyer et al., 2012), found that video-playback offered no difference in learning outcomes compared to oral debriefing. In their systematic review and meta-analysis, Cheng et al. (2014)

acknowledge this and recommend that further exploration take place to determine costs and benefits of integrating this technology in simulation based learning.

This leads to questioning what the most effective way to debrief utilizing videos is or if videos should be utilized at all in simulation. Dreifuerst and Decker (2012) contend that "…there is not enough evidence to support a definitive conclusion on the impact of recording on student outcomes" (p.112). However, they do say that video provides an objective record of the student performance. As well, it is unclear if videos should be reviewed during debriefing or after. Several questions remain and more research is indicated.

Communication

Communication errors contribute to a large percentage of preventable sentinel or unexpected events yearly (Fay-Hillier et al., 2012; Foronda et al., 2014). A large portion of those events resulted in patient deaths or permanent loss of function (Joint Commission on Accreditation of Health Care Organization, JCAHO, 2015). Examples of these events provided by JCAHO (2015) include delay in treatment; fall or elopement related events as well as infection related cases to name a few. Within the United States and Canada, health care organizations must meet the needs of a diverse population. This demands a focus on understanding the importance of communication practices and the potential for errors by healthcare workers.

The Institute of Medicine has requested that health care education integrate professional communication within its core competencies to improve patient outcomes (Greiner & Kneibel, 2003). In Canada, the Canadian Patient Safety Institute (CPSI, 2014) has established a patient safety education plan. One of the goals of this plan is to promote a living curriculum, reviewed frequently, to further advance best practices to improve communication

skills. This has also lead to other initiatives to integrate communication competencies within educational programs such as the efforts at the University of Toronto. The Pharmacy program at the University of Toronto, along with four medical and four nursing programs from across the country, have mapped the CPSI competencies to their curricula, which includes developing effective communication skills. This has led to a national discussion concerning best practices, innovative ways in teaching and learning as well as the identification of gaps within the curricula (CPSI, 2014). A discussion paper by the Canadian Nurses Association and the University of Toronto, Faculty of Nursing (2004), identified the challenges of providing safe patient care including communication errors. With an increased focus on patient safety, the task of preparing undergraduate students to effectively communicate is seen as important within nursing and medical education (Mullan & Kothe, 2010; Peterson et al., 2014).

In the past, developing communication competencies typically occurred within the classroom and included textbook readings, lectures and role-playing. The premise behind this was that as students learn about communication, they may become more proficient and willing to communicate (Bower, Cavanagh, Moloney & MingMing Dao, 2011). Mullan and Kothe (2010) and Rozeweig et al. (2008) stated that communication skills should be taught utilizing an experiential and participatory method. By utilizing simulation, nurse educators can integrate more effective ways for students to practice their communication skills. Simulation provides structured opportunities for direct feedback and assessment of undergraduate nursing students' communication skills during debriefing (Fay-Hiller et al., 2012; Teherani et al. 2008), as well as through the playback of their videos.

Simulation and Communication

The following studies have linked the use of simulation for the improvement of communication skills in undergraduate programs, however not all have utilised video recordings. As well, research varies from using high fidelity mannequins to standardized patients. In some cases, communication was not always the primary focus of study (Anderson & Nelson, 2014).

Communication Research

Foronda et al. (2014) set out to evaluate the effectiveness of using virtual simulations to teach communication skills. The study used a within group, time series design. Undergraduate nursing students (n=8) were asked to utilize the Identity, Situation, Background, Assessment and Recommendation (ISBAR) tool during two virtual simulations. The original SBAR tool, developed by the military, addresses these four key elements of effective communication and has proven to improve communication among inter-professional groups (Mahlmeister, 2005). Over time, the addition of stating your identity was added which is now the ISBAR method. In this study, students were scored on their communication performance using a rating sheet when they were in the role of the primary nurse and communicating with a health care provider. Findings demonstrated that student communication skills improved greatly after the second simulation and that they understood how to utilize the ISBAR method of communication with virtual simulations (Foronda et al., 2014).

Likewise, Fay-Hiller et al. (2012) utilized the SBAR tool as a method to assess communication skills. In this qualitative study, the researchers developed a mental health simulation for undergraduate nursing students. In contrast to the previous study, they utilized

a standardized patient (SP) to assess the nurse-patient communication process. According to Meakim et al. (2013), standardized patients are people trained to portray patients for the purpose of practice and evaluation. They offer a more genuine experience in terms of the communication process as opposed to high fidelity mannequins. In this study, nine students were paired where one student was asked to interact with a SP, while the other was asked to fill out a structured tool for peer evaluation that was developed by the researchers. Students were required to provide a report utilising the SBAR format. A second simulation was then done and students switched roles where the evaluator now became the nurse in the patient interaction. All students expressed satisfaction with the SBAR communication format which assisted in helping them focus on patient safety and with an improvement in their communication skills after the simulation experience. Recommendations include having reliable and valid evaluation instruments, adequate sample sizes and more quasi-experimental data to effectively evaluate this method of analysis.

In their quasi-experimental non-randomized study, Kameg et al. (2010) compared the use of a high fidelity simulator versus a didactic approach in teaching communication skills. Thirty-eight students were divided into two groups depending on their schedule for the semester. The first group had the simulation experience during the first six weeks of the semester, whereas the second group had their simulation experience during the last six weeks of the semester. For the didactic portion, a two hour communication course was offered to all the students, who then were asked to evaluate their communication skills utilizing a visual analogue scale. Following this, they participated in a video-taped simulation and debriefing session. The students were again asked to reassess their communication skills with the same tool. The dependant variable was the student's self-efficacy to communicate with a patient

with mental illness. When grouped together, a dependant *t*-test revealed that all students demonstrated a significant improvement in self-efficacy of communication skills (p=.005). Interestingly, students responded negatively to being video-taped which they stated increased their anxiety.

O'Hagan et al. (2013) have cited that the quality of communication skills can impact patient outcomes. Their exploratory design study sought to determine what constitutes effective communication and asked 15 educators to evaluate videos of nurses and their interactions with a simulated patient. Thematic analysis was undertaken from field notes and transcriptions. Four major themes emerged from the data, deemed relevant to effective nurse-patient communication. These themes include: the nurse approach, manner towards the patient, techniques in interaction and communication as a concept. These themes align themselves with what McCorry and Mason (2011) refer to as the communication process. This process demands that there "…is the successful transfer of a message and meaning from one person or group to another" (McCorry & Mason, 2011, p. 6) by the healthcare professional. O'Hagan et al. (2013) suggest their findings could inform or guide nurse educators on how to integrate effective communication skills, with the ultimate goal of having thoughtful interactions with patients.

In their qualitative study, Anderson and Nelson (2014) examined patterns of communication from video recordings with fourth year undergraduate nursing students over three clinical rotations. The scenario consisted of a 64 year old who suffered burns from a house fire. A high fidelity mannequin was used for the simulation. A total of 71 student participated where three to four students were assigned to each scenario. This required that both researchers review a total of 25 videos. Analysis was then undertaken where three

themes emerged which included "…a) focusing on tasks, b) communicating–in-action and c) being therapeutic" (p. 24). It became apparent that nursing students are novices in effective communicating and their focus was on getting tasks done and what Anderson and Nelson (2014) refer to as "…missed opportunities to explore the patient's feelings". As well, students may have lacked insight while communicating-in-action, and may not have assessed the potential impact of the situation. Similar findings were evident in the research by O'Shea, Pagano, Campbell and Caso (2013) who reviewed videos of simulation sessions with either a mannequin or an SP. The researchers identified that students missed opportunities to build relationships with their patients as well as used terminology that the patient was unable to understand. The use of a mannequin versus a SP might have contributed to their ability to communicate as SPs can provide more authentic experiences.

Finally, a mixed methods study by Chan (2014) looked at the undergraduate nursing students' abilities to respond to patient cues during a simulation session. Ten senior year undergraduate nursing students participated in the study. Quantitative data was collected utilizing the Medical Interview Aural Rating System (MARS), an instrument utilised to "…explore and code nurses' communication skills in the area of cue-responding behavior to patients' expression of emotional needs…" (Chan, 2014, p. 1059). Qualitative data consisted of analysis of transcriptions from focus groups and students' self-reflection of their video performance. Quantitatively, results indicated that 61% of the cue responding behavior was inadequately addressed such as the students who tended to distance themselves or acknowledge cues with inadequate responses. Qualitatively, students indicated that they enjoyed viewing their videos as they were able to be more aware of their communication styles and were able to reflect on their performance. Chan (2014) states that the study

provided insight into the value of video-recording and the process of self-reflection. Video-recording allowed students to see and evaluate the patients and themselves in interaction during the cue responding behaviors simulation.

In summary, video review of communication skills by faculty provided a concrete means of evaluating nursing students and nurses performances (Anderson & Nelson, 2014; Chan, 2014; O'Hagan et al., 2013; O'Shea et al., 2013). However there was only one study where students appreciated the video review and demonstrated that communication skills or their perception of their communication improved (Chan, 2014). O'Donnell, Decker, Howard, Levett-Jones and Miller (2014) add that learning outcomes such as communication should continue to be measured to further the research within this domain. Based on these findings, simulation sessions offer a platform in which communication skills can be assessed, yet there is a paucity of research on whether or not videotaping the simulation adds to nursing students' ability to effectively communicate or evaluate their communication skills.

Reflection

The concept of reflection has been widely examined within nursing and education (Atkins & Murphy, 1993; Bulman, Lathlean & Gobbi, 2011; Rogers, 2001; Wan Yim, et al., 2012). Specifically, several nursing and education studies explicate the importance of reflection as a process to gain knowledge (Duffy, 2007; Chirema, 2006; Crowe & O'Malley, 2006; Horton-Deutsch & Sherwood, 2008). Reflection continues to be a corner stone of the simulation process and is well documented as an important element of debriefing (Dreifuerst, 2009; Jeffries, 2012). According to INACSL Standards of Best Practice: Simulation guidelines (2015), all simulations should incorporate a debriefing session aimed at promoting reflective thinking.

Definitions of Reflection

Many have tried to define reflection and its importance to student learning. Dewey (1910) utilized the term reflective thought as a purposeful consideration of an idea: "The purport of this act of inquiry is to confirm or refute suggested belief. New facts are brought into perception, which either corroborate the idea that a change is imminent, or refute it" (Dewey, p. 10). According to Rogers (2001), the exploration of underlying beliefs and how this may impact one's response should also be considered. In this fashion, the learner's previous experiences are considered valuable to this activity. Reflection is considered to be a voluntary process whereby concepts are interpreted. Their relevance is then determined and may lead to building new knowledge on past experiences. Forneris (2004) asserted that reflection is an attribute of the critical thinking process and allows practitioners to solve numerous problems within practice. She asserts that by "…knowing what to knowing how…and knowing why…" allows the learner to decipher the importance of the information provided (Forneris, 2004, p.4). Mezirow (1990) asserts that reflection should go further and requires a pause to reassess. He terms this critical reflection. This leads to more reflective action and what he asserts as a more accurate interpretation of the situation. Dreifuerst (2015) contends that these actions establish reflection as an antecedent to meaningful learning.

Schön (1983), building on Dewey's interpretation, goes further to describe the concept of the reflective practitioner. Reflective practice is a "process of personal transformation" (Duffy, 2007, p. 1403). According to Kinsella (2010) reflective practice is characterized "…as a critical assessment of one's own behavior as a means towards developing one's own abilities in the workplace and as a dialectical process in which thought and action are integrally linked" (p.7). The premise is that one becomes more skillful as one reflects. Schön

(1983) also defined two types of reflection. He termed these reflection-in-action and reflection-on action. Reflection in-action and on-action are differentiated by their temporality. Freshwater, Taylor and Sherwood (2008) describe the reflection-in-action as "thinking on one's feet" (p.4) and reflection-on-action as "the thinking occurs after an incident with the aim of making sense and using process outcomes to influence further practice" (p.4) Within nursing education, Scanlan and Chernomas (1997) liken reflection-in-action to reflection that takes place during the care of patients whereas reflection-on action is more congruent to reflection that takes place in a post-conference setting.

Dreifurst (2009) adds that reflection-beyond-action must also take place. This is seen as a component of decision making where you are "…looking forward…" (p.111) while anticipating what is to come. Expert nurses are able to anticipate certain elements of care even before they see patients, dependent on the context of the situation.

Simulation and Reflection

Reflection has been shown to connect experiences to practice and develop higher order cognitive skills (Scanlan, Care & Udod, 2002), enhance communication and professional development (Tashiro, Shimpuku, Naruse, Maftuhah & Matsutani, 2013), and promote clinical reasoning skills (Lasater & Nielson, 2009). In the past, reflective practices have included self-reflected journaling (Epp, 2008) and oral reflection practices such as the discussion of case studies (Jeffries, 2012) within post-conferences (Murphy, 2004). Rogers (2001) contends that structured experiences, such as those offered by simulation, can foster reflection.

In simulation, guided reflection allows the learner to better apply theory to practice through case scenarios. This supports Conway's study (1998) which demonstrated that

nurses, who exhibit better reflective skills, were able to provide better individualized care. Similarly, Murphy (2004) added that students who understand what they need to learn ultimately become more involved in their learning.

Integrating guided reflection into simulation experiences requires that students be engaged in the activity. It requires educators to plan meaningful experiences to foster the reflection process. Meakim et al. (2013) define guided reflection as a process that encourages insightful learning and allows the learner to integrate the theory to influence future decision making. Reflection is not a natural process for some and can take time to develop (Dreifuerst, 2009; Scanlan et al., 2002). Dreifuerst (2015) professed the importance of Socratic questioning to engage students to ponder the emotions attached to their experiences. Jeffries (2012) warned that negative outcomes such as feelings of distress, isolation, self-doubt and insecurity can be felt during the reflective process of debriefing. This calls for the facilitator to provide feedback in a supportive manner.

Reflection Research

Studies on reflection have been conducted in education, medicine and nursing education. Within education, a qualitative study by Bower, Cavanaugh, Moloney and Ming Ming Dao (2011) employed a video reflection approach to assess the communication skills of undergraduate students enrolled in an education program (or preservice teachers). A "micro teaching" strategy was utilized and this is similar to simulation in that it reproduces and enforces the content learned during the didactic portion of the classroom but also provides an experiential experience (Bower et al., 2011). Grossman and McDonald (2008) refer to this as "…simulations of interactive practice…" (p.190) and this strategy allows for students to focus on development of skills to improve their practice. Students were provided with

communication scenarios and were asked to make short presentations. Students evaluated one and another by accessing the videos online which were immediately accessible as well as providing peer and self-reported feedback via online blogs. A total of 26 students participated and generated 50 video posts and 106 peer responses. Specific questions sought to answer if the video allowed them to reflect on their communication skills. Grossman and McDonald (2008) concluded that the video reflection approach facilitates self-reflection practices.

In their systematic review, Mann, Gordon and Macleod (2009) evaluated the existing evidence concerning reflection and reflective practices in health education. Although none involved simulation, the authors were able to establish that students demonstrated reflective thinking. A total of 29 papers utilizing various study methods were included in the final analysis. Interestingly, their findings concluded that reflection was higher when the clinical situation presented was more complex. They posit that the "…anticipation of challenging situations also stimulates reflection" (Mann et al., 2009, p.610). However, many of the studies reviewed focused on practicing professionals. No studies addressed students in clinical practice and the influences of context and reflection.

Other studies have measured levels of reflection and reflectivity. Wessel and Larin (2006) sought to identify if student reflective skills increased over time by analyzing reflective journals of undergraduate nursing students. Utilizing the Levels of Reflection tool, they compared journal entries at two different placement times. In their findings, students demonstrated slightly higher reflection scores in the second placement. Students broadened their perceptions of their roles and the impact their care had on their patients (Wessel & Larin, 2006).

