Simulation Psychological Safety Ecosystem: A Grounded Theory Study of Nurses’ Experience with Psychological Safety in Prelicensure Simulation

Susan Eller

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SIMULATION PSYCHOLOGICAL SAFETY ECOSYSTEM:
A GROUNDED THEORY STUDY OF NURSES’ EXPERIENCE
WITH PSYCHOLOGICAL SAFETY IN PRELICENSURE SIMULATION

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
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ABSTRACT

Over the past couple of decades, the utilization of simulation-based education in prelicensure nursing expanded in both frequency and functionality. Learning through simulation requires psychological safety where participants feel comfortable engaging to their fullest extent and can speak up or ask questions without fear of embarrassment to themselves or others. Professional simulation organizations provide recommendations for creating psychological safety, yet anecdotal stories from nurses report variability in their experiences ranging from positive to negative.

Research regarding psychological safety in nursing education revealed some consistent themes of anxiety due to being observed or unfamiliar with simulation environments or expectations. The evolving literature also discussed some issues of anger, humiliation, and fear that result from participating in an environment that lacked psychological safety. Some of the findings were limited due to being at schools of nursing where the researchers were faculty for the population being studied and highly skilled in simulation pedagogy. The lack of understanding of the nurses’ perceptions of psychological safety and what factors could influence that feeling deserved further exploration.

Seventeen recently graduated nurses were interviewed regarding their experiences with psychological safety during prelicensure simulation. Using Constructivist Grounded Theory, the data from these interviews were analyzed and the resultant theory was Simulation Psychological Safety Ecosystem. The theory explains that psychological safety is a dynamic, complex process
with a spectrum of outcomes from feeling psychologically safe to suffering psychological harm. Factors that influence this outcome include: clarification of simulation expectations, guidance from the instructor during scenarios, experience with watching and being watched by peers and faculty, and quality and tone of feedback received. The overall sense of psychological safety can also be influenced by nurses’ relationships with faculty and peers, and their desire to achieve meaningful clinical learning during the simulation.

Findings of this study offer insight into the complex process of establishing, maintaining, and repairing psychological safety in prelicensure nursing simulation. The results are useful in guiding nursing education practices and suggest areas for future research.
CHAPTER ONE
INTRODUCTION

Simulation-based Education (SBE) can be a valuable tool for enhancing patient safety and teamwork within healthcare teams, and therefore simulation scientists need to study any barriers to using this tool. One barrier expressed by practicing nurses is a reluctance to participate in SBE due to perceived negative experiences during their prelicensure curricula. Nursing education scientists should examine the nature of the SBE learning environment that leads to feelings of psychological safety or harm to provide evidence-based guidelines for best practice.

SBE has been consistently recommended as one mechanism for improving patient safety and quality of care since the Institute of Medicine (IOM) published their watershed report *To Err is Human: Building a Safer Health System* (Kohn et al., 2000). This report provided evidence that most medical errors were the result of system issues and communication gaps, as opposed to individual mistakes; and advocated the use of simulation to mitigate these errors. SBE can best be described as “a technique, not a technology to replace or amplify real experiences with guided experiences, often immersive in nature, that evokes or replicates substantial aspects of the real world in a fully interactive fashion” (Gaba, 2007, p. 126). The experiential learning of SBE includes a variety of modalities that can be used to achieve desired learning outcomes; these include, but are not limited to: role-play with other learners, task training on low fidelity devices, interactive scenarios with standardized patient actors, and
complex scenarios with technologically advanced mannequins (Cook et al., 2013; Gaba, 2007; Gore & Thomson, 2016). SBE activities include several components essential to successful learning: prebriefing on learning expectations, confidentiality issues, scenario setting, and familiarization with the equipment and environment (Page-Cutrara, 2015; Rudolph et al., 2014); delivery of scenario using the appropriate modalities with prompts and cues (Beischel, 2013; Curran, 2008); and a facilitated debriefing of the learning experience (Al Sabei & Lasater, 2016; Fanning & Gaba, 2007; Jeffries, 2005).

SBE has been used in prelicensure nursing education to provide practice prior to clinical experiences, assess clinical reasoning and decision-making, teach communication skills, promote teamwork, and increase retention of procedural skills (Cant & Cooper, 2016; Gore & Thomson, 2016). Simulation has also been used in prelicensure nursing education as a high-stakes assessment tool (Bensfield et al., 2012; Wolf et al., 2011), and as a replacement for clinical hours (Hayden, 2010; Larue et al., 2015). Simulation’s pervasive use in nursing education mandates that nurse scientists closely examine the potential risks and benefits associated with its use. Many studies regarding the impact of SBE in prelicensure nursing education focus on either the cognitive or psychomotor domains, and measure clinical skills, knowledge, or self-confidence (Foronda et al., 2013; Gore & Thomson, 2016; Shinnick et al., 2011). One area that has been traditionally underexplored in nursing education science is examining the affective impact of the SBE learning environment (Cant & Cooper, 2016; Cantrell et al., 2017; Mariani & Doolen, 2016; Shearer, 2016), and how their experience of psychological safety can influence nurses’ future engagement in SBE exercises that are designed to enhance patient care.
Problem Statement

As Director for a simulation center at a midwestern academic medical center, the researcher designed and implemented SBE sessions for all new nursing hires. During the introduction/prebriefing session they inquired about nurses’ previous experiences with SBE. Some newly graduated nurses reported having positive experiences during school and were enthusiastic participants. However, several reported negative experiences with prelicensure SBE, and were reluctant to engage. When queried, these nurses would list a variety of challenges they experienced in their undergraduate sessions that made them feel anxious: being watched by peers and faculty, feeling embarrassed about making a mistake, or fearing that they would fail out of their baccalaureate program due to an SBE high-stakes examination for which they felt ill prepared. The researcher ameliorated some of their expressed fears by reviewing ground rules for the simulation sessions, providing familiarization to the environment, and giving an assurance that their participation was part of their orientation learning needs self-assessment. The new nurses would usually fully engage in the experience after this introduction.

Subsequent personal conversations with hospital based SBE colleagues at international simulation conferences revealed that this phenomenon was not isolated to one institution, geographical area, or level of academic program. At the International Meeting of Simulation in Healthcare (IMSH) in 2009, a group of five educators from various areas lamented that many of their new nurse residents were unwilling to participate in SBE teamwork and interprofessional education (IPE) training due to negative experiences they had in nursing school. At the time, some of these negative experiences to the fact that SBE was still a relatively new technique in prelicensure nursing; however, this theme persisted in at least ten different small group
discussions at IMSH between 2010 and 2017. In querying hospital-based nurse educators at the International Nursing Association for Clinical Simulation and Learning (INACSL) conference in 2014, they reported similar experiences of having some nurses having good experiences with prelicensure SBE, and others who would refuse to participate in simulation due to negative experiences. When discussing this recurring theme with four nurse educators at a conference for the Society in Europe for Simulation Applied to Medicine (SESAM) in 2016, they expressed this was also a challenge for them in the United Kingdom and Australia. Most recently at a Simulation Women in Leadership conference in 2018, nurse leaders from INACSL and the Society for Simulation in Healthcare (SSH), articulated the need to address the psychological harm that occurred in some prelicensure SBE programs. The fact that these conversations recurred between the years of 2009 and 2018 indicated that the reluctance to participate due to negative experiences with SBE was not a transient occurrence. Many of these colleagues related that the new graduate nurses were reluctant to participate in any type of simulation-based learning, including life support courses.

Although a frequent topic of anecdotal conversations with professional colleagues, the affective experiences that challenge psychological safety and create reluctance to participate was not frequently captured in the scholarly literature on nursing SBE. Some poignant examples from peer-reviewed publications have nursing students describing simulation experiences as evoking feelings such as: nerve wracking (Cantrell et al., 2017; Najjar et al., 2015), humiliation and anger (Ganley & Linnard-Palmer, 2012), and being thrown into situations unprepared (Ganley & Linnard-Palmer, 2012; Kang & Min, 2019). One potential reason for the gap between anecdotal and scholarly literature is that much of the research on prelicensure nursing SBE is
limited to BSN institutions where the faculty are highly experienced and skilled at facilitating (Cantrell et al., 2017; Lee & Oh, 2015; Nielsen & Harder, 2013; Shearer, 2016). This gap reveals the need for further exploration of the experiences of nurses with safe learning environments during prelicensure SBE, including BSN, ADN, and diploma program sites.