Within nursing education, McKenna et al. (2011) addressed the history taking skills of first year undergraduate students utilizing video-playback. This qualitative study explored the value of video-recording and facilitated review with a SP utilizing video analysis, questioning and focus groups. Their findings concluded that the exercise had an impact on nursing students' reflective practice and suggested that watching the video with a facilitator allowed for deeper reflection versus watching it alone.

Ha (2014) conducted a study to assess attitudes toward video-assisted debriefing with 44 undergraduate nursing students utilizing the Q-methodology approach. This approach is defined as "…an integrated approach that synthesizes the advantage of quantitative and qualitative methods to clarify a subject's point of view about a phenomenon, interest or concern" (p.979). The findings from this study supported video-assisted debriefing (VAD) in assisting in self-reflection. Interestingly, these students exhibited a higher tendency toward self-directed learning (Ha, 2014). However, other students felt that VAD invaded their privacy and that they felt less supported by the faculty which may have impacted the results.

Few studies have considered together the process of reflection, simulation and video recording within nursing. The two studies with nursing education utilizing video-playback (McKenna et al., 2011; Wessel & Larin, 2008) demonstrated positive effects in increasing student reflective skills. However, reflective skills improved with other techniques despite the lack of video-playback as well (Bower et al., 2011; Mann et al., 2009; Wessel & Larin, 2008). Reflective skills may increase with simulation and debriefing; however the link between video debriefing and reflection requires more study.

Anxiety

Novice nursing baccalaureate students exhibited high levels of stress prior to entering clinical areas (de Souza Teixeira et al., 2014; Happell, Platania-Phung, Harris & Bradshaw, 2014; Kameg, Szpak, Cline & Mcdermott, 2014; Khalaila, 2014; Melo, Williams & Ross, 2010). Interestingly, in a study comparing the test anxiety levels of nursing students and general college students, anxiety levels were higher among the nursing students (30%) compared to the college students (17%) (Driscoll, Evans, Ramsey & Wheeler, 2009). Nursing students are apprehensive the first time they must interact and care for patients.

Moderate and severe levels of anxiety can impede learning, hinder the development of therapeutic relationships with patients (Khalaila 2014; Szpak & Kameg, 2011) and lead to poor performance in clinical areas (Cheung & Au, 2011). Rachman (2004) describes anxiety as "…the tense, unsettling anticipation of a threatening but vague event; a feeling of uneasy suspense" (p.3). According to Kurzweil (1967), anxiety is a natural phenomenon and the goal of the educator should be to keep anxiety levels tolerable to ensure learning outcomes can be achieved. Moscaritolo (2009) asserted the importance of mediating anxiety levels through supportive behaviors such as humor thus improving student success. It is also incumbent on the nursing educational programs to develop learning opportunities to prepare nursing students for the workplace as well as addressing their stress and anxiety levels.

Simulation and Anxiety

Simulation can provide opportunities to decrease anxiety levels prior to entering the clinical area. Students' self confidence levels improve and their anxiety levels diminish when they recognize that the experiences are not real and have no untoward consequences (Khalaila, 2014). Gore, Hunt, Parker and Raines (2011) investigated whether junior

baccalaureate nursing students' anxiety levels would decrease by introducing a simulation session prior to their first clinical encounter. Students (n=70) were randomized to the control and intervention group. The State-Trait Anxiety Inventory (STAI) tool was then distributed to both groups prior to their first clinical experience. A two-tailed *t* test showed a statistically significantly difference ($p<.01$) in mean scores, indicating lower self-reported levels of anxiety among the intervention group. Although the sample was not sufficient to allow for generalizability; the study did suggest that anxiety levels of nursing students could be reduced with the introduction of a simulation session prior to clinical.

Szpak and Kameg (2013) investigated the impact simulation had on nursing student anxiety and their ability to communicate with a mental health patient. This non-randomized study utilized a high fidelity simulator (HFS). A sample of 44 students participated in a two hour lecture on communication prior to the experience. The STAI tool and anxiety visual analog scale (VAS) were distributed to students before and after the simulation. Data collection took place over two semesters. After the final measurement, results indicate that the use of the HFS decreased anxiety levels, and students reported that they would be better able to communicate with their patients once they entered the clinical site.

Similarly, Kameg et al. (2014) studied the impact a mental health simulation experience utilizing a SP had with undergraduate nursing students' anxiety level. The sample consisted of 69 students in their senior year. The VAS and STAI tool measured and compared before and after a mental health simulation. Findings concluded that students reported lower levels of anxiety after the simulation ($p = .022$, one tailed). These studies reiterate that anxiety levels can diminish with the use of simulation and may be helpful in improving learning outcomes for students. Gordon and Buckley (2009) demonstrated similar results. The aim of

their study focused on graduate nursing students' (n=50) ability to respond to patient clinical emergencies. All students completed a simulation session and were asked to fill out a questionnaire prior to the simulation and again after. The questionnaire asked students to rate their perceived ability regarding technical and non-technical skills. A high number of students (86%) rated viewing their video performance as an effective strategy to evaluate their abilities to respond to emergencies. However, students' actual technical abilities were not tested so it is unclear if what they learned could be transferred to the clinical setting.

In contrast, other studies have shown that the simulation experience is in itself anxiety provoking. Anxiety may be heightened when nursing students perceive the instructor as not helpful, uses a forceful tone or the students feel intimidated by the instructor (Hutchinson & Goodin, 2013). Najjar, Lyman and Miehl (2015) and Nielson and Harder (2013) discovered that simulation produces much anxiety and identified several factors contributing to increasing anxiety levels. These include: performing in front of peers, feeling rushed, being the primary nurse role, as well as apprehension while wondering when a complication would occur during the simulation or if the simulation would unfold differently than anticipated.

Bieschel (2013) stated that simulation experiences are anxiety provoking as they resemble testing experiences. Students are asked to perform in front of others including their peers and faculty. Students will also exhibit increased anxiety if the preparation for the simulation experience takes more than one hour. And lastly, students are aware that mistakes in judgment and critical thinking are captured with video recording and remain until erasure occurs.

Anxiety and Research

The literature surrounding the effect of videotaping on anxiety is mixed. Brimble (2008) set out to evaluate nursing students' views about being video recorded during a simulation. Data was gathered utilizing a questionnaire developed by Brimble, which was distributed to 29 nursing students before and after a simulation. Results indicated that 79% of students expressed concern of being videotaped as well as being judged by others. However, post-test data scores decreased to only 58% of respondents stating they felt anxious. Although many students felt that being recorded was anxiety provoking, they also felt that the videos provided true feedback in assessing competencies. A supportive learning environment contributed to minimizing their anxiety post simulation.

In a qualitative phenomenological study, Cordeau (2010) set out to discover the lived experience of clinical simulations for novice nursing students. Students were evaluated utilizing a checklist and were provided with a grade following the simulation. A major theme in this phenomenological study revealed that students had varying levels of anxiety throughout the whole experience of simulation from the preparation and into the debriefing session. Being video recorded provided a continuous source of anxiety. However, the summative nature of the simulation session as well as the fact that this was their first simulation may have contributed to higher degrees of anxiety.

de Sousa Teixeira et al. (2014) conducted a study with 20 students in a baccalaureate nursing program comparing the level of anxiety with the presence of an evaluator versus a filmed assessment with no evaluator. Students were evaluated on their clinical performance. Year four nursing students were randomized to a control or intervention group (n=20). A self- assessment rating scale was utilized and was given to both groups prior to the

simulation. Data was collected over seven months. Both groups were provided with an instructional video prior to the simulation on the clinical situation that would be presented. The first control group performed the simulation with the presence of the evaluator assessing their performance. The second group then had the chance to go through the simulation while being videotaped without an evaluator. Findings concluded that there was no statistical difference between the performance scores or anxiety levels between the two groups. Being videotaped seemed to produce only mild anxieties.

In summary, the literature does support simulation to decrease anxiety levels for students prior to entering the clinical environment (Brimble, 2008; Gore et al., 2011; Kameg, Szpak, Cline & Mcdermott, 2014; Khalaila, 2014; Szpak & Kameg, 2013). However, other studies have shown that simulation itself produces higher anxiety levels in students when they were being evaluated and was higher before the debriefing session (Brimble, 2008; Cordeau, 2014).

Anxiety continues to be prevalent in nursing students. This is not surprising considering that student choices and decisions in care can impact patient safety. Not all students enjoy watching themselves on video. Many find it time consuming as well as an invasion of their privacy (Ha, 2014). What does appear to support video recordings and diminished anxiety appears to be a supportive environment by the facilitator which enhances learning (Moscaritolo, 2009; Partin, Payne & Slemmons, 2011) as well as consideration of student learning styles (Ha, 2014). Further research is required to assess how anxiety levels can stay at manageable levels.

Conclusion

In summary, the literature supporting simulation and debriefing is mixed. Nursing faculty continue to invest time and resources into this newer pedagogy however there are still many unanswered questions concerning the pedagogy surrounding simulation, debriefing, and specifically video recording. The use of videos to support the learning outcomes of communication, reflection and the effect that anxiety has on outcomes remains unclear and the results are mixed. Chapter two reviewed the major concepts in this study including simulation, debriefing, video-assisted debriefing, communication, reflection, and anxiety. Chapter three will present the methodology of the study, the survey instruments and the sample as well as ethical concerns.

Chapter three: Methodology

This chapter addresses the methodology of the study which includes the research design, setting and sample. A review of the data collection instruments and their validity and reliability are discussed. The ethical considerations and data collection procedures are outlined. Lastly, an explanation of the proposed data analysis is presented.

Research Design

This quasi-experimental design study explored the use of video-playback, after debriefing, and its impacts on student communication, reflection and anxiety. The knowledge that is gained from this type of design assures that the data was "…grounded in reality rather than in researchers' personal beliefs" (Polit & Beck, 2004, p. 15). The simulation that the students experienced was part of their program of learning. Thus, all students were required to participate in the simulation but were not required to participate in the research project.

The week before the simulation sessions were to begin, students received a letter of invitation that was sent by the administrative assistant from l'École Technique et Professionelle via blind copy. The day of the simulation, students were asked by the administrative assistant if they wished to participate in the study and sign the consent form (Appendix A) at this time. The students, in groups of four, were briefed prior to the simulation session, as is normally done and each set of students then went through a 20-30 minute simulation. Immediately following this, they attended a 40-50 minute debriefing session. All the students then completed the demographic questionnaire and the self-administered measurements after the debriefing session. The learning outcomes of communication, reflection, as well as anxiety levels were measured. At this point, the students were randomized into two groups (A and B). The following week (5-7 days later),

group A watched their video performance and completed a second set of the three self-administered scales. In the same 5-7 days, Group B was asked to complete two measurements (communication and anxiety) and then about 10 days later, they were asked to view their video performances and complete the remaining survey (reflection). This design allowed a comparison of the two groups (A and B), one group who had viewed their video performance (group A) and one group who had not viewed this performance (group B). Group B viewed their video performance at a later date (about 10 days later) so all students had the same learning experience albeit one group's experience was delayed by a few days. The remaining survey that group B filled out after the ten days had to be administered then because it referred to viewing the video. Students in both groups were debriefed as a small group and were then asked to watch their video alone. In this sense, video-playback is a form of self-debriefing.

The learning outcomes of communication, reflection as well anxiety levels were measured using the following tools: a) The demographic survey, b) subscales from the Lasater Clinical Judgment Rubric (LCJR) (Lasater, 2007) and from c) the Debriefing Experience Scale (DES) (Reed, 2012) as well as the d) The State-Trait Anxiety Inventory for Adults (STAI) form Y-1 and Y-2 (Speilberger , Gorsuch, Lushene, Vagg & Jacobs, 1983). The characteristics of each of the scales are described in further detail in the data collection instrument section.

The Setting

The setting for the study took place at a small university in a western Canadian city. The university offers a four year baccalaureate nursing program. Typically, the university admits approximately 40 students per year. Simulation sessions are integrated within nursing

didactic courses and provide students with the opportunity to apply theory content to the care of high fidelity mannequins.

The simulation center consists of three hospital rooms with audio-visual capabilities and where recording can be easily accomplished. Each room contains three cameras and two microphones. Each control room overlooks the simulation room and is separated by a one way mirror. Typically, an instructor runs the high fidelity simulator within the control room and acts as the voice of the patient. As well, students have access to a facilitator within the room during the simulation to gently prompt and guide the student as needed. There are also two separate rooms in close proximity to the simulation center where video is live streamed to students who are not actively involved within the simulation session, and where debriefing typically takes place.

The Sample

The sample was recruited from 31 third year baccalaureate nursing students who were enrolled in a combined medicine-surgery course in the winter term. Students have had previous experience with simulation in year two, within maternal health and chronic diseases courses. As well, in the first semester of year three, these students were exposed to simulations in mental health which utilize standardized patients. All students have been videotaped in previous simulations and where standard practice includes reviewing their performance video approximately 5-7 days after the event. From an ethical standpoint, year three students had been chosen over year two students as the researcher teaches in year two and students might feel uncomfortable being research participants for that instructor. In order to maintain the principle of volunteerism, it was not ethically acceptable to approach year

two students. As well, the researcher felt that students in year two are still learning to be comfortable in the simulation setting, and have less experience with reflection.

The sample was a convenience sample as the nursing students are easily accessible. This was the preferred method as simulation opportunities are limited within the university as well as within the province where the study took place. Prior to the introduction to the study, students were already assigned to a group of four students by the instructor for a total of eight groups. This was done for scheduling purposes early on at the beginning of the semester. From that point, these groups were randomly assigned to either group A or B by the administrative assistant.

It was very difficult to determine effects sizes for all the constructs as they were rarely documented within studies. For this study and in consultation with a statistician, the G*Power 3.1.9.2 statistical software was used to compute the power analysis. With power set at .80 and probability (alpha) set at .05, it was determined that a paired-*t* test statistic would detect a medium effect size between those who had viewed their video compared to those who had not viewed their video for a minimum sample size of 102 participants. Considering there are only 31 students in the class, the study was underpowered, necessitating a decision to use non-parametric statistics for analysis.

The patient scenario was chosen by the nursing instructor along with the researcher to ensure that it met the objectives of the course and that the scenario could be done within the time period available. The scenario consists of two sections where an elderly woman who recently had a hernia repair is being assessed at home by a home care nurse. The nurse finds the patient in pain, with a possible ileus and who must be transferred back to the hospital. The second part resumes when the patient is back in a hospital room and requires

reassessment and subsequent care. Two students were assigned to each section of the scenario, a primary and secondary nurse. The same scenario was repeated eight times over a three week period. This was done to ensure the scenario itself was not a confounding factor.