**Background**

**Simulation in Nursing Education**

SBE strategies have proliferated in prelicensure nursing programs over the past two decades as a mechanism for providing an environment where students can learn and practice clinical skills that enhance patient safety (Bland et al., 2011; Foronda et al., 2013; Ricketts, 2011). A panel convened by the Carnegie Foundation for the Advancement of Teaching for the professions recommended SBE as one mechanism for the experiential learning that is essential in practice professions, and cautioned educators to use the right modality for the learning objectives (Benner et al., 2009). Recommendation for the use of SBE also appeared in the IOM’s 2011 report *The Future of Nursing: Leading Change, Advancing Health*; aimed at strengthening the nursing workforce’s ability to be leaders in providing safe, effective, patient-centered care (Institute of Medicine Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, 2011). The Committee’s (2011) recommendations for SBE included: a change in focus from hours of learning to competencies assessed in simulation, including patient safety elements in simulation design, incorporation of collaboration and crucial conversation simulations to improve nurses’ ability to speak up in professional relationships, and the potential replacement of clinical hours with simulation if faculty has the expertise to ensure valuable learning occurs.
Bland et al. (2011) used Walker and Avant’s method of concept analysis to define simulation as a learning strategy in the education of undergraduate nursing. Their working definition was: “a dynamic process with five critical attributes that constitute the phenomenon. These are: creating a hypothetical opportunity; authentic representation; active participation; integration; and repetition, evaluation, and reflection” (Bland et al., 2011, p. 667). Simulation pioneer Dr. Pamela Jeffries recognized that it was not sufficient to just have recommendations for simulation as part of prelicensure curricula, but that there was a need for an empirical model of how to design, implement and evaluate simulation pedagogy (Adamson, 2015; Jeffries, 2005). Jeffries’ work helped to fill a void that still persists in SBE research; as many authors either lack a theoretical framework for their study, or cite an existing learning theory without describing its explicit use in their investigation (Doolen et al., 2016; Rourke et al., 2010). Jeffries’ (2005) initial framework consisted of five major components: teacher factors, student factors, educational practices, design characteristics and simulation, and outcomes. This dynamic iterative framework has been revised twice. In 2012, it became the National League of Nursing (NLN)/Jeffries Simulation Framework, with the components of Teacher, Student, Educational Practices, Simulation Design Characteristics, and Outcomes (Jeffries & Rogers, 2012). Further revisions in 2016 yielded the NLN Jeffries Simulation Theory; with the structure and components modified based on published evidence and expert recommendation to include the components of Context, Background, Design, Simulation Experience, Facilitator and Educational Strategies, Participant, and Outcomes (Jeffries et al., 2016). Each of these components has variables associated with them to provide further guidance to the educator or researcher as needed.


Prevalence of Simulation in Nursing Education

The National Council of State Boards of Nursing (NCBSN) conducted a longitudinal national study to evaluate current usage, provide recommendations for best practices of SBE, and establish standards for replacing clinical hours with simulation hours (Hayden et al., 2014a). The first phase of the study was a survey sent to all prelicensure registered nursing programs, \( n = 1729 \), to assess their usage of SBE. The definitions of the simulation used for the NCBSN survey included: *High-fidelity simulation* that uses either a standardized patient (SP) or full-body patient simulation that can be programmed to respond to psychomotor or affective cues; *Medium-fidelity simulation* that utilizes a full body simulator with minimal human qualities installed into the device; and *Task trainers* that uses parts of a mannequin designed for training a specific psychomotor skill, such as IV insertion in an arm (Hayden, 2010). The 62% response, \( n = 1060 \), to the survey provided information on the types of simulation, the courses they were used for within the curricula, the frequency of simulation within a specific course, the authorship of the scenarios used, and the preparation of the faculty for being simulation facilitators (Hayden, 2010). Most programs (87%) used high or medium-fidelity simulation in their pre-licensure program. The majority use of simulation was in foundations courses, followed by health assessment, and then medical/surgical nursing. Task trainers were the most frequently used modality for all programs. Reviewing the authorship of scenarios revealed that many of the nursing programs purchase some scenarios from a publisher; in programs where the faculty write their own scenarios, not all faculty had received SBE training (Hayden, 2010). This study also assessed replacement of clinical time with SBE, and 69%, \( n = 731 \), responded to say that they have counted SBE towards clinical hours/partial clinical hours; most frequently at a 1:1 hourly
substitution rate. One of the limitations discussed in the study is that “some types of degrees are over-represented” (Hayden, 2010; p. 55). In fact, the sample included 523 Associate Degree programs, 379 Baccalaureate programs, 48 Diploma programs, and 31 Pre-licensure Master’s in Nursing Programs. Results from Hayden’s 2010 study are the most recent data that the NCBSN has listed on their website as of August 2018.

During the same year, a separate study was published that assessed only baccalaureate programs in nursing; this survey was sent to NLN accredited baccalaureate programs (209), with a response rate of 37.3%, n = 78 (Katz et al., 2010). While the article did not specify the definitions of simulation as in the 2010 Hayden article, they had similar queries and results: Almost 80%, n = 60, of nursing schools reported using simulation in their programs, approximately 50%, n = 39, of respondents were using simulation to replace clinical hours in variable fashion, and the most frequent uses were in nursing fundamental courses and medical/surgical nursing (Katz et al., 2010). An additional finding from Katz et al. is that over half of the schools reported using simulation for competency assessment or performance evaluation. The authors identified that they had not defined the concept of using simulation for competency assessment, so indicated in their discussion section that it was an area for future exploration and research. This use of simulation for high-stakes exams is a reported cause for anxiety in the nursing SBE literature (Bensfield et al., 2012; Cazzell & Rodriguez, 2011; Oermann et al., 2016), and could therefore be a potential source of jeopardy to creating a safe learning environment.