The Data Collection Instruments

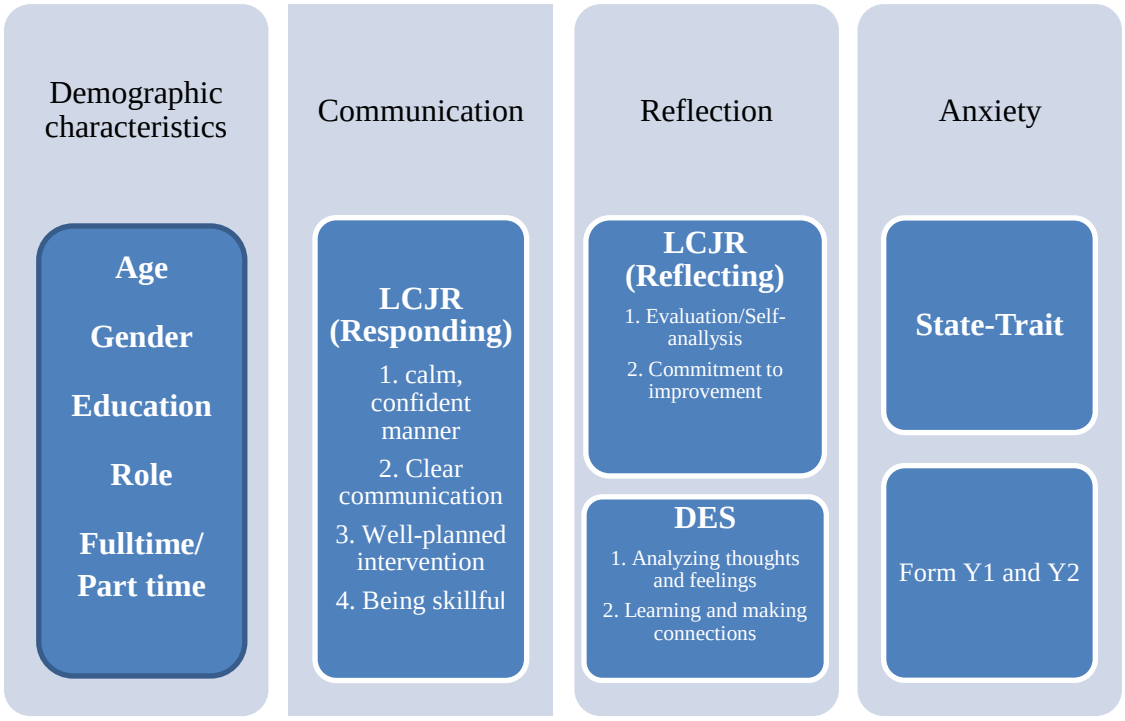
Demographic Survey

The researcher developed the demographic survey and asked students to provide the following information: age, gender, prior education, fulltime or part time student, and role within the simulation session (primary or secondary nurse) (see Appendix B). According to Connelly (2013), common demographics include age, gender, level of education as well as any specific criteria.

For this study, the role within the simulation, as well whether the student is full time or part time was also added to see if these factors might have any effect on their levels of anxiety and reflection. Part time students may require additional skills or time to manage busy schedules, family life or other commitments in order to complete their nursing program (McDaid, 2009). Being the primary nurse might prove to be more stress provoking. Another consideration was that students in the primary nurse role might be more reflective. Students who were enrolled full time might already be under greater stress compared to part-time students and thus have greater anxiety overall. The following figure (2) provides an outline of the measurement tools associated with the outcomes that were measured.

Figure 2

Study outcomes and measurement tools



Lasater Clinical Judgment Rubric (LCJR)

The Lasater Clinical Judgment Rubric's goal was used to quantify nursing students' levels of performance in developing clinical judgment (Lasater, 2007) (Appendix C). Tanner's Model of Clinical Judgment provided the framework in which the rubric was developed and includes four distinct components. The four major components of the model- *Noticing, Interpreting, Responding and Reflecting* were established following an extensive research review. Each component is measured by two to three items for a total of 11 items (Lasater, 2007). The self-rating rubric scoring sheet consists of the following four responses which are ordinal in nature and which are scored dependent on the response: a) exemplary (4 points); b) accomplished (3 points); c) developing (2 points); and d) beginning (1 point).

Total possible scores range from 11-44. Permission to use the tool has been granted by Dr. Kathie Lasater via email (Appendix D).

According to Kardon-Edgren, Adamson, and Fitzgerald (2010), developing instruments can be time-consuming and require special skill sets. They therefore propose that "…instruments that each measure one or a part of the outcome or outcomes of interest might be employed for a comprehensive evaluation" (p.e28). For the purpose of this study, only the section of *Responding* was used to measure communication. For communication, the items included were: calm, confident manner; clear communication; well-planned intervention/flexibility; and being skillful. Total possible scores ranged from 4-16 points for this section. The subscale of *Reflecting* was utilized to measure reflective skills. For reflection, the items included were: evaluation/self-analysis and commitment to improvement. For these items, total possible scores range from 2-8 points. The levels of performance for these two components provided guidelines of effective reflection and communication abilities and matched the learning outcomes that were measured.

Gubrud-Howe (2008) reported the following for the LCJR tool: inter-rater reliability at alpha of 0.87, internal consistency for the subscales of *Responding and Reflecting* for a Cronbach's coefficient alpha at 0.88 to 0.91 respectively. In 2012, Adamson, Gubrud, Sideras and Lasater compared three different studies assessing the validity and reliability of the LCJR in simulation. All three studies reported provided evidence for construct validity. Reliability was proven to be stronger when "… raters and cases were held stable" (Adamson et al. 2012, p. 72). Therefore, the simulation scenarios were chosen to ensure the least amount of variation. This was accomplished by having each set of students take part in the same simulation.

For this study, students were asked to self-assess the components of *Responding and Reflecting*. In a study by Jensen (2013), the LCJR was completed by both students and faculty after a simulation session, when scores were compared; there was little difference between faculty (*M*=33.04) and students' (*M*=31.81) mean scores. Cato, Lasater and Peeples (2009) asked nursing students to utilize the LCJR tool as a means to foster self-reflection after debriefing twice throughout the semester. Clinical faculty found the information useful in assessing student progress as their reflective responses were more detailed than what was discussed in the debriefing session.

Debriefing Experience Scale (DES)

Developed by Reed (2012), the Debriefing Experience Scale (DES) measures the student experience during debriefing and the importance of the experience for the student (Appendix E). The scale is based on Kolb's Experiential Learning Theory (1984) as well as Thiagarajan's instructional model (Reed, 2012). According to Kolb, learning is enhanced when students have experiences, reflect on those experiences, and consequently apply new knowledge to future experiences. Thiagarajan's model provides the structure, where objectives and experience help frame the debriefing session (Reed, Andrews & Ravert, 2013).

The 20 item tool consists of the four following subscales: *Analyzing thoughts and feelings, Learning and making connections, Facilitator skill in conducting the debriefing, and Appropriate facilitator guidance*. Utilizing a Likert scale, the following responses range from 1(strongly agree) to 5 (strongly disagree). The importance scale utilizes different descriptors: 1 (not important) to 5 (very important).

Following a comprehensive literature search, the DES was created on "…the construct that learning takes place during debriefing" (Reed, 2012, p. e212). The scale was then distributed to three nationally known nursing experts in the simulation field to evaluate consistency in wording and content, in an effort to evaluate content validity. As well, in a pilot study, nursing undergraduate students provided input concerning the clarity, and wording on the scale (Reed, 2012).

Reed (2012) also established construct validity through factor analysis on the experience portion of the scale. Items considered to be central to the debriefing experience were considered through a literature search. Originally, the scale contained 39 items which was further reduced to 20 items. These items were categorized in the four subscales previously mentioned. Cronbach's alpha consistency was rated at .80 and .89 respectively for the two subscales *Analyzing thoughts and feelings and Learning and making connections* for the experience portion of the scale only.

For this study, the subscales of *Analyzing thoughts and feelings and Learning and making connections* were utilized to measure the concept of reflection. The subscales *Facilitator Skill in Conducting the Debriefing* and *Appropriate Facilitator Guidance* were not utilized as students did not have access to a facilitator or instructor while watching their video. As well, the word 'debriefing' was changed to 'video-playback' for the two subscales *Analyzing thoughts and feelings and Learning and making connections*, to not confuse the students. In this sense, video-playback was seen as a form of individual debriefing. Possible scores for the experience portion of the scale ranged from 12-60 whereas possible scores for the rating the experience portion of the scale were also 12-60. Scores were calculated for each section

individually. Permission to utilize the scale with changes has been obtained from Reed (Appendix F).

State-Trait Anxiety Inventory for Adults

The State-Trait Anxiety Inventory (STAI) self-evaluation questionnaire (see Appendix G) developed by Speilberger et al. (1983) has been widely used in research and clinical practice. The State anxiety form (STAI form Y1) measures how people feel at "this moment" whereas the Trait anxiety form (STAI form Y2) measures how people generally feel. Revisions of the scale have been performed over the years and the tool has been used in over 2000 studies since 1970. It is recommended that the Y1 scale be administered first followed by the Y2 scale. It is felt that the Trait scale may influence the emotional climate in which the test is given (Speilberger et al., 1983).

Response categories for the State scale (Y1) include (1) not at all; (2) somewhat; (3) moderately so; (4) very much, whereas statements for the Trait scale (Y2) include (1) almost never; (2) sometimes; (3) often; (4) almost always. Ten items from the Y1 scale and 11 items from the Y2 are categorized as anxiety present and are weighted as 1 to 4. Ten items are categorized as anxiety absent for the Y1 scale and nine items for the Y2 scale are weighted as 4 to 1. Total scores range from 20 to 80 for both scales.

Construct Validity for both forms has been established through factor analysis describing either anxiety present or anxiety absent factors in the development of the tool (Speiberger et al., 1983). Feelings of tension, apprehension, nervousness, and worry were considered significant when assessing anxiety. Specifically for the form Y2 testing how students generally feel, items that included "anxiety-proneness" were considered. As well,

Cronbach's alphas for the Y1 and Y2 scale were reported at 0.90 for both (Speilberger et al., 1983). The permission to use this scale is found in Appendix H.

Ethical Considerations

Approval from the Education and Nursing Research Ethics Board (ENREB) (Appendix I) at the University of Manitoba as well as the affiliated university where the study took place, Université de Saint Boniface, (Appendix J) were obtained, prior to the study. The researcher was not involved either in the didactic portion of the course, nor the simulation sessions, and did not teach the students during this year of the program. However, the researcher was involved in the choice of the scenario to ensure it met the objectives of the research study. The researcher completed the CORE certificate (Appendix K).

Students were informed of the study prior to the simulation sessions via email. Letter of consent was obtained prior to the study. Students were informed that non participation did not have an effect on their performance or grade and that they could withdraw from the study at any time. At the time of study, the role of the researcher at the university held the simulation coordinator position. However the researcher has no direct authority over this group of students.

All data were collected and coded by the administrative assistant, and to ensure that the researcher had no access to participants' identities. The administrative assistant will keep the list of participants with attached codes and consent forms for the duration of their academic program until their exit from the university through graduation (June 2017) in a locked filing cabinet in the administrative assistant office. The completed questionnaires will be locked in a filing cabinet in the researcher's office and then will be shredded within seven years of the

study's completion (June 2023). All data entered on the researcher's computer will be kept in a password protected file and will be deleted after 7 years (June 2023). Hard copy data will be shredded. As per the Advisory Student Agreement at the University of Manitoba, the co-chairs will have access to the data (without identifiers).

At the beginning of year two, students were also asked to sign a confidentiality form so that contents of any simulation video would not be shared with any other students throughout their academic time at the university where the study took place. Visualization of the video is only allowed at the university and can only be accessed by the faculty members who have been trained on the use of AV system. Students must present themselves in the simulation center and watch their performance video alone. Typically, videos are kept for the duration of the student academic period (typically 4 years) and then erased. They are stored in a secure data base/server.

To encourage student participation in the study, three $20 gift certificates from a coffee shop were provided at the end of data collection. Three student names were randomly drawn by the administrative assistant.

Data Collection Procedure

The simulation design followed the guidelines set forth by INACSL Best Practice Guidelines: Simulation (2015). Students were sent objectives for the scenario a week before as well as a synopsis of the case that would be presented. The scenario was chosen from the Program for Nursing Curriculum Integration (PNCI) scenarios that were purchased for use by the university in 2011. The PNCIs provide a standardized format in how the scenario should proceed and are embedded within the simulation software.

The scenario was based on a medicine/surgery patient and utilized with a high fidelity mannequin. Year three students presently had the same instructor and facilitator who conducted all the scenarios for this course. The instructor has over four years of experience running the simulation sessions. The instructor operated the mannequin and acted as the voice of the patient. The facilitator was in the room and provided assistance and guidance, as needed, to students.

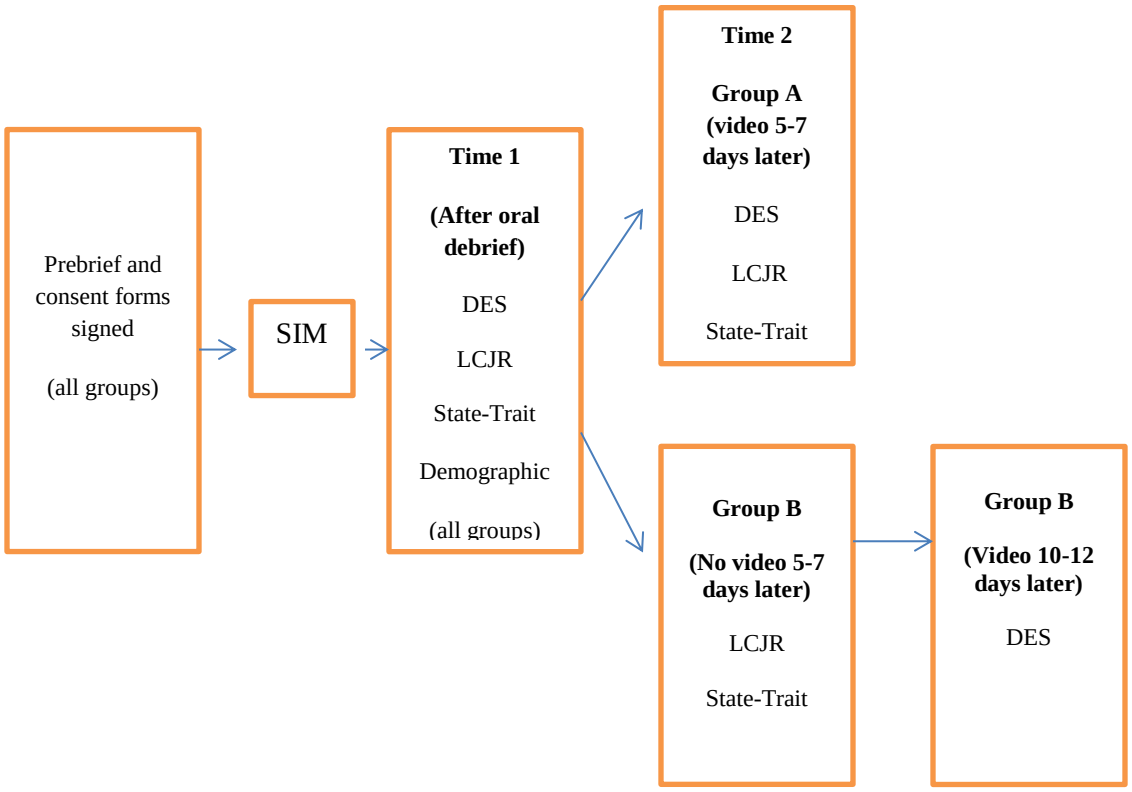
Students were separated into groups of 3-4 for a total of eight groups. Each student was assigned to a role, either the primary nurse or the secondary nurse. Each set of students went through the same simulation session followed by a debriefing session. INACSL Best Practice Guidelines: Simulation (2015) recommends a structured framework to guide the debriefing session. The instructor, with assistance from the facilitator for feedback, led the debriefing session utilizing the Debriefing for Meaningful Learning (DML) strategy by Dreifuerst (2009). The framework reinforces reflective learning through the use of tools utilized by the students. The instructor, who conducted the debriefing, has been utilizing this framework for approximately two years. She has attended numerous simulation conferences as well as attended workshops concerning DML. She has also extensively self-studied on this subject.

The following general questions guided the debriefing session and are based on the PNCI general debriefing questions which are similar to those defined by Dreifuerst: a) What was the experience like for you? b) What worked and what didn't work? c) What happened and why? d) How did you decide on your priorities for care and what would you change? e) What are you going to take away from this experience? The first measures were taken after the debriefing session. Following this, students were then randomized into two groups. Group A, after 5-7 days later, reviewed their performance video and filled out three questionnaires

(communication, reflection and anxiety). Group B completed two of the questionnaires (communication and anxiety) at this time. Group B then returned 10-12 days later and watched their performance video and subsequently filled out the last questionnaire (reflection) because it pertained to videos. Figure 3 provides a summary of the data collection process.

Figure 3

Study timelines and data collection points



Data analysis procedure

Data was analyzed utilizing the Statistical Package for Social Sciences (SPSS) version. 22.0. The items identified from the STAI, DES and LCJR tools are ordinal in nature. For the

descriptive component of the study, raw data collected from each tool and categorical socio-demographic variables were reported using frequency tables (frequencies and percentages).

Preliminary analyses of the variables of interest (the scores) were carried out and described using means, median, and standard deviations. Since the variables were not normally distributed within the population, a non-parametric test (Wilcoxon paired-sample rank test) for scores was used (Wood & Ross-Kerr, 2011). The Wilcoxon paired-sample rank test is applied when "…comparing two paired groups, based on the relative ranking of values between the pairs" (Polit and Beck, 2010, p. 571). Therefore, in this study, the difference in scores from the same group was compared as to whether there is a difference between the debriefing session and the video-playback session. The Mann Whitney *U* was also used to test differences between independent groups, that is, between group A and B between those who watched their video and those who did not. This non-parametric test is also based on ranked sums (Polit & Beck, 2010). Each tool author requested a report of the psychometric properties of each scale and how they were used.

Conclusion

The quasi-experimental design study addressed the following question: Is video-playback in simulation, after verbal debriefing, associated with changes in nursing students' reflection, communication and anxiety level? Data was collected utilizing the demographic survey, the LCJR, the DES and the State- Trait Y1 and Y2 forms to analyze the outcomes of reflection, communication and anxiety. Data analysis was performed utilizing SPSS 22.0 and in consultation of a statistician. Recruitment procedures and ethical considerations have been outlined. The next chapter will discuss the results from the study.

Chapter four: Analysis

In this chapter, the study findings are presented. Sample demographics will first be described followed by results related to the testing of the three hypotheses. This chapter will also report the reliability of the psychometric properties of the scales.

The purpose of this study was to address the following question: Is video-playback in simulation, after verbal debriefing, associated with changes in nursing students' reflection, communication and anxiety level? The learning outcomes of communication, reflection, as well as anxiety levels were measured utilizing subscales of the Debriefing Experience Scale (DES), and the Lasater Clinical Judgment Rubric, and the State-Trait Y1 and Y2 scale. A demographic questionnaire was also included to assess characteristics of the sample. Nursing students enrolled in a year three medicine/surgery course participated in a simulation and debriefing session which was followed by the distribution of all the scales as well as the demographic survey at that time. Students were then randomized into group A and B. Group A watched their video performance within 5-7 days after the simulation and filled out all the questionnaires. Group B (no video) filled out only 2 of the questionnaires. Group B then returned at time 3 (10-12 days later) to watch their video and fill out the last questionnaire pertaining to viewing their video. This ensured that all students had the same experience.

Three hypotheses were explored to address this question:

Hypothesis 1: Video-playback, after verbal debriefing, will increase students' perception of their reflection abilities versus debriefing alone.

Hypothesis 2: Video-playback, after verbal debriefing, will increase students' perception of their communication skills versus debriefing alone.

Hypothesis 3: Video-playback, after verbal debriefing, will increase student anxiety levels versus debriefing alone.

Data were collected from March 9th, 2016 to April 9th, 2016 over a five week period. The total sample consisted of 31 students. A total of 23 students agreed to participate and completed in the study for a response rate of 74%. All students completed the surveys within the time frame allotted except for one student in group B who did not return to watch her video 10 days after the simulation session. This may have been due to the fact that viewing her video coincided with the final exam period. The final sample size included 23 patients which did affect the study's power that was previously calculated at 102 students. A post hoc analysis using G*power for a sample size of 23 with a medium effect size (d=.60) and the significance at 0.05, determined that the actual power to be 50% for paired groups and 32% for independent groups. Previous studies were reviewed to find the effect size for the three outcomes being measured but only two studies reported their effect size at 0.75 (Kameg et al, 2010) and where the other was based on "… post-test overall performance means and SDs [standard deviation] using Cohen d" (Sawyer et al., 2012, p.216). Given that few studies did not report their effect size, a medium effect size (.50) was chosen as the default (Bannon, 2013).

Data was entered by the researcher into IBM Statistical Package for the Social Sciences (SPSS) version 22.0 with the assistance of a research coordinator from the Manitoba Center for Nursing and Health Research (MCNHR). The statistical analysis was then further verified by the statistician.

Data Analysis Procedures

Descriptive analysis (frequencies, percentages, means and standard deviations) were performed with the LCJR, DES and State-Trait forms as well as demographic data where appropriate. In order to determine the level of normality in the distribution of values, the Shapiro-Wilk test was utilized as it is the preferred method for sample sizes less than 50 (Bannon, 2013). For this specific test, if the observed significance levels for the tests are small, the assumption of normality is doubtful (Bannon, 2013). Using the Shapiro-Wilk test, it was determined that the LCJR and DES results did not meet the assumptions for normal distribution therefore parametric tests were inappropriate. However, results for the State-Trait Y1 and Y2 anxiety scales differed. The significance levels for the Y1 and Y2 scales were p=.164 and p= .420 respectively, suggesting that the assumption for normality was not unreasonable. However, when assessing the skewness and kurtosis of the Y1 and Y2 scales, the output indicated that there was a negative kurtosis for both scales. In further assessment, the value of the kurtosis and skewness for each scale was divided by its standard error in order to get a ratio. A ratio of less <2 indicates normality of distribution (Bannon, 2013). For kurtosis, the ratio was >2 for both Y1 and Y2, therefore indicating a non-normal distribution. For the skewness ratio, both Y1 and Y2 were shown to be normally distributed. In consultation with the statistician, it was felt that due to the smaller sample size and the non-normal distribution, that non-parametric tests would be utilized. The Mann Whitney U was used to compare the two independent groups (A and B) based on ranked scores and the Wilcoxon paired-sample rank sum test was used to compare the pair groups based on the ranking of values.

Psychometric Properties of Instruments

Table 1 summarizes the Cronbach's alpha reliabilities that were reported at time 1 for all the study instruments subscales and scales. As mentioned earlier, acceptable ranges are 0.70 and higher. For the DES scale, a Cronbach's alpha for each subscale measuring the experience and rating that experience was calculated. For the opinion section of the DES scale, the following Cronbach's alpha of .69 was reported for the subscale of *Analyzing thoughts and feelings* (4 items). Using SPSS, the Cronbach's alpha would have been reported as .88 had the item "The environment was physically comfortable to debrief" been deleted. This might be due to the fact of poor correlation with the other items. For the subscale *Learning and making connections* with six items, the Cronbach's alpha was reported at .85. For the rating of the importance portion of the scale, the Cronbach's alpha for *Analyzing thoughts and feelings* was calculated at .76 and for the subscale *Learning and making connections* at .89. The Cronbach's alpha for all items in the experience section was .85 and for the rating the importance was .88. These values are slightly different to Reed's study (2012) where she reported a higher Cronbach's alpha (.81) for *Analyzing thoughts and feelings* for the experience scale but a lower Cronbach's alpha (.89) for the importance of the experience scale.

For the LCJR scale, the two subscales that were addressed were *Reflecting and Responding.* The subscale of *Responding* consisting of four items reported a Cronbach's alpha of .76. No item deletion could be made to increase the alpha scores for this subscale as per SPSS. Previous values were reported slightly higher at 0.88 and 0.91 by Gubrud-Howe (2008). The subscale of *Reflecting* consisted of only two items and reported a correlation of .68.

The following Cronbach's alphas were reported for the Y1 and Y2 form respectively: .87 and .92. This is similar to what has been previously reported for samples of students (Speilberger et al., 1983).

Table 1

Reliability scores for the DES, LCJR and State-Trait Anxiety tools

Time 1	**Cronbach's alpha for subscale**	**Number of items in scale/subscale**	**Cronbach's alpha for scale**
DES			
Analyzing thoughts and feelings	.69	4	.85
Learning and making connections (Experience items)	.85	6	
Analyzing thoughts and feelings	.76	4	.88
Learning and making connections (Rating that experience items)	.89	6	
LCJR			
Responding	.76	4	xx
STATE-TRAIT			
Y1		20	.87
Y2		20	.92

To summarize psychometric properties of the three measurement tools used in this study, generally the tools performed well in terms of internal consistency, meaning the scale or subscale items were correlated with each other. While .70 and higher is recommended, one measurement (DES, *Analyzing thoughts and feelings*) was marginally below .70 at .69. This bodes well for confidence in the analysis of the relationships among measurements.

Sample Demographics

Characteristics of the demographic survey are described below and include age, gender, level of education, full time or part time student and role within the simulation. The final sample for the study consisted of 23 students, 11 who were in the video-playback group (Group A) and 12 who were in the group with no video (Group B).

Of the 23 respondents, 82.6% were female and 17.4% were male. No one self-identified as transgender. The mean age was 23.17 with a *SD* (4.29), with a range between 20 to 38 years old. The highest percent of students were between the ages of 20-22 (52.2%); with the next set of students were 23 years and older (47.18%). Only three students were older than 30 years of age (13%). Nurses were asked their level of education and their role within the simulation. Of the 23 respondents, a total of 16 students (69.6%) identified their highest level of education as high school. Three students (13%) responded that they had a post-education however did not specify if they obtained a diploma or degree. Data was missing on four of the surveys (17.4%) for this question. As well, students identified that they were the primary nurse more often (87%) versus the secondary nurse (13%). The majority of students identified that they were full-time (95.7%) within the curriculum whereas only one person was part-time (4.3%). Table 2 provides a summary of the demographic characteristics of the sample.

Table 2

Demographic characteristics of the sample (n=23)

Characteristics	**Frequency**	**(%)**	***M (SD)***
Age			23.17 (4.29)
20-22	12	52.2	
23+	11	47.8	
Gender			
Female	19	82.6	
Male	4	17.4	
Transgender	0	0.0	
Level of education			
High school	16	69.6	
Post-secondary	3	13.0	
Missing	4	17.4	
Full time or part time within program	22	95.7	
Full-time	1	4.3	
Part-time			
Role in the simulation	20	87.0	
Primary nurse	3	13.0	
Secondary nurse			

Summary of Sample Characteristics

In summary, the sample consisted mostly of female students who were in their early twenties and attended school on a full-time basis. As well, the highest level of education identified most often was a high school diploma. The student's role (either primary or secondary nurse) was explained prior to each simulation by the nursing instructor. Despite this, students more often identified themselves as the primary nurse than the secondary nurse. This was not possible so this characteristic is not useable in this study. Groups cannot be compared on their designation as primary or secondary nurse.

Reflection

Subscales of the Debriefing Experience Scale (DES) and the Lasater Clinical Judgment Rubric (LCJR) were both used to assess the construct of reflection. Given that the sample size was small, and in consultation with the statistician, missing data on six surveys was calculated through the following imputation method. This was done by adding the responses answered, dividing by number of questions answered in the section followed by multiplying by the total number of questions (Bannon, 2013). This ensured that the sample size could be maintained for analysis. It is suggested that the questionnaires with more than 5% of questions missing be excluded as this can affect the validity of the scale (Bannon, 2013). However, none of the questionnaires were excluded for this reason.

The Lasater Clinical Judgment Rubric

The LCJR was administered at time 1 and time 2 to group A (video) and group B (no video). Of the 23 participants, two questionnaires were excluded because participants did not fill out the questionnaire correctly or did not complete it all.

The mean for participants from group A (n=10) was 6.9 (SD=0.88) at time 1 and 6.8 (SD=0.92) at time 2. For group B (n=11), the mean was reported as 5.91 (SD=0.94) at time 1 and 6.75 (SD=0.86) at time 2. The raw scores ranged from 6-8 points for all groups except group B (no video) at time 1 where the range was slightly lower (4-7). The medians were all within one point of each other. Table 3 provides the findings of the LCJR tool.

Table 3

Summary of LCJR subscale Reflection

	Time 1 (after debrief)				***Time 2 (after video)***			
	n	*Mean (SD)*	Ranges	Median	*n*	*Mean (SD)*	Ranges	Median
Group A	10	6.90 (0.88)	6-8	7.0	10	6.80 (0.92)	6-8	6.5
Group B	11	5.91 (0.94)	4-7	6.0	12	6.75 (0.86)	6-8	6.5

The Debriefing Experience Scale

The DES subscales included were titled: *Analyzing thoughts and feelings and learning and making connections.* Responses were rated from a 5 point Likert scale ranging from 1(strongly disagree) to 5 (strongly agree). For *Analyzing thoughts and feelings,* four items were included for a total possible score of 4 to 20 for each section of the opinion section and rating section. For the *Learning and making connections* subscale, six items are included with possible scores ranging from 6-30 for each section as well. The original subscale for this section contained eight items and two items were accidently omitted when reproducing the scale for distribution. As a reminder, the same scale was provided to both groups (A and B) after the simulation and debriefing session at time 1 and after they watched their video at time 2 (Group A) and time 3 (group B). However, the word "debriefing" was changed to "viewing video" at time 2 and 3 as to not confuse the students.

Total scores for the *experience* portion of the scale and for the *rating the experience* portions were between 34-50 points. Means for group A and B were almost identical at time

1 for the experience portion 47.81 (SD=3.06) and 47.83 (SD=3.51) and slightly lower for the rating portion of the scale at 45.36 (SD=4.16) for group B versus group A 47.72 (SD=3.74). At time 2, the means for group A only were 44.20 (SD=5.80) for the experience portion of the scale and 40.78 (SD=5.45) for the rating portion of the scale. For time 3, group B means were reported as 42.46 (SD=4.82) for experience and 42.18 (SD=5.10) for rating the experience. Group B displayed lower medians (SD=42.0) at time 3 compared to group A at time 2 (45.0). Table 4 summarizes this data.

Table 4

Summary of DES subscales for Reflection

Time 1		***Experience***			***Rate the Experience***		
	n	*Mean(SD)*	*Ranges*	*Median*	*Mean(SD)*	*Ranges*	*Median*
Group A	11	47.81 (3.06)	41-50	49	47.72 (3.74)	37-50	49
Group B	12	47.83 (3.51)	39-50	49.5	45.36 (4.16)	35-50	47

Time 2		***Experience***			***Rate the Experience***		
	n	*Mean(SD)*	*Ranges*	*Median*	*Mean(SD)*	*Ranges*	*Median*
Group A	9	44.20 (5.80)	34-50	45.0	40.78 (5.45)	34-50	40.0
Group B	X	X	X	X	X	X	X

Time 3		***Experience***			***Rate the Experience***		
	n	*Mean(SD)*	*Ranges*	*Median*	*Mean (SD)*	*Ranges*	*Median*
Group A	X	X	X	X	X	X	X
Group B	11	42.46 (4.82)	34-48	42.0	42.18 (5.10)	34-50	41.0

Analysis of Hypothesis #1

The first hypothesis addressed within this study is the following:

1. Video-playback, after verbal debriefing, will increase students' perception of their reflection abilities versus debriefing alone.

The DES scales and the LCJR scale both addressed this construct. When assessing the results from the LCJR- subscale *Reflection*, group A and B were randomized at time 2 where group A watched their video and group B did not. Using the Mann Whitney *U* for non-parametric testing, findings indicated that there were no significant differences between those who watched the video and those who did not at time 2 (U= 58.50, p=.92, 2-tailed).

The Wilcoxon paired-sample rank test compared the size of the difference between time 1 and 2 within groups. Findings for group A (video) were not statistically different (Z=.000, p=1.0,) as well as for group B (no video) (Z=1.897, p=0.06).