**Safe Learning Environment**

A good description of the SBE learning environment comes from Curran (2008)—a
complex educational structure composed of three core elements: the physical environment, which includes equipment and resources; the actions and resources of the trainers, which includes knowledge and communication skills; and the response of the learner, which includes both planned and unplanned behaviors. Curran emphasizes that learning is a process that resides within the learner, and therefore educational activities like SBE need to be learner centered. Curran states that without effective facilitators, the simulation room is essentially a room full of expensive equipment that has no intrinsic educational value. As an expert in SBE, the researcher had that sentiment sadly reflected by statements of several nursing educators who described having been given a grant for simulation, but the “doll” is still in a closet at their facility. Creating a learning environment should not be confused with a teaching environment, and requires faculty who are adept at establishing expectations for the course, developing and implementing realistic scenarios, and guiding learning through facilitated reflection during the debriefing conversation (Curran, 2008; Fey et al., 2014; Jones et al., 2014). SBE facilitators need to incorporate best practices for developing and maintaining psychological safety throughout the learners’ experience.

**Psychological Safety**

There was a lack of a theoretical framework within SBE for psychological safety, so simulation scientists adapted work done by Organizational Development scholars (Rudolph et al., 2014; Turner & Harder, 2018). The concept of psychological safety is explicated as an environment that allows individual members of a team to feel comfortable with risky interpersonal behaviors such as speaking up against hierarchy or asking for assistance (Edmondson & Lei, 2014). Edmondson and Lei describe such behaviors as learning-oriented
behaviors. These behaviors are especially relevant to maintaining patient safety in healthcare disciplines, where professional norms create barriers to speaking up (Edmondson et al., 2016). A similar cultural paradigm can exist in the discipline of education, where establishing psychological safety contributes to student learning and fosters skills for career development (Edmondson et al., 2016). SBE in prelicensure nursing is a blend of healthcare and education, so merits creating and maintaining a psychologically safe environment. Edmondson et al. (2016) articulate that psychological safety is a group level phenomenon, and this is especially relevant to SBE where the learning often occurs in small groups. The psychological safety of the SBE learning environment can impact the student’s willingness to speak up or ask for help during the scenario, and during the debriefing process (Ganley & Linnard-Palmer, 2012; Kang & Min, 2018; Turner & Harder, 2018). One of the SSH requirements for Simulation Center Accreditation is that there are mechanisms in place to protect the psychological safety of the SBE participants (Deutsch & Palaganas, 2015). Since either positive or negative psychological safety can influence learners’ ability to perform skills or retain knowledge (Henricksen et al., 2017; LeBlanc & Posner, 2022; Nielsen & Harder, 2013), further clarification of this concept in SBE is essential.

**Psychologically Safe Learning Environment in Simulation-Based Education.**

Concept analysis is a systematic technique that nursing scientists perform in order to clarify concepts used as building blocks for existing theories, to advance the state of nursing science or knowledge by exploring new possibilities for research, or to develop concepts that are useful for advancing nursing practice (Rodgers, 2000; Walker & Avant, 2011). Turner and Harder (2018) utilized Walker and Avant’s method of concept analysis to define a psychologically safe learning
environment. Their definition of this concept is the following: “A feeling or climate whereby the learner can feel valued and comfortable yet still speak up and takes risks without fear of retribution, embarrassment, judgment or consequences either to themselves or others, thereby promoting learning and innovation.” (Turner & Harder, 2018, p. 49). Defining attributes identified were: the ability to make mistakes without consequences; the quality of the simulation facilitator; and foundational activities of simulation such as orientation, preparation, and objectives and expectations (Turner & Harder, 2018). The attribute of quality of the facilitator reflects themes in relevant debriefing literature; this attribute is essential to a safe learning environment by providing respectful answers to questions and offering meaningful feedback in a non-threatening manner (Fey et al., 2014; Grant et al., 2018; Turner & Harder, 2018).

Antecedents needed for a psychologically safe SBE environment found by Turner and Harder were a controlled environment, formative evaluation, and confidentiality and trust. Turner and Harder reinforced that summative evaluation can negatively impact the psychological safety of a learning environment. Consequences listed by Turner and Harder were focused on the outcomes from a psychologically safe environment, as opposed to a non-safe environment, and include learning from mistakes, problem solving, and skill acquisition. Turner and Harder noted that the empirical referents were similar to the concept due to the abstractness of the concept.

The pervasiveness of interest in psychological safety of SBE is illustrated in that Turner and Harder’s concept analysis yielded similar results to one performed in Korea by Kang and Bae in 2017 (Kang & Min, 2018). Although published in Korean language only, Kang and Bae also used Walker and Avant’s method for concept analysis (Kang, email communication, August 28, 2018). Kang and Bae’s attributes for psychological safety in nursing simulation were:
feeling or status of comfort, state in which students can perform without fear, sense of trust towards the organization, and anticipation of no harm to oneself (Kang & Min, 2018). It is notable that both concept analyses were developed using the Walker and Avant method. Although this is a well-established method within nursing science, it misses the fieldwork/observational component that is included in the hybrid method by Schwartz-Barcott and Kim. This component corroborates and refines information found in the theoretical phase with empirical observations of the sample population (Schwartz-Barcott & Kim, 2000).

**Safe Container.** A seminal work on psychological safety during simulation comes from experts at the Center for Medical Simulation (CMS) in Boston. The authors expanded upon Edmondson’s work on psychological safety that promoted learning-oriented behaviors, to create an environment that fostered a learning orientation (Rudolph et al., 2014). Rudolph et al. (2014) assert that in such an environment, learners will be willing to practice at the edge of their abilities, tolerate confusion in the setting, appreciate feedback, engage in reflection on problems and skills that are new to them, correct and repeat actions, learn from mistakes, and tolerate not knowing the exact answers to complex questions. Along with identifying these positive outcomes, the article relates some potential pitfalls when the learner experiences threats to the safe environment: they may not fully engage, or “buy into” the simulation; they question the fidelity of the simulation setting or scenario; they feel exposed by the simulation and/or debriefing in a way that can threaten their professional identity; or they may feel defensive discussing performance that falls short of a standard and subsequently miss the recognition of the error and the potential for correction (Rudolph et al., 2014). Since psychological safety promotes skill acquisition, knowledge gains, and problem-solving ability, several simulation
experts and associations have provided recommendations on how to promote optimal learning environments.

**Recommendations for Safe Learning During Simulation-Based Education**

Several experts and leading SBE professional organizations have provided guidelines for promoting a safe learning environment. Rudolph et al. (2014) outline actions that the facilitator can take in collaboration with their learners to create and maintain psychological safety throughout the simulation session. The CMS team developed a tool to assess a facilitator’s efficacy with SBE, which is called the Debriefing Assessment for Simulation in Healthcare (DASH) (Simon et al., 2010). Although the DASH specifies debriefing in the title, it also examines the efficacy of facilitators on more global elements: establishes an engaging environment, and maintains an engaging learning environment (Simon et al., 2010). Other guiding principles for developing psychological safety are contained within the NLN/Jeffries Simulation Framework (Adamson, 2015), and embedded in standards from professional simulation organizations such as the SSH (Deutsch & Palaganas, 2015) and INACSL (Watts et al., 2021).

**Prebriefing.** The SSH Healthcare Simulation Dictionary describes prebriefing as an information or orientation session during which the participants are given information and orientation to the SBE environment in order to establish psychological safety (Loice et al., 2020). However, terminology for this stage has some variability, as it also has been described as briefing, orientation, or pre-briefing (Chamberlain, 2015; McDermott, 2016; Page-Cutrara, 2015). INACSL expanded their criteria twice to expand their description of 2013 prebriefing to their current component of prebriefing: preparation and briefing (McDermott et al., 2021). Despite
some inconsistencies in the guidelines for prebriefing, there are several key components that are mentioned by SBE experts and organizations.

Rudolph et al. (2014) discuss the structure and importance of actions during this prebriefing phase, which include: clarifying objectives, environment and equipment functionality, roles of the participants and faculty, confidentiality of the session, and expectations of the learners; establishing a “fiction contract” with the learners to act as if things are real in order to gain the maximum amount of learning from the time in the scenario; attending to the logistical details of the session; and conveying a commitment to respecting learners and understanding their perspective (Rudolph et al., 2014). Key to this prebriefing is the explicit statement regarding the basic assumption that everyone participating in SBE is “intelligent, capable, cares about doing their best, and wants to improve” (Rudolph et al., 2014, p. 343).

Rudolph et al. (2014) emphasize that routinely performing these practices as part of the pre-brief provides psychological safety; this assertion is echoed by the professional society standards for SSH and INACSL.