The DES scale with subscales *Analyzing thoughts and feelings* and *Learning and making connections* were given to both group A at time 2 (after watching their video 5-7 days after the simulation and debriefing) and group B at time 3 (after watching their video 10-12 days after the simulation and debriefing). For the experience portion of the scale, the Mann-Whitney *U*, findings indicated that no statistical significance differences between time 2 for group A (5-7 days later) and time 3 for group B (10-12 days later) (U=41.50, p=.35, 2-tailed). For the rating of importance portion of the scale, findings indicated no statistical difference between groups (U=51.50, p=.38, 2-tailed).

The scale at time 1 pertained to debriefing, and at time 2 (group A) and 3 (group B) pertained to video-playback, a Wilcoxon paired sample rank test was performed to test the

differences as the scales asked identical questions. When comparing group A at time 1 and 2, findings indicated that there was a statistical significance between time 1 and time 2 for the experience portion of the scale (Z=-2.077, *p*=.038) and this was the case for the rated the experience portion of the scale (Z=-2.805, *p*=.005). A comparison was conducted for group B at time 1 and time 3. Similarly, the Wilcoxon paired sample rank test found that there was a statistical significance between time 1 and time 2 for the experience portion of scale (Z=-2.705, *p*=.007). However there was no statistically significant difference noted for the rating the importance portion of the scale (Z=-1.060, *p*=.289). Table 5 summarizes these results.

Table 5

Inferential tests for LCJR subscales and DES subscales

	Comparison between group A and B at time 2	***Comparison within groups A and B between time 1 and time 2***
	Mann Whitney U, (p)	*Wilcoxon p value (Z value)*
LCJR	58.50 (.92)	*p*=1.0, Z=.000 (Group A) *p*=0.06, Z=1.897 (Group B)
DES Experience	41.50 (.35)	*p*=.038*, (-2.077) *(*group A*)* *p*=.007*, (-2.705) (group B)
Rate the experience	51.50 (.38)	*p*=.005*, (-2.805) (group A) *p*=.289, (-1.060) (group B)

*statistical significance set at <0.05

To briefly summarize the findings for hypothesis #1, analyses from both the DES and LCJR indicated no significant differences *between* groups A and B, suggesting the hypothesis was not supported, that is, video-playback did not demonstrate statistically significant differences in reflection between group A who saw their videotapes (time 2) and group B who did not see their videotapes (time 2).

However, when the two groups were analyzed separately at time 1 and time 2 (group A) and time 1 and time 3 (group B), there were statistically significant differences *within* groups for the DES. For group A, the post-test (time 2) scores in both portions of the DES (rating the video-playback experience and rating the importance of the video-playback experience) were statistically significantly lower than the pretest scores (time 1, oral debrief). This means that the experience of having the oral debrief (time 1) and the importance of the oral debrief was more positively rated compared with the video-playback experience and the importance of the video-playback. In essence, the students rated more highly the oral debrief compared to the video-playback in terms of analyzing their thoughts and feelings, helping them learn and the importance of the experience.

For group B, the findings were mixed. As with group A, the post-test (time 3) scores in the DES (rating the video-playback experience) were statistically significantly lower than the pretest scores (time 1). This means that the experience of debriefing after the oral debrief (time 1) was more positively rated compared with the video-playback experience for students in group B. Higher ratings were accorded to the oral debrief compared to video play back. However, the post-test (time 3) scores in the DES (rating the importance of the video-playback experience) were not statistically significantly different than the pretest scores (time 1).

Communication

The concept of communication was measured utilizing the subscale *Responding* from the LCJR tool. The items included in this analysis were calm/confident manner, clear communication, well-planned intervention and being skillful. As mentioned earlier, students were to self-evaluate their level of responding as noted by the parameters outlined ranging from beginner to exemplary and which were rated 1 to 4, where potential scale score of 4-16 where higher scores reflect a better ability to communicate. Mean scores were then calculated at time 1 and time 2 and for both groups. Table 6 provides a summary of the data. Ranges of scores were lower at time 1 for both groups. Means for group A and B were close at 12.50 (SD=2.07) and 12.90 (SD=0.87) at time 1. For time 2, findings reported a mean of 12.09 (SD=1.76) for group A and 12.83 (SD=0.58) for group B. Medians were the same except for group B which was 12.0 compared to 13.0 for the other times.

Table 6

Summary of LCJR subscale Responding

	Time 1 (after debrief)				***Time 2 (after video)***			
	n	*Mean (SD)*	Ranges	Median	*n*	*Mean (SD)*	Ranges	Median
Group A	10	12.50 (2.07)	8-16	13.00	10	12.09 (1.76)	12-14	13.0
Group B	11	12.90 (0.87)	8-14	12.00	12	12.83 (0.58)	12-14	13.0

Analysis of Hypothesis #2

The second hypothesis focused on the outcome of communication:

2. Video-playback, after verbal debriefing, will increase students' perception of their communication skills versus debriefing alone.

Students were asked to rate their communication skills using the LCJR subscale *Responding*. The Mann Whitney *U* was used to compare group A and B at time 2. Results indicated that *U*=58.5, *p*=.92 sig≤.05, 2-tailed was not statistically significant. When comparing the Wilcoxon value in paired groups between time 1 and time 2, the Wilcoxon paired-sample rank test revealed a value of Z=-1.382 (*p*= .167) for group A, and Z=-1.354 (*p*=.176) for group B. A synopsis of the data is provided in Table 7.

Table 7

Inferential tests for LCJR subscale Responding

	Comparison between group A and B	*Comparison within groups A and B between time 1 and time 2*
Time 2	*Mann Whitney U, (p)*	*Wilcoxon p value (Z value)*
LCJR-Responding	U=58.50 (0.92)	*p*=.167(-1.382) group A *p*= .176 (-1.354) group B

*statistical significance set at <0.05

To briefly summarize the findings for hypothesis #2, analyses from the LCJR *Responding* subscale indicated no significant differences between groups A and B, suggesting the hypothesis was not supported, that is, video-playback after verbal debriefing did not

demonstrate statistically significant differences in perceptions of communication between group A who saw their videotapes (time 2) and group B who did not see their videotapes (time 2). There were no statistical differences within the groups in their perceptions of the communication skills.

The median score did increase slightly in group B, while the median score in group A remained the same. Students who viewed their videos responded that their communication skills remained the same, while those who did not view their recordings had a perceived increase in the communication skills. This is an interesting finding given that the only thing that occurred to group B was the passage of time.

Anxiety

Table 8 summarizes the data for the outcome Anxiety. The State-Trait Anxiety Scale form Y1 and Y2 was utilised to measure anxiety levels. The scale measures how students feel at a certain moment (State-Y1) compared to how they generally feel (Trait-Y2). The test was administered to all students after the simulation and debriefing sessions as well as 5-7 days later to both group A (video) and B (no-video). Raw scores were calculated using a scoring key where each response was weighted 1 to 4. The range for each version (Y1 and Y2) is 20-80 where a higher score indicates more anxiety. Items 1,2,5,8,10,11,15,16,19 and 20 on the STAI AD form Y1 and items 21,23,26,27,30,33, 34, 36 and 39 for the STAI AD form Y2 were reverse scored as per the answer key provided. The data was then recoded in SPSS. For those who omitted 1-2 items, a prorated full scale score was calculated by determining the mean weighted score for those responses answered which was then multiplied by 20. The number was then rounded to the next higher score. One survey did have four questions

unanswered however this was still within the accepted 5% that is permitted when assessing the validity of the tool (Bannon, 2013). Two students did not fill out the tool at time 1 and one student omitted completing the tool at time 2. Table 5 contains the means, medians, standard deviations and ranges of the STAI Y1 and STAI Y2 scores at time 1 and time 2 of data collection.

Mean scores Group A at time 1 for form Y1 and Y2 were 35.55 (SD=9.54) and 40.99 (SD=10.55). Lower scores for Y1 compared to Y2 makes sense because Y1 is "at the moment" after simulation where anxiety is likely high than would be expected as "general feeling". For group B, means were reported lower for both Y1 31.83 (7.96) and Y2 36.67 (8.62) at time 1. Ranges for group B were slightly lower (20-49) compared to group A (22-61). For time 2, when comparing those in group A (watched their video) to group B (no video), means were again slightly lower for group B. Group A means for Y1 and Y2 were 37.18 (SD=11.79) and 40.72 (SD=9.92). Group B reported means of 35.17 (SD=9.55) and 36.03 (SD=8.61). Means for Y1 were slightly higher at time 2 for both groups signifying they rated their stress slightly higher at this point. Means for Y2 were stable for both groups from time 1 to time 2 which seems likely given Y2 is about "generally feeling". Interestingly, group B rated their anxiety higher on form Y1 at time 2 despite not having a video to watch. Medians values are also reported in the table below.

Table 8

Summary of State-Trait forms Y1 and Y2

	Time 1 (after debrief)				***Time 2 (after video)***			
	n	*Mean (SD)*	Ranges	Median	*n*	*Mean (SD)*	Ranges	Median
Group A Form Y1	11	35.55 (9.54)	22-51	34.0	11	37.18 (11.79)	20-61	37.0
Form Y2		40.90 (10.55)	28-61	39.0		40.72 (9.92)	29-60	39.0
Group B Form Y1	12	31.83 (7.96)	20-44	30.0	12	35.17 (9.55)	20-54	36.5
Form Y2		36.67 (8.62)	23-49	37.0		36.03 (8.61)	23-49	37.0

Analysis of Hypothesis #3

The last hypothesis addresses the anxiety levels of students.

3. Video-playback, after verbal debriefing, will increase student anxiety versus debriefing alone.

Two scales analyzing how students feel at a certain time (Y1) and how they generally feel (Y2) were utilized to compare anxiety levels between the randomized groups. Despite group B means being lower, the Mann Whitney *U* revealed that these results were not statistically significant at time 2 for the Y1 scale U=63, p=.88, 2-tailed, and the Y2 scale U= 52.5,

p=.413, sig≤.05. Similarly, results for the Wilcoxon paired-sample rank test revealed there was no statistical significance between those who watched their video and those who did debriefing for the Y1 scale for group A (Z=-.845, *p*=.398) and for group B (Z=-1.067, *p*=.286) and the Y2 scale group A (Z= -.401, *p*=.689) and group B (Z=-.462, *p*=.644). Table 9 summarize this data.

Table 9

Inferential tests for State Trait scale Y1 and Y2

	Comparison between group A and B	*Comparison within groups A and B between time 1 and time 2*
Time 2	*Mann Whitney U (p)*	*Wilcoxon p value (Z value)*
State-Trait		*p*=.398, (-.845) group A
Y1	*U*= 63 (*p*=.88)	*p*=.286, (-1.067) group B
		p=.689, (-.401) group A
Y2	*U*=52.5 (*p*=.413)	*p*=.644, (-.462) group B
	**statistical significance set at<0.05*	

To briefly summarize the findings for hypothesis #3, analyses from both the State-Trait forms Y1 and Y2 indicated no statistically significant differences between groups A and B, suggesting the hypothesis was not supported, that is, video-playback following verbal debriefing did not increase student anxiety.

When comparing groups, there were no statistically significant differences. The measure of anxiety in the moment (Form Y1) was conducted at time 1, which was the point in time where both group A and B had completed their simulation experience and debriefing session and at time 2, after watching their video. At time 2, students in both group A and B indicated

that their anxiety was higher than what was experienced after the initial simulation and debriefing session, although group A had watched their video while group B had not. It is unexpected that group B means would be higher at time 2 considering they did not watch a video.

Findings for Form Y2 were only slightly higher after the debriefing session for both groups. The group median scores remained relatively consistent. It would appear as though being video recorded or watching a video recording did not affect anxiety levels in the students.

Conclusion

In this chapter, the socio-demographics of the sample were described. These data were used to present a profile of participants. As expected the majority were female, age 20-22, had high school as the highest level of education, and attended their nursing program on a full-time basis. More students identified themselves as the primary nurse during the simulation (87%) when it should have been closer to 50%. Perhaps, students felt great responsibility during the simulation and this self-identified as the primary nurse.

The measurement instruments that were selected have been widely used and performed well in relation to internal consistency as measured by Cronbach's alpha. The inter-item correlations were greater than .70 except for one measure and this was on the margin at .69.

The findings from a comparison of groups A and B at time 2 suggested that students who viewed their videotaped simulation experience were not different from those students who did not have this opportunity in relation to their perceptions of reflection and communication

abilities, and levels of anxiety. It had been hypothesized that there would be differences, that students who had viewed their videotaped simulation experience would report higher scores in their perceptions of reflection and communication abilities, and higher levels of anxiety. These findings add to the literature on simulations and the use of video-playback as a debriefing strategy in nursing education. These findings suggest that oral debrief from a facilitator might be preferable in terms of promoting student learning outcomes (reflection and communication) and addressing students' anxiety given the costs (equipment) of video-playback. This will be further discussed in chapter 5.

Although not formally hypothesized, it was of interest to compare the two groups separately, to examine within group changes that might occur from time 1 to time 2 for group A and from time 1 to time 3 for group B. These analyses yielded changes in one measurement, perception of reflection as measured by the DES. Group A rated the oral debrief experience and its importance more positively compared to the video-playback experience and its importance. For group B it was only the oral debrief experience (and not its importance) that was more positively rated compared to the video-playback experience. These findings suggest the value of oral debrief from a facilitator might be preferable to video play back.

Chapter five: Discussion

This chapter includes a discussion of the results based on the findings presented in the previous chapter. It presents an examination on the demographics of the study as well the findings for each hypothesis. Limitations of the study are addressed in detail. Finally, recommendations for practice and for future research related to nursing education are provided.

Study Overview

The purpose of this study was to answer the following question: Is video-playback in simulation, after verbal debriefing, associated with changes in nursing students' reflection, communication and anxiety level? In the literature, the use of video has been integrated into debriefing sessions however it has been unclear whether video-playback has any effect on student learning outcomes when done a few days after the simulation session. INACSL Best Practice Guidelines: Simulation (2015) encourage video use depending on the objectives of the simulation, however this directive is not helpful. Some literature has suggested that video review after the simulation and debriefing session should be provided and examined as integral to the learning experience (Gore et al., 2012; Reed, 2012; Shellenbarger & Hagler, 2015), but this is not uniformly accepted as necessary to the learning experience (Krogh, Bearman & Nestel, 2015). This study was based on previous research in the areas of video and debriefing and their use and attempted to contribute to what was known about the value of video-playback and learning.

Kolb's Experiential Learning Theory (1984) provided the lens for the study. Through continuous exposure to simulation experiences, new frames of reference can develop as students learn to reflect on their performances and apply this new learning to future

situations. This requires an active participation from the student as they must learn to grasp and transform an experience to learn. Debriefing further enhances the reflective process because discussions with facilitators and peers allow learners to analyze their decision making process and ultimately apply these new frames of reference to future situations. It is about engagement and Bonnel and Hober (2016) affirm that engaged learners enhance their learning opportunities.

Generally speaking, the findings from this study did not support the use of video-playback following verbal debriefing in relation to students' perception of their reflection and communication skills, and their anxiety levels. Discussion of the findings from this study follows and will focus on each of the three hypotheses.

Demographics

The demographic information provided an overall description of the study participants. The study took place in a small university in mid-western Canada. Year three nursing students of a Bachelor or Nursing program were invited to participate in the study. A response rate of 71.4 % (n=23) was obtained. Most of the respondents were females (82.6%), and were between the ages of 20-30. High school was cited most frequently as the highest level of education (69.6%). Almost all of the students attended school fulltime (95.7%).

Year three students were the only students who were accessible to the researcher at that time. The researcher holds a faculty position within the Bachelor of Nursing program and teaches in year two; therefore year two students were not accessible. The university admits 33 students per year. All students speak English despite it being a French university and therefore could answer the questionnaires without difficulty. The administrative assistant

who administered the consent forms stated that students did not ask any questions concerning the questionnaires while completing them.

In comparing the demographics of the sample to the larger population of students in Manitoba, statistics for Canadian nursing students were difficult to find. The regulating body (College of Registered Nurses of Manitoba) for the province in which the study took place did not have any data on new graduates. They did however report that male nurses made up 8.7% of the nursing population in the province (College of Registered Nurses of Manitoba, 2015). This is lower than was reported in this study (17.1%). Statistics from the University where the study took place revealed that for 2014-2015, 13% of the nursing student population were males (Université de Saint-Boniface, 2016). Most of the students were between the ages of 20-30 in this study. Only 13% were <30 years old. For 2014-2015, 90% of students in the nursing program where the study took place were between the ages of 18-29, and 10% were >30 of age.

The sample proved to be fairly homogeneous and there were not enough variation to go beyond reporting frequencies (univariate analysis). Differences in scores between male and female populations have been previously reported in other studies. For example, a study by Dyck, Oliffe, Phinney, and Garrett (2009) discovered that males rated the concept reflection as being overly stressed in nursing and therefore scored lower on their reflection papers. As well, Cazzell and Anderson (2016) discovered that females scores were higher on the LCJR than males ($p<.001$). These types of results help to explain certain patterns within data sets.

The question concerning the role of the student may have caused some confusion for participants. Grant et al. (2014) discovered that simulation experiences vary for each student

dependent upon the role they are assigned. A large percentage (87.7%) identified that they were the primary nurse when actually half of the students should have identified as the secondary nurse. This may due to the fact that the scenario only had four students (two for each section) in the simulation and debriefing session. Every student was asked to play a role in this study as primary or secondary nurse. Students might have felt more invested in the simulation and therefore thought their role was as the primary nurse as opposed to the secondary nurse.

Discussion of Findings for Each Hypothesis

Hypothesis #1

Hypothesis 1 tested whether video-playback after verbal debriefing, increased students' perception of their reflection abilities versus debriefing alone. A Subscale of the Lasater Clinical Judgment Rubric scale (LCJR) - *Reflection* and the Debriefing experience scale (DES) - *Analyzing thoughts and feelings* and *Learning and making connections* compared reflection at two points in time. At time 1, all students were asked to complete the scales LCJR and DES immediately after they had debriefed as a group, followed by time 2, where group A completed both scales following viewing their videos while group B did not watch their video and completed the LCJR only. At time 3, group B watched their video and completed the DES, resulting in all students watching their videos and completing the scales.

Lasater Clinical Judgment Rubric. Both groups of students were asked to complete the LCJR subscale *Reflection* at time 1 and time 2 to see if there was a difference between those who viewed their video and those who did not. The Mann Whitney *U* did not demonstrate a statistical significance between groups *(p*=.92). Differences in means were identified at time

1 where means were lower for group B but which increased at time 2 despite not having any intervention.

In the LCJR subscale (effective reflecting), there were 2 items labelled *evaluation/self-analysis* and *commitment to improvement*. For each item, there were four possible descriptions: beginning, developing, accomplished and exemplary. The participants were third year students and they are close to completing the third year of the program. The possible range in scores for both items is 2-8. The group A mean was 6.9 and the median was 7.0 for time 1. The group B mean was 5.91 and the median was 6.0 at time 1. So, clearly these students were ranking themselves quite high, very close to the maximum of 8. Intuitively, this makes sense because at this point in their program they do not see themselves as "beginning" or "developing" rather they likely see themselves as "accomplished" or even "exemplary". The mean and median values suggest that participants saw themselves as "accomplished" to "exemplary". This may have created a "ceiling effect", and the means and medians at time 2 (group A and B) were similar to time 1. These students rated themselves so highly at time 1 that the second rating could not increase to the extent that there would be likely having been a statistical difference. If this study had been conducted with second year students, it is possible that time 1 rating would have been lower but then again, time 2 might also have been lower. Perhaps we cannot expect a change in the perception of reflection in such a short time period (approximately two weeks).

The use of the LCJR might be called into question for this study. However, it is widely used. There is a rubric for each rating. For example, when choosing "exemplary", six descriptors are included to describe what this rating means. According to Lasater (2007), the format of the rubric is beneficial in that it offers language that students can understand and

can track their progress more accurately instead. Cato et al. (2009) posit that by using the LCJR tool, students demonstrate a deeper and more significant self-evaluation. These statements support rubrics however students might not agree that they are *exemplary* for all descriptors, and might have generalized if they felt they were good at three of the descriptors.

As mentioned, mean values were lower for group B at time 1. Both groups received the same scenario with the same instructor thereby assuming that their debriefing experiences were similar. Group B had a bit more time to reflect on the debriefing process in itself which may account for the increased scores 5-7 days later (mean of 5.91 at time 1 and 6.75 at time 2). This is in line with Schön (1983) when describing 'reflection- on action' denoting reflection that takes place after an event. The process of reflection requires time to develop and asks that the student question and reframe their thoughts, taking into account past experiences to formulate new frames of reference. Nursing instructors understand that testing student's ability to reflect should not be done at one time only and requires more than one format to assess. Lestander, Lehto, and Engström (2016) integrated a written individual assessment on the day of the simulation followed by a 90 minute group debriefing session the next day and again a written reflection one week later. Findings show that reflection over time is important for students as it reinforces feelings of self-confidence as they learn in the process of self-evaluation. This supports the findings of Wessel and Larin (2006) as previously noted.

Reflection can be affected by the context and the culture of the classroom (Scanlan et al., 2002) as well as the demeanor of the debriefer and the learning environment (Grant et al, 2014). A safe learning environment has always been encouraged within the university and the instructor who debriefed was experienced with simulation and working with students.

The correlations between the two items for the LCJR were reported as .68 for this study. Shin, Park and Shim (2015) reported a Cronbach's alpha of .683 for this subscale. The authors sought to validate the tool after having it translated from English to Korean. The Cronbach's alpha for this subscale has been reported higher in other studies (Victor-Chmil and Larew, 2013) which may be due to the fact that the scale was used in its entirety.

Debriefing Experience Scale. The findings for the DES scale revealed there was no statistical difference in reflection between those who watched their video 5-7 days after verbal debriefing (group A) compared to those who watched their video 10-12 days later (group B) for the experience and rating portion of the scale respectively (p=.349 and p=.379). The DES was not distributed at time 2 as the scale specifically cited 'video review' within the items.

As indicated in chapter four, the findings from this study did not support the use of video-playback following verbal debriefing in relation to students' perceptions of their reflection. Analyses of the DES indicated no significant differences *between* groups A and B, suggesting that the hypothesis was not supported, that is, video-playback after verbal debriefing did not demonstrate statistically significant differences in reflection between group A who saw their video (time 2) and group B who did not see their video (time 2). But when the two groups were analyzed separately at time 1 and time 2 (group A) and time 1 and time 3 (group B), there were statistically significant differences *within* groups for the DES.

For group A, the post-test (time 2) scores in both portions of the DES (rating the video-playback experience and rating the importance of the video-playback experience) were statistically significantly lower than the pretest scores (time 1, verbal debrief). This means

that the experience of debriefing after the verbal debrief (time 1) and the importance of the verbal debrief was more positively rated compared with the video-playback experience and the importance of the video-playback. In essence, the students more highly rated the verbal debrief compared to the video-playback in terms of analyzing their thoughts and feelings, helping them learn and the importance of the experience.

For group B, the findings were mixed. As with group A, the post-test (time 3) scores in the DES (rating the video-playback experience) were statistically significantly lower than the pretest scores (time 1). This means that the experience of debriefing after the verbal debrief (time 1) was more positively rated compared with the video-playback experience for students in group B. Higher ratings were accorded to the verbal debrief compared to video play back. However, the post-test (time 3) scores in the DES (rating the importance of the video-playback experience) were not statistically significantly different than the pretest scores (time 1).

Overall, the pre and post-test findings within groups suggested the primacy of verbal debrief in relation to students' perception of their reflection. This could be for several reasons. First, the verbal debrief was conducted at time 1 immediately after the simulation and this immediacy may be a factor. The video-playback occurred 5-7 days later for group A and 10-12 days later for group B. The video-playback captured the interaction in the simulation but it would not capture the students' feelings and thoughts immediately after the simulation. For the DES instrument, more prompting statements during the simulation from the facilitator might have contributed to a deeper reflection after the debriefing session on the part of the students at time 1. According to Reed (2012), items relevant to the process of guided reflection are integrated within the subscale *Analyzing Thoughts and Feelings*. This

subscale encompasses elements of emotional, psychological, behavioral, and environmental aspects of debriefing. Emotions related to the simulation might have been rawer after the debriefing session and captured by this instrument.

The use of videos as a means to facilitate learning has been questioned. Krogh, Bearman and Nestel (2015) interviewed expert debriefers` views of video assisted debriefing (VAD). This study was based in Australia where 24 expert debriefers had been asked to take part in the study. When analyzing major themes pertaining to VAD, the educational approaches of VAD emerged as a major topic. Respondents warned against using VAD within debriefing if not well versed in the practice. It is important to understand what you are going to show and understanding the reasons for choosing video clips. Krough et al. (2015) remark that although VAD can be beneficial, it is merely a tool and may not be necessary.

Second, it may be that changing the DES items from "debriefing" to "video" was not ideal. Item #9 for example says, "My questions from the simulation were answered by the debriefing" and it seems likely that the facilitator did answer questions during the debriefing. Changing this item to read, "My questions from the simulation were answered by viewing my video" may not be a valid item because viewing is unlikely to answer questions.

Third, it may be that there is a preference for getting feedback from a real person, an instructor, someone who is known and respected versus viewing a "stand alone" video. Reed (2015) recently compared three types of debriefing: oral discussion, discussion followed by blogging, discussion followed by journaling. This experimental design used the DES scale. Students (n=58) most preferred oral discussion alone, supporting the notion that debriefing alone is sufficient in itself as supported by other literature (Decker et al., 2013) As well, the

DES was distributed to the whole group at time 1 and then to group A and B after they watched their video whereas the LCJR was given both at time 2 with no intervention for group B. It might have been beneficial to test results at time 3 with group B after they watched their video as well as distribute the DES debriefing scale at time 2 to group B.

Fourth, the timing of the video-playback might have been awkward. Two sets of students in group B were asked to view their videos during the time of exams. Group B students had three sessions (time 1, 2 and 3) as opposed to group A, who had 2 sessions. It is uncertain if that might have played a role in how students answered the scale.

It should be noted that two items were accidently omitted from the DES. However the DES in this study reported a Cronbach's alpha of .88. Other studies have modified the DES. Blum et al. (2010) chose eight items from the subscale to assess self-confidence and clinical competence and reported high Cronbach alpha's (.81 and .88). In translating the DES scale in Norwegian, Tosterud, Polit, Petzäll, Wnagensteen and Hall-Lord (2015) discovered that the scale might benefit from decreasing the subscales and did remove two items, although not the same two that were omitted. These researchers did rate the scale as a good tool to evaluate debriefing but that items should be re-categorized.

Debriefing is an important element and warrants further research. Although there were many studies that report findings of video-assisted debriefing, there was little research with video-playback after the debriefing session. Only one study was cited (Jiang, 2010) who debriefed weekly instead of after every simulation to assess utilizing videos to assess CPR skills in emergency rooms.

Summary for Reflection

For this study, two different scales (DES and the LCJR) were used to examine possible differences in reflection by comparing one group who experienced debriefing and video-playback with another group who experienced only debriefing. There were no statistically significant differences. When comparing groups separately and comparing scores on the DES and LCJR, there were no statistically significant differences for the LCJR but there were statistically significant difference with the DES that suggested a higher rating by students for the verbal debrief compared with video play back. The results of this study are consistent with other simulation studies that concern video and debriefing (Byrne et al.; Cantrell, 2008; Salvodelli et al., 2006). It is suggested that the skill of the facilitator who is debriefing might be a more essential element in relation to students' perception of their reflection as suggested by Neill and Wotton (2011). There are a number of speculations about why this might be. In retrospection, open-ended questions might have been added to the questionnaire asking about student preference for debriefing and the reason for this preference.

Hypothesis #2

Simulation provides an interactive and experiential format in which to incorporate the practice and assessment of communication skills (Rozenwieg et al., (2008). Using review of videos by the instructors or facilitators to assess student performances has been widely studied (Anderson & Nelson, 2014; O'Hagan et al., 2013). Pedagogy previously linked to teaching communication skills was limited to classroom teaching and followed a more didactic approach. For this study, the incorporation of video play-back provided an opportunity to see if video-playback would allow students to evaluate their communication skills differently from those who received debriefing alone from an instructor.

The second hypothesis was: Video-playback, after verbal debriefing increase students' perceptions of their communication skills versus debriefing alone. The LCJR subscale *Responding* was utilized. The LCJR subscale *Responding* contained the following items: calm, confident matter, clear communication, well-planned intervention/flexibility and being skillful. Lasater (2007) designed this subscale to assess how students respond to a clinical situation and how they react to that situation. For this study, using the Mann Whitney *U*, findings showed no statistically significant difference when comparing group A (video) and B (debrief only) at time 2 *(p*=0.92).

Within group comparisons were made for each group, comparing any changes in perception of communication scores from time 1 to time 2 for group A and similarly from time 1 to time 2 for group B. The Wilcoxon paired sample rank test was used and there were no statistically significant differences for both groups from time 1 to time 2. Generally speaking, it may not be reasonable to expect students' perception of their communication skills to improve over such a short period of time (5-7 days after they had their debriefing session). O'Donnell et al., (2014) report that there is a lack of studies that measure retention of learning and transferability. A recommendation for future studies would include testing over a few semesters. A longitudinal study might shed light on the students' changes in perception of their communication skills.

The instrument itself might be examined more closely. Although there are four items in the LCJR subscale *Responding*, only one item refers directly to communication in itself. The LCJR is meant to assess clinical judgment and good communication skills are necessary for assessment. However, the subscale might not have captured other important aspects of communication, for example the rubric of behaviors for clear communication is based

entirely on verbal communication, neglecting an equally important aspect, that of non-verbal communication. O'Hagan et al. (2013) caution using questionnaires to evaluate communication skills as they do not capture what they call "…the complexities of the actual communication encounter and the competing practices that may impact communication" (p. 1346).

The LCJR was originally developed as a tool to be used by instructors, to help them place students in a continuum of skill development. The rubric cites behaviors that reflect four stages of skill development (beginning, developing, accomplished, and exemplary). For this study, the instrument/rubric was given to the student as a self-assessment exercise and it is a fairly complex tool. The self-assessment of communication skills has been well documented (Cato et al., 2009; Rozenweig et al., 2008). Self-reporting provides insight in to how students think and feel during an interaction (Campbell et al., 2013). However, Mullan and Kothe (2010) also caution that student self-rated ability does not always correlate with increased performances. Students' subjective assessments of their performances can be influenced by numerous issues such as the environment, the content and students' personal points-of-view (Eva & Regehr, 2005).

For this study, students rated themselves more often as 'accomplished' or 'exemplary' in how they responded to this scenario. At time 2, the range of scores compressed from 8-16 (group A) and 8-14 (group B) to 12-14 (for both groups) out of a possible score of 16. This may due to the fact these students have been participating in simulations for almost four semesters and therefore felt quite comfortable with simulation and confident in their communication skills. In contrast, Jensen (2013) found different results when he used the LCJR to compare scores between faculty ratings and student ratings. Students (n=38) scored

themselves lower on the *Responding* subscale than had their teachers. Also, no qualitative data was collected from this study which would have provided a better understanding of the results, for example, students could be asked why they ranked themselves as exemplary.