The empirical evidence on prebriefing is an emerging area of focus for SBE scholars. A recent concept analysis of prebriefing in nursing simulation reinforces these practices by stating that (prebriefing): “…should include information and activities that are provided to learners in consideration of their level of knowledge, learning needs, and prior experiences; structured for anticipatory reflection and planning; and facilitated by a qualified nursing simulation educator to support decision-making, psychological safety, and debriefing activities.” (Page-Cutrara, 2015, p. 339). These prebriefing activities can affect learner anxiety and subsequent performance and learning throughout the SBE experience (Chamberlain, 2017; Roh et al., 2022). Noting that were
inconsistencies in prebriefing terminology and empirical evidence, McDermott (2016) performed a Delphi approach to survey certified SBE educators to determine their perspective of the prebriefing role and develop guidelines for preparing participants. The findings were consistent with recommendations noted above, and advised that prebriefing should be conducted by a skilled SBE facilitator who can adapt their delivery based on the learner characteristics and objectives (McDermott, 2016). Although proportionately more of the literature on SBE psychological safety focuses on debriefing, SBE scientists have postulated that there needs to be further research on prebriefing’s impact to debriefing, learning, and psychological safety (Page-Cutrara, 2014; Silva et al., 2022).

**Scenario Delivery.** There is a dearth of published recommendations specifically for psychological safety during scenario delivery; however, some suggestions are embedded in literature addressing affective impact to learners. Gaba (2013) provided guidelines for designing scenarios that might psychologically impact learners, including mindful consideration of embedding deceit into a scenario; consideration of the vulnerability of the learner when constructing challenging scenarios; and having only expert facilitators design and debrief such challenging scenarios.

Other suggestions for a safe learning environment are frequently found within discussions of design characteristics of SBE. It is essential that the scenarios have learner-centric objectives that match the appropriate modality of simulation (SSH, 2015; Watts et al., 2021; Waxman, 2010); that the level of realism, also called fidelity, is sufficient for the learners to suspend disbelief and engage in the scenario; and the learner is provided with sufficient cues, or student support, from the mannequin, environment, or instructor in order to cause the scenario
to progress (Watts et al., 2021). Another scenario related factor embedded in the NLN/Jeffries Simulation Theory is that of time on task. Two elements of this factor are providing the students time to become familiar within the scenario prior to critical events, and planning for repetition of scenarios in order to reinforce learning (Hallmark et al., 2014; Jeffries & Rogers, 2012).

**Debriefing.** Of all the SBE components, debriefing has been examined the most extensively, and has a large body of literature of recommendations for creating good learning environments. Debriefing is a facilitated discussion post-scenario that should be led by an experience SBE educator who can promote learner self-reflection; assist with identifying performance gaps, exploring the rationale for behaviors and providing solutions; and attend to any threats to the psychological safety of the learner (Fanning & Gaba, 2007; Fey & Jenkins, 2015; Kolbe et al., 2020; Watts et al., 2021) Debriefings tend to follow a three-phase structure: description/reactions as an overview of the scenario; analysis of the actions and performance during the scenario; and application/summary of how lessons learned during the scenario can be translated to clinical settings (Al Sabei & Lasater, 2016; Fanning & Gaba, 2007; Fey & Jenkins, 2015).

In order for maximum learning to take place, it is essential that the SBE facilitator create an environment that fosters trust so that the participant feels comfortable exploring their own behaviors, self-identifying gaps in performance, and recognizing opportunities for future improvement in either the simulation or clinical setting (Fanning & Gaba, 2007; Kolbe et al., 2020; Sittner et al., 2015). The debriefing component is a significant factor in ameliorating student anxiety or other negative emotions (Cantrell et al., 2017; Cato, 2013; Fey & Jenkins, 2015; Gore, Hunt et al., 2011; Janzen et al., 2016). Because of its significance, the DASH
(Simon et al., 2010) has four elements that specifically address the facilitator behavior during the debriefing process: it structures the debriefing in an organized way; provokes engaging discussion; identifies and explores performance gaps; and helps trainees achieve or sustain good future performance.

Curran (2008) asserts that just telling someone to change their behavior rarely changes deeply ingrained behaviors, so is largely ineffective, and definitely not learner centric. A pivotal work on promoting learner-centric debriefing was Rudolph et al.’s (2006) article introducing “debriefing with good judgment.” Rudolph et al. (2006) adapted work from organizational development that said individuals have reasons for their behavior that they perceive are rational and correct; these reasons are called “frames”. If a learner’s performance does not match the expectation for the scenario, then the job of a good facilitator is to explore the reason why the person behaved or performed the way that they did. The formula is called Advocacy/Inquiry, where first the facilitator describes the behavior, explains their own perspective regarding the gap in behaviors and then seeks the rationale/frame from the individual (Rudolph et al., 2006). Understanding the reason for the gap can often help the facilitator suggest ways to improve future performance. Fanning and Gaba (2007) assert that there are a variety of facilitation techniques that can be used during simulation conversations, and that the choice of which to use is dependent upon multiple factors including level of the learner and complexity of the scenario. One routine technique utilized by SBE facilitators is that of normalization, where the facilitator acknowledges that the behavior of the learner resembles past performances by other learners (Grant et al., 2018; Kolbe et al., 2020).

Best debriefing practice recommendations for achieving a safe learning environment
include: debriefing led by a competent facilitator, debriefing by an instructor who actually observed the scenario, using a structured debriefing framework, using evidence-based facilitation techniques, and providing an environment that supports trust, confidentiality, and self-reflection (Decker et al., 2013; Eppich & Cheng, 2015; Fanning & Gaba, 2007; Fey & Jenkins, 2015). Although good debriefing is one of the components essential to learning and psychological safety, a survey by Fey and Jenkins (2015), found that less than half of the nursing educators using SBE had been trained in debriefing techniques. Having such untrained debriefers may heighten the risk for negative psychological safety.

Negative emotions can be the result of the scenario or could be impacts from a traumatic event in the learner’s personal experience (Gaba, 2013; Grant et al., 2018). Gaba (2013) cautions that instructors must be prepared to deal with any negative emotions that arise during the scenario or debriefing. Grant et al. (2018) advise that the facilitator needs to address these “hot moments” during debriefing to maintain a good learning environment, and this principle is also part of simulation instructor courses at CMS and many academic medical centers. Janzen et al. (2016) recommend having a co-facilitator present during debriefing so that one can deal with any individual who is distressed, and the other can continue debriefing the other learners. Recommendations for psychological safety in debriefing have evolved to include suggestions for follow-up after the simulation session. Gaba (2013) suggests that facilitators follow-up with any participants who show signs of significant psychological impacts from the simulation experience, and potential referral to professional counselors if needed. SSH has accreditation requirements regarding plans for dealing with psychologically distressed participants (Deutsch & Palaganas, 2015). However, only one sample policy for handling episodes of distressed learners was found
in the literature (Willhaus, Averette, Gates, Jackson, & Windnagel, 2014). Henricksen et al. (2017) developed a rubric for follow up with distressed participants, and CMS has a counselor on call for any untoward psychological events that occur at their course.

**Facilitator Factors.** Although many of the preceding recommendations depend highly on the skill of the facilitator, it is worthwhile to clarify this essential component further since the quality of the simulation correlates heavily to the expertise level of the facilitator. The NL N Jeffries Simulation Theory (2016) includes the facilitator construct. Some of the desired attributes include positive attitude, calm demeanor, knowledge of simulation pedagogy, ability to provide prompt feedback, ability to identify gaps in knowledge and skills, and the ability to integrate clinical standards into scenarios (Jones et al., 2014). One of the INACSL Standards of Best Practice is Simulation™ Facilitation (Persico et al., 2021). Many of the INACSL recommendations for facilitators have already been discussed, such as providing scaffolding, prebriefing discussions on confidentiality and realism, and a calm professional demeanor. INACSL (Watts et al., 2021) also suggests that to achieve these attributes, the facilitator should have formal training in simulation pedagogy, and perhaps obtain certification such as SSH’s Certified Healthcare Simulation Educator (CHSE). The CHSE program was developed to establish globally recognized standards and core competencies for SBE educators (Nicholas et al., 2015). The eligibility criteria for certification are that the faculty has a bachelor’s degree or higher in a related field and has used simulation in a healthcare field for at least two years. The candidate also sits for a written exam that covers the domains of Professional Values and Capabilities; Knowledge of Simulation Principles, Practice, and Methodology; Education and Assessment of Learners Using Simulation; Management of Simulation Resources and
Environment; and Engagement in Scholarly Activities (Nicholas et al., 2015). There is also an advanced certification, CHSE which requires five years of SBE experience, a master’s degree or equivalent, and a more robust portfolio with education and publication information (Nicholas et al., 2015). Although NCBSN, INACSL, and SSH all recommend CHSE certification for SBE educators, a recent survey found that up to 71% of SBE facilitators in prelicensure programs did not have the certification even though the majority of these programs were using SBE for courses or to replace traditional clinical time with SBE (Breymier et al., 2015; Rutherford-Hemming, Lioce, Kardong-Edgren, Jeffries, & Sittner, 2016).

Despite the robust existing literature, professional society recommendations, and emerging research on psychological safety during SBE, negative emotions/experiences persist in anecdotal reports from nurses and hospital-based educators as mentioned earlier in the chapter. The researcher was trained as an SBE facilitator using CMS best practices, had been privileged to work/teach with many of the simulation experts cited thus far, and obtained CHSE in 2014. Their perspective was therefore somewhat skewed towards thinking that most facilitators had similar ways of conducting SBE, and it was only in hearing the negative stories that she realized there was a gap in how nurses were experiencing psychological safety in prelicensure SBE. There is a gap in the empirical knowledge from prelicensure nurses in how they experience the spectrum of psychological safety during their SBE encounters. Research directed at filling this gap in knowledge is essential to providing safe and effective learning environments for prelicensure nursing SBE; especially in institutions that use SBE for clinical replacement time and/or high-stakes examinations.
Significance to Nursing

Replacement of Clinical Hours with Simulation

A current logistical challenge for nursing education is the scarcity of clinical placement sites and clinical instructors, so a developing trend is to replace clinical hours with SBE hours (Breymier et al., 2015; Hayden et al., 2014b; Larue et al., 2015; Rutherford-Hemming et al., 2016). Larue et al. (2015) performed a systematic review assessing the status of SBE in preparation or substitution for clinical placement hours and found that some of the advantages were: opportunities to practice situations that are rarely experienced in clinical settings, standardization of learning experiences for an entire cohort of learners, and reflective feedback on active learning. Some of the disadvantages of SBE replacement found in the review include: possibly stressful for students, risk of interfering with the development of professional socialization and development, and risk of blurring reality with simulation (Larue et al., 2015). One challenge listed in Larue et al. (2015) was the burden of material and human resources invested in SBE, and that includes faculty development in SBE facilitation techniques. Until the 2014 NCBSN study, most of the evidence for clinical replacement with SBE was based on reports from individual institutions (Hayden et al., 2014; Larue et al., 2015). As mentioned earlier, one of the objectives for NCBSN study was to provide evidence-based recommendations for replacement of clinical time with SBE.

NCBSN Longitudinal Study

The NCBSN (Hayden et al., 2014) study is described as a comparison study using a randomized, controlled longitudinal design at multiple sites to examine whether SBE time could effectively be substituted for clinical placement time. The robust inclusion criteria for study sites
including Board of Nursing approved prelicensure curricula, ADN or BSN program, NCLEX pass
rates at or above the national average, maximum of 10% simulation usage in current clinical
programs, access to simulation facilities that could accommodate learners, willingness to
randomize students to control groups, and a commitment to designating faculty and staff
members (called study teams) to conducting the study. Five ADN programs and five BSN
programs were chosen as study sites based on this criterion. All study teams received training on
the NLN/Jeffries Simulation Framework, formal debriefing training, and training on standardized
scenarios that were run at all the study sites. The students were randomized into control group,
with no more than 10% SBE replacement hours; 25% group, with 25% SBE replacement hours;
and 50% group, with 50% SBE replacement hours. A total of 847 students were recruited into
the study, and 666 (79%) completed the full two-year study period. The researchers used
validated outcome measures at the end of the study to examine students’ knowledge,
competency, critical thinking, and perceptions of how their learning needs were met. There were
no statistically significant differences between groups in any of these measures, nor in passing
rates for the NCLEX exam. The authors of this study did not report metrics on psychological
safety during SBE but followed best practices according to the NLN/Jeffries Simulation

Recommendations from the NCBSN study were that up to 50% of clinical placement
time could be replaced with SBE if the conditions from the study were replicated (Hayden et al.,
2014a; Rutherford-Hemming et al., 2016). SBE experts who participated on the study stressed
that a key element in moving forward with SBE replacement is faculty development in theory-
based simulation and debriefing practices and recommended using INACSL Standards of Best
PracticeSM and CHSE certification as guidelines (Rutherford-Hemming et al., 2016). These are sound recommendations that would assist with maintaining a psychologically safe SBE learning environment, but existing regulations do not specify the ratio of replacement hours to clinical time, curricular design, or faculty and facility requirements (Hayden et al., 2014b).

One of the limitations to the study noted by the authors was that the schools participating in the program were not chosen at random (Hayden et al., 2014a); and the schools had existing simulation facilities and perhaps a vested interest in the success of SBE replacement. This means that positive findings for replacement time in simulation would only be generalizable if similar conditions with faculty and facilities were met. Another limitation noted was that the preceptors and clinical instructors were not blinded as to which study groups the students were assigned, and that may have affected how the students were treated by those groups. Although not listed as a limitation, there was a statistically significant higher dropout rate in the 50% Group than in the other two groups; and the authors noted that the students who dropped out were older, male, and members of a minority population (Hayden et al., 2014a). Since this differential dropout rate between groups specifies certain demographics, it does not seem random and can be a cause of bias to the study (Bell et al., 2013). As Hayden et al. advise, this is a cause for further research to ascertain if SBE is suitable for all students; and perhaps merits a measurement of psychological safety of SBE included in the study, with results compared between study groups and demographic groups. Unfortunately, no validated tool for measuring psychological safety in SBE exists at this time (Henricksen et al., 2017; Kang & Min, 2018), so it would suggest further exploration of prelicensure students’ experience of clinical replacement hours regarding psychological safety.
In 2019, when the initial research proposal was submitted, there were 22 states where State Boards of Nursing (BON) allowed SBE