The use of a high fidelity mannequin was required for this simulation to be able to mimic the physiological changes required by the patient physical status. High fidelity mannequins cannot display facial expressions, an important factor when communicating or assessing the nonverbal behavior of your patient. In their meta-analysis of the effects of simulation using standardized patients (SPs), Oh, Jeon, and Koh (2015) support the use of SPs as effective to evaluate and teach communication skills. Their study demonstrated that the use of SPs directly enhanced scores on communication skills. SPs can provide feedback after the experience that the mannequin cannot which can lead to augmented learning. Chan (2014) did find that video review increased students' ability to identify missed communication opportunities to respond to patients. For this study, students lacked the cues of non-verbal behavior. It is not clear how this might have affected their scores on the LCJR.

There are no standardized recommendations of how to assess communication skills, specifically with respect to videos and debriefing. The results of this study were not statistically significant but we gain from such findings by exploring the possibilities of why there were no differences between groups and within groups and of what changes might be made in the future. It may be that the instrument that was used, the LCJR was lacking in some ways. One item out of four was directly related to communication and non-verbal communication was not tapped. The mannequins did not have capacity for non-verbal communication, an important element as noted previously by Anderson and Nelson (2014). And again, as with the perception of reflection, perhaps we cannot expect a change in

perception of communication skills in the time period of the study which was approximately one week.

Hypothesis #3

This third hypothesis addresses anxiety: Video-playback, after debriefing, will increase student anxiety versus debriefing alone. Anxiety has been studied extensively within higher education and specifically within nursing education. High anxiety can be disruptive to clinical learning (Hollenback, 2016). Research has demonstrated that simulation can either increase or decrease anxieties (Brimble, 2008; Cordeau, 2014; Gore,et al., 2011). Lee, Park, Kim, Han (2016) tested salivary cortisol levels as an indicator of stress levels on 23 nursing students. Students in the intervention group were asked to take part in a maternity simulation whereas the control group was asked to simply watch a video. Samples were taken pre and post intervention. A knowledge test was also given before and after each intervention. Increased cortisol levels correlated with increased knowledge acquisition. Results support that despite slightly high student anxiety levels, learning does occur. However, the optimum level of anxiety has not been discovered.

The findings related to students' anxiety from this study were based on data collected on students' completion of the State-Trait Inventory form Y1 and Y2 (Spielbergeret al. 1983). Y1 asks about the anxiety experience in the present, *how you feel right now, that is at this moment*. Y2 asks about the generally feeling of being anxious. The findings showed no statistically significant difference between group A,who watched their video and group B who had the debriefing alone. Furthermore, when the *within groups* comparison was made, both group A and group B showed no statistically significant changes from time 1 to time 2.

When comparing means for the form Y2 (general anxiety) for both groups there was very little change in mean scores and no change in the median scores, suggesting that the Y2 does measure the feeling of anxiety generally. For both groups, mean scores of the Y1 increased from time 1 to time 2, although this was not a statistically significant difference. The range of both the Y1 and the Y2 is 20-80 with higher scores indicating higher anxiety. The highest scores were at time 2 for group A (37.18) and for group B (35.17) and there is very little difference between them. de Sousa Teixeira et al. (2014) reported that for their study of nursing students, some of whom were being evaluated through videotaping experienced only mild anxiety. However, that study took place over seven months and videotaping may have become less anxiety producing. For this study, students in year three have been accustomed to simulations and viewing their video. It may be that this explains relatively low mean scores and little difference between group A and group B in terms of the anxiety scores.

Speilberger et al. (1983) provide normative samples for the STAI Y1 and STAI Y2 scale. They are however based on male and female students. This is difficult to compare within this study as there were so few males. STAI normative results have typically shown that females exhibit more anxiety than males (Speilberger et al., 1983). Mean scores for Form Y1 were slightly higher at time 2 than time 1 suggesting that student anxiety had increased slightly for group A with watching their video, but did so as well for group B who did not have to watch a video. However, means were slightly lower at time 2 for Form Y2 for both groups. Many situations can lead to higher anxiety and therefore it is uncertain why group B means were slightly higher at time 2 despite not watching their video.

There has not been a great deal of research on nursing students, simulation and anxiety. Mariani and Doolen (2016) tried to identify gaps within nursing research and sought expert

opinion from 90 INACSL members. Interestingly, anxiety was not mentioned. For nursing instructors and facilitators, factors contributing to decreasing anxiety have been related to supportive and safe learning environments (Moscaritolo, 2009; Partin, Payne & Slemmons, 2011). Increased attention should focus on ways to promote these environments as studied by Gosselin, Holland, Mulcahy, Williamson and Widacki (2016). Their research integrated music prior to a simulation session with 38 undergraduate nursing students. Results demonstrated that students appreciated the integration of music as measured with the six-item version of the State-Trait Anxiety Scale (p= .005).

This study reported relatively low levels of anxiety among nursing students in general for nursing students in group A, who exhibited similar mean scores to those in group B who experience debriefing alone. It may be that as part of simulations, videotaping becomes less anxiety producing over time. Some research has attempted to create supportive environments to learn that will decrease anxiety. There is relatively little research in this area.

Limitations of the Study

There are several limitations for this study. The first limitation pertains to the small sample size that was underpowered. As previously noted, the study required 102 participants for appropriate power and had a final n=23. This reduces the likelihood of obtaining accurate results. As well, the convenience sample was limited to the number of students enrolled in a class from a small bachelor of nursing program and only took place at one particular location. Mariaini and Doolen (2016) state that nursing education simulation opportunities within nursing programs are limited and logistically difficult to manage. Participation of year three nursing students was sought as the researcher was responsible for year two simulations.

Student demographics showed a more homogeneous sample with only four males. A more heterogeneous sample including males of different ages would have been desirable. The study took place only at one location. Thirdly, two items were missed in the reproduction of the scale for the DES *Learning and making connections.* These two items were missed for both the experience portion of the scale as well as rating the experience portion of the scale. The first item included the statement: "Debriefing helped me to clarify problems" and the second was "Debriefing helped me to make connections between theory and real-life situations". Cronbach's alphas for both these subscales were quite good (.89 and .85) despite this. However, the researcher recognizes the importance of this error. Further analysis would be required to assess the variance that the missed items might have presented within this study.

In reference to the scales utilized, distributing the State-Trait scale to group B at time 3 might have been beneficial to capture student anxiety levels at this time after they watched their video. This would have given a better reflection of how both groups felt after their video and allowed for a better comparison. This is reflected by Spielberger et al. (2015) as they stated that repeat testing provides greater reliability in differentiating subjects. As well, the LCJR tool could have been distributed at time 3 for both assessing communication and reflection with group B after the video. Testing throughout the year might have shown greater differences as well.

The self-reported nature of the tools may have produced responses that were more socially acceptable. Students might have rated their capabilities higher. However, the lack of reliable and valid tools to assess outcomes in nursing simulation has been identified by INACSL members as a gap in simulation research that should be addressed (Mariani & Doolen, 2016).

Recommendations for Nursing Practice

Despite the study results that video-playback after verbal debriefing was not statistically significant in increasing communication, reflection, and anxiety compared to those who did not watch the video, the study does advance research in simulation education. The following recommendations are based on the results of this study, including opportunities for future research in this area.

Currently there are no accepted practices regarding the use of video-playback either during or post-debriefing. Video equipment can be a costly purchase during the development of a simulation center, and can range from simple video streaming abilities, to more expensive recording and data storage options. There is also a human resource cost associated with more technical video equipment. Given that this research did not demonstrate an improvement in communication and reflection scores using video-playback after debriefing, caution should be used when purchasing such equipment if the intended purpose is solely for this reason. Programs implementing simulation need to be certain as to their needs and proceed with a strong plan, if video is to be included, and that is based on available research.

Students frequently verbally indicate that they are more anxious when being video recorded. This research study found that students were not increasingly more anxious in watching their own videos than they were in their regularly scheduled simulation experience. While this study did not address whether students were more or less anxious without being video recorded at all, it does indicate that there is no additional anxiety experienced by students in viewing their recordings. Anxiety should not be a factor in determining whether video-playback should or should not be used.

Recommendations for Nursing Research

As indicated, the sample size for this study was small and underpowered. Further research should attempt to replicate this study using a larger sample of nursing students in order to improve the confidence in the results and their generalizability. Other studies have also incorporated grade point averages (GPA) which might have been beneficial in terms of correlating means of the outcomes to GPAs. A longitudinal study could prove beneficial to see effects over time. Specifically, differences between the variables of study could be better captured with inferential tests such as correlations and linear regressions. Single site studies have been identified as areas that are well-researched thereby encouraging multisite collaboration.

The approach in measuring the outcomes of communication could include an observational component by the researcher and be incorporated into the evaluation process. This would provide additional data as to any improvements in communication skills in students. In this study, a high fidelity mannequin was used however the inclusion of a SP could be added to play a role as a family member. This might prove to be a more authentic experience for the student as they could gain direct feedback from the SP.

The debriefing skill of the facilitator was not assessed in this study. The DES scale does include the subscales *Facilitator skill in conducting the debriefing, and Appropriate facilitator guidance* which could be included for future studies. The literature has stated that a supportive learning environment accompanied with a supportive debriefing style has proved to be one of the most beneficial aspects of debriefing session (Neill and Wotton, 2011) as well as linking the simulation purpose with the desired learning outcomes (Bonnell & Hober,

2016). Although the facilitator in this study has many years of experience, Fey and Jenkins (2016) discovered in their national debriefing survey that continued assessment is important to ensure simulations are based on best practice guidelines. It would be beneficial to determine whether the debriefing skills of the facilitator affected students self-reported communication skills, reflection practices, or anxiety.

This study focused on the student outcomes of reflection and communication as well as levels of anxiety. The importance of gathering data on learning outcomes are needed to improve best practice guidelines for learners (Rutherford-Hemming, Lioce, Kardong-Edgren, Jeffries & Sittner, 2016). Continuing to study various simulation design elements in all aspects of simulation-based experiences will ensure that educators are utilizing best practices to promote optimal student lear

Conclusion

Increased patient acuities and more demanding working conditions have necessitated that nursing schools better prepare our nursing students. Simulation has become a cornerstone within nursing education that provides an experiential learning experience, asking students to play an active role in their learning. The debriefing session that accompanies simulations allows for students to evaluate and reflect on their performances, thereby bringing new learned behaviors and understanding to the clinical areas. Best practices for debriefing and the use of videos continue to be sought and explored.

This research study enriched the body of knowledge within simulation and debriefing. Findings support other studies that have demonstrated that video does not add any statistical significance compared to debriefing or no video. In fact, in using the DES scale, results

showed that the scores increased after debriefing than after watching the video. Statistical significance was demonstrated within groups however the study was underpowered. Although several study limitations were present, the study can inform the use of video a few days after the simulation. Many studies have previously focused on video review during the debriefing session. Further studies are warranted in this area as there very were few studies addressing this element.

In conclusion, the study provided new insights that are useful to further incorporate video within debriefing methods as well as other avenues of research.

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Appendix A

UNIVERSITY OF MANITOBA | Faculty of Health Sciences

College of Nursing
Helen Glass Centre for Nursing
89 Curry Place
Winnipeg, Manitoba
Canada R3T 2N2
Telephone: 204-474-7452
Fax: 204-474-7682

Informed Consent for Students

Research Title Project: Simulation and Video-playback: Is it useful as learning strategy?

Principal Investigator: Darcelle Vigier
Phone: 204-233-0210 ext 710
Email: umvigied@myumanitoba.ca

Thesis Committee:

Co-advisor: Dr. Lorna Guse
University of Manitoba, College of Nursing
Email: Lorna.Guse@umanitoba.ca, Phone: 204-. 474.8113

Co-advisor: Dr. Nicole Harder
University of Manitoba, College of Nursing
Email: Nicole.Harder@umanitoba.ca Phone: 204- 474.6714

Internal Member: Dr. Bev Temple
University of Manitoba, College of Nursing

External Member: Dr. Robert Renaud
University of Manitoba, Faculty of Education

This consent form should provide you with a basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

I, _____volunteer, to participate in the above study. I understand that the purpose of the study is to explore the use of video-playback, after debriefing, and its impacts on student learning. The surveys contain questions regarding the learning outcomes of communication, reflection and anxiety. The results of this study will add to the body of simulation research on the use of video- playback after the debriefing and its effectiveness as a teaching and learning strategy among undergraduate

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nursing students. This will help in the development of best practice guidelines for effective debriefing techniques.

I understand the study is being done by Darcelle Vigier, a student in the Master of Nursing Program at the University of Manitoba, for her thesis. Dr. Lorna Guse and Dr. Nicole Harder will supervise the study.

I understand that if I agree to participate in the study, I will be asked to fill out a demographic sheet and three self-administered surveys after debriefing. After debriefing, I will be randomly assigned to one of the two groups (A and B). If I am in group A, I will view my video performance, 5-7 days following the simulation and I will complete three surveys. It will take approximately 10-15 minutes to fill out all three surveys. If I am assigned to Group B, in five to seven days after the simulation, I will be asked to complete two surveys and then in about ten days, I will view my video performance and then complete the remaining survey. Each survey takes about 3-5 minutes to complete so the total amount of time to fill all three is approximately 10-15 minutes. The demographic survey will take 1-2 minutes to complete and will only be filled out once.

I understand that my participation is completely voluntary. I may choose to leave the study at any time, except after data aggregation and it will not have any effect on my performance or grade. There are minimal risks to participate in the study. All data will be collected by the administrative assistant and will be coded to ensure no potential identifiers will be attached to the data. The administrative assistant will then provide the anonymized completed questionnaires to the researcher.

I understand that if I decide to participate in the study, a summary of the findings will be provided to me by the administrative assistant, if I indicate that I would like to receive this summary.

I understand that the completed thesis will be available at the University of Manitoba, MSpace, Faculty of Graduate Studies, under the Electronic theses and dissertations and that the researcher, Darcelle Vigier intends to present at conferences and publish the findings.

My signature on this form indicates that I have understood to my satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive my legal rights nor lease the researchers, sponsors, or

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involved institutions from their legal and professional responsibilities. I am free to refrain from answering any questions I prefer to omit, without prejudice or consequence. My continued participation should be informed as my initial consent so I should feel free to ask for clarification or new information throughout my participation.

The University of Manitoba may look at my research records to see that the research is being done in a safe and proper way.

This study has been approved by the Education/Nursing Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons (Darcelle Vigier, Lorna Guse or Nicole Harder) or the Human Ethics Coordinator at 204-474-7122 or email: humanethics@umanitoba.ca.

Participant's Signature	Date
Signature of Researcher/Delegate	Date

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I would like a summary report of the findings

Yes___ No_____

Please mail a summary of the report of the findings to:

_____ _____
Name

_____ _____
Address

I would like my name to be entered into one of three random draws for a $20 gift card to a coffee shop.

_____
Name

Please give this paper to the administrative assistant. The prizes will be drawn after the data collection is complete.

Appendix B

Demographic questionnaire

1. Age _____

2. Gender (please check one): Female _____ Male _____

3. Prior education _____

Diploma_____

Degree_____

4. Fulltime student _____ part time student_____

5. Role within the simulation

Primary nurse_____

Secondary nurse_____

Appendix C

The Lasater Clinical Judgment Rubric

Responding and Reflecting

Effective RESPONDING involves:	Exemplary	Accomplished	Developing	Beginning
Calm, Confident Manner	Assumes responsibility: delegates team assignments, assess the client and reassures them and their families	Generally displays leadership and confidence, and is able to control/calm most situations; may show stress in particular difficult or complex situations	Is tentative in the leader's role; reassures clients/families routine and relatively simple situations, but becomes stressed and disorganized easily	Except in simple and routine situations, is stressed and disorganized, lacks control,making clients and families anxious/less able to cooperate
Clear Communication	Communicates effectively; explains interventions; calms/reassuresclients and families; directs and involves team members, explaining and giving directions; checks for understanding	Generally communicates well; explains carefully to clinets, gives clear directions to team; could be more effective in establishing rapport.	Shows some communication ability (e.g., giving directions); communication with clients/families/team members is only partly successful; displays caring but not competence	Has difficulty communicating; explanations are confusing, directions are unclear or contradictory, and clients/families are made confused/anxious, not reassured
Well-Planned Intervention/Flexibility	Interventions are tailored for the individual client; monitors client progress closely and is able to adjust treatment as indicated by the client response	Develops interventions based on relevant patient data; monitors progress regularly but does not expect to have to change treatments	Develops interventions based on the most obvious data; monitors progress, but is unable to make adjustments based on the patient response	Focuses on developing a single intervention addressing a likely solution, but it may be vague, confusing, and/or incomplete; some monitoring may occur
Being Skillful	Shows mastery of necessary nursing skills	Displays proficiency in the use of most nursing skills; could improve speed or accuracy	Is hesitant or ineffective in utilizing nursing skills	Is unable to select and/or perform the nursing skills

Effective REFLECTING involves:	**Exemplary**	**Accomplished**	**Developing**	**Beginning**
Evaluation/Self-Analysis	Independently evaluates/ analyzes personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives	Evaluates/analyzes personal clinical performance with minimal prompting, primarily major events/decisions; key decision points are identified and alternatives are considered	Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them
Commitment to Improvement	Demonstrates commitment to ongoing improvement: reflects on and critically evaluates nursing experiences; accurately identifies strengths/weaknesses and develops specific plans to eliminate weaknesses	Demonstrates a desire to improve nursing performance: reflects on and evaluates experiences; identifies strengths/weaknesses; could be more systematic in evaluating weaknesses	Demonstrates awareness of the need for ongoing improvement and makes some effort to learn from experience and improve performance but tends to state the obvious, and needs external evaluation	Appears uninterested in improving performance or unable to do so; rarely reflects; is uncritical of him/herself, or overly critical (given level of development); is unable to see flaws or need for improvement

Appendix D

Appendix E- Letter of permission

Inbox: RE: https://webtools.cc.umanitoba.ca/webmail/horde/imp/message.php?a...

Date: Fri, 4 Dec 2015 16:51:42 +0000 [12/04/15 10:51:42 AM CST]
From: Kathie Lasater <lasatork@ohsu.edu>
To: umvigied@cc.umanitoba.ca <umvigied@cc.umanitoba.ca>
Cc: Nicole Harder <Nicole.Harder@umanitoba.ca>, Lorna_Guse <Lorna_Guse@umanitoba.ca>
Subject: RE:

Hello, Darcelle,

I'm so happy you're doing this study as I believe the value of video-playback for learning is as yet unknown. Here is some information for you:

You have my permission to use the tool for your project. I ask that you (1) cite it correctly, and (2) send me a paragraph or two to let me know a bit about your project when you?ve completed it, including how you used the LCJR. In this way, I can help guide others who may wish to use it. Please let me know if it would be helpful to have an electronic copy.

You should also be aware that the LCJR describes four aspects of the Tanner Model of clinical judgment?Noticing, Interpreting, Responding, and Reflecting?and as such, does not measure clinical judgment because clinical judgment involves much of what the individual student/nurse brings to the unique patient situation (see Tanner, 2006 article). We know there are many other factors that impact clinical judgment in the moment, many of which are impacted by the context of care and the needs of the particular patient.

The LCJR was designed as an instrument to describe the trajectory of students? clinical judgment development over the length of their program. The purposes were to offer a common language between students, faculty, and preceptors in order to talk about students? thinking and to serve as a help for offering formative guidance and feedback (See Lasater, 2007; Lasater, 2011). For measurement purposes, the rubric appears to be most useful with multiple opportunities for clinical judgment vs. one point/patient in time.

Please let me know if I can be of help,

Kathie

Kathie Lasater, EdD, RN, ANEF, FAAN
Professor
OHSU School of Nursing, SN-4S
3455 SW Veterans' Hospital Rd.
Portland, OR 97239
(503)494-8325

Appendix E

Debriefing Experience Scale- Measure 1

Little is known about participants' experience during debriefing following simulation. You can add to professional knowledge by giving your opinions. Please complete the survey below. Your views are very valuable. There is no right or wrong answer.

Your debriefing type(s)--Mark(x) all that apply:

___ Discussion without videotape ___Video-playback

Circle the number below that best reflects your opinion about your debriefing experience. **Rate each experience item based on its importance to you.**

1 – Strongly disagree with the statement 4 – Agree with the statement 1 –Not important
2 – Disagree with the statement 5 – Strongly Agree with the statement 2- Somewhat
3 – Undecided – you neither agree or disagree with the statement 3 -Neutral
NA—Not Applicable; the statement does not pertain to the debriefing 4 -Important performed
5- Very important

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Not Applicable		NOT Important	Somewhat Important	Neutral	Important	VERY Important
Analyzing Thoughts and Feelings												
1. Debriefing helped me to analyze my thoughts	1	2	3	4	5	NA		1	2	3	4	5
2. Debriefing reinforced aspects of the health care team's behavior	1	2	3	4	5	NA		1	2	3	4	5
3. The environment was physically comfortable to debrief.	1	2	3	4	5	NA		1	2	3	4	5
4. Unsettled feelings from the simulation were resolved by debriefing.	1	2	3	4	5	NA		1	2	3	4	5
Learning and Making Connections												
5. Debriefing helped me to make connections in my learning	1	2	3	4	5	NA		1	2	3	4	5
6. Debriefing was helpful in processing the simulation experience	1	2	3	4	5	NA		1	2	3	4	5
7. Debriefing provided me with a learning opportunity	1	2	3	4	5	NA		1	2	3	4	5
8. Debriefing helped me to find meaning in the simulation	1	2	3	4	5	NA		1	2	3	4	5
9. My questions from the simulation were answered by debriefing.	1	2	3	4	5	NA		1	2	3	4	5
10. I became more aware of myself when debriefing.	1	2	3	4	5	NA		1	2	3	4	5

Debriefing Experience Scale- Measure 2

Little is known about participants' experience during debriefing following simulation. You can add to professional knowledge by giving your opinions. Please complete the survey below. Your views are very valuable. There is no right or wrong answer.

Your debriefing type(s)--Mark(x) all that apply:

___ Discussion without videotape ___Video-playback

Circle the number below that best reflects your opinion about your debriefing experience.

1 – Strongly disagree with the statement
2 – Disagree with the statement
3 – Undecided – you neither agree or disagree with the statement
4 – Agree with the statement
5 – Strongly Agree with the statement
NA—Not Applicable; the statement does not pertain to the debriefing

Rate each experience item based on its importance to you.

1 –Not important
2- Somewhat
3 -Neutral
4 -Important performed
5- Very important

	Strongly Disagree	Disagree	Undeci-ded	Agree	Strongly Agree	Not Appli-cable		NOT Import-ant	Some-what Import-ant	Neutral	Important	VERY Import-ant
Analyzing Thoughts and Feelings												
1. Viewing my video helped me to analyze my thoughts	1	2	3	4	5	NA		1	2	3	4	5
2. The video reinforced aspects of the health care team's behavior	1	2	3	4	5	NA		1	2	3	4	5
3. The environment was physically comfortable to view my video.	1	2	3	4	5	NA		1	2	3	4	5
4. Unsettled feelings from the simulation were resolved by viewing my video.	1	2	3	4	5	NA		1	2	3	4	5
Learning and Making Connections												
5. Viewing my video helped me to make connections in my learning	1	2	3	4	5	NA		1	2	3	4	5
6. Viewing my video was helpful in processing the simulation experience	1	2	3	4	5	NA		1	2	3	4	5
7. Viewing my video provided me with a learning opportunity	1	2	3	4	5	NA		1	2	3	4	5
8. Viewing my video helped me to find meaning in the simulation	1	2	3	4	5	NA		1	2	3	4	5
9. My questions from the simulation were answered by Viewing my video	1	2	3	4	5	NA		1	2	3	4	5
10. I became more aware of myself when Viewing my video	1	2	3	4	5	NA		1	2	3	4	5

Appendix F

Title of the Scale: Debriefing Experience Scale
Author: Shelly J. Reed, DNP, APRN
This scale is copyrighted by the author.

I understand that you are requesting use of the Debriefing Experience Scale. You are granted permission to use the scale if the following conditions are met, you will:

1. Provide information about the purpose and duration of your study.
2. Describe the sample (population and sample size) in your study or evaluation.
3. Provide results of tests of reliability with this sample.
4. Provide information about whether you have or are seeking funding in the study using the scale.
5. Further, if you wish to alter or modify the scale you must seek additional consent for this purpose prior to altering the scale.
6. Inform the author of any proposed or submitted presentations or publications in which the scale is used.

I agree to the conditions stated for allowing me to use the scale:

Name (print): Darcelle Vigier
Signature: Darcelle Vigier
Date: December 17th, 2015

I give my permission to you to use the scale under the conditions stated above.

Name (print): Shelly J. Reed
Signature: Shelly J. Reed
Date: Dec. 18, 2015

Appendix G

For use by Darcelle Vigier only. Received from Mind Garden, Inc. on October 8, 2015

SELF-EVALUATION QUESTIONNAIRE

Please provide the following information:

Name _____ Date _____

Age _____ Gender (*Circle*) **M F**

DIRECTIONS:

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

1. I feel calm **1 2 3 4**

2. I feel secure **1 2 3 4**

3. I am tense **1 2 3 4**

SELF-EVALUATION QUESTIONNAIRE STAI Form Y-2

Name_____Date_____

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel.

21. I feel pleasant **1 2 3 4**

22. I feel nervous and rest..... **1 2 3 4**

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Appendix H

For use by Darcelle Vigier only. Received from Mind Garden, Inc. on March 8, 2016

mind garden

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her thesis or dissertation research.

Instrument: ***State-Trait Anxiety Inventory for Adults***

Authors: ***Charles D. Spielberger, in collaboration with R.L. Gorsuch, G.A. Jacobs, R. Lushene, and P.R. Vagg***

Copyright: ***1968, 1977 by Charles D. Spielberger***

Up to 5 sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,

Robert Most
Mind Garden, Inc.
www.mindgarden.com

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Appendix I

Ethics approval from the University of Manitoba

UNIVERSITY OF MANITOBA | Research Ethics and Compliance
Office of the Vice-President (Research and International)

Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
Fax +204-269-7173

APPROVAL CERTIFICATE

February 26, 2016

TO: **Darcelle Vigier** **(Supervisor: L. Guse and N. Harder)**
Principal Investigator [redacted]

FROM: **Zana Lutfiyya, Chair**
Education/Nursing Research Ethics Board (ENREB)

Re: **Protocol #E2016:013 (HS19412)**
"Simulation and Video-playback: Is it useful as a learning strategy"

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). **This approval is valid for one year only and will expire on February 26, 2017.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **If you have funds pending human ethics approval, please mail/e-mail/fax (261-0325) a copy of this Approval (identifying the related UM Project Number) to the Research Grants Officer in ORS in order to initiate fund setup. (How to find your UM Project Number: http://umanitoba.ca/research/ors/mrt-faq.html#pr0)**

- **if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba *Ethics of Research Involving Humans.*

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

Appendix J

Ethics approval from l'Université de Saint Boniface

Université de
Saint-Boniface
Bureau de la recherche
200, avenue de la Cathédrale
Winnipeg (Manitoba) R2H 0H7
Téléphone : 1 (204) 237 1818, poste 467

Le 15 mars 2016

Darcelle Vigier
Faculté des arts
Étudiante – Université du Manitoba
INTRA

Objet :	ETH 2016 – 15 mars
Chercheure principale	Darcelle Vigier
Cochercheurs	
Titre :	Is video-playback, after debriefing, useful in student learning
Date fin du projet :	Mai 2016
Demande de prolongation :	Mai 2016

Madame,

Le Comité d'éthique de la recherche (CÉR) étudier votre projet.de recherche. Au terme de son évaluation, le CÉR juge la demande conforme en matière d'éthique.

Veuillez noter que le CÉR exigera, pour tout autre projet de recherche à l'Université, un formulaire de consentement en français ou, à tout le moins, bilingue. De plus, le formulaire de consentement devra indiquer que toute plainte de la part des étudiants de l'Université de Saint-Boniface peut être acheminée au Bureau de la recherche de l'Université de Saint-Boniface.

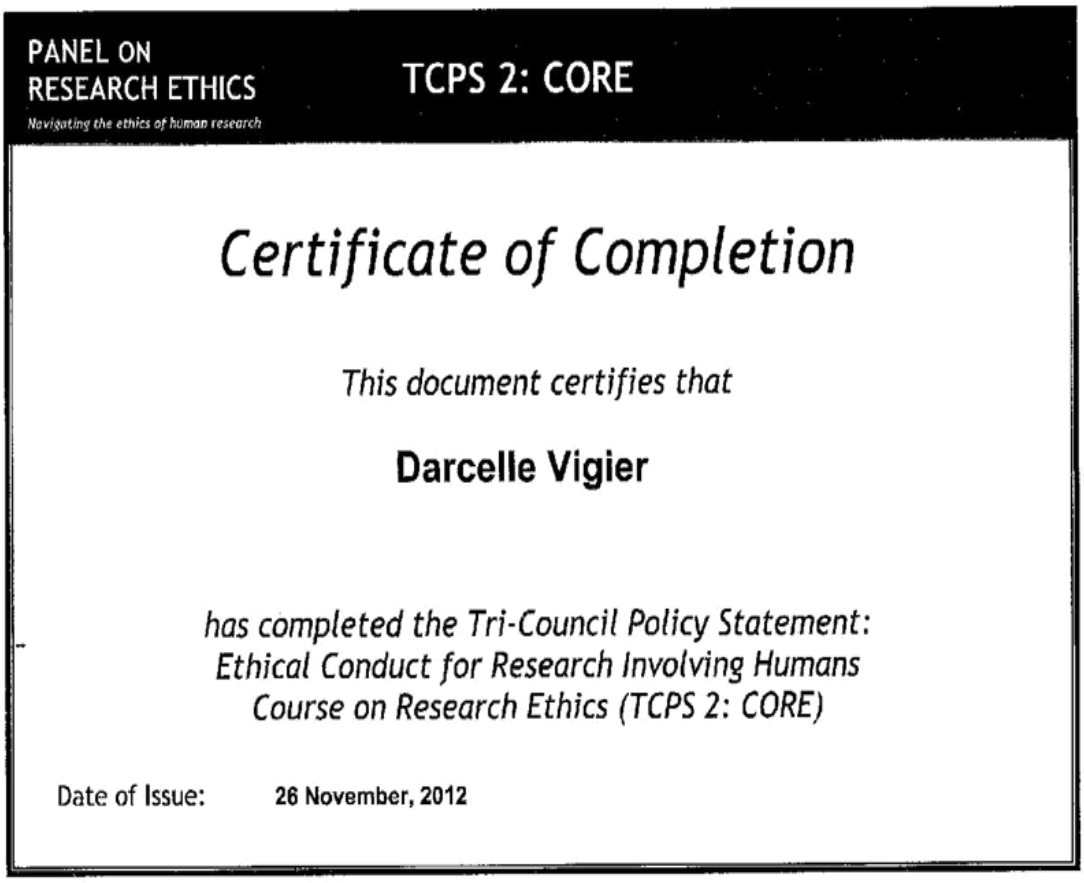
Je vous prie d'agréer l'expression de mes sentiments distingués.

Président, CÉR

[redacted]
Thierry Lapointe

Appendix K

CORE Completion Certificate



PANEL ON RESEARCH ETHICS
Navigating the ethics of human research

TCPS 2: CORE

Certificate of Completion

This document certifies that

Darcelle Vigier

has completed the Tri-Council Policy Statement:
Ethical Conduct for Research Involving Humans
Course on Research Ethics (TCPS 2: CORE)

Date of Issue: **26 November, 2012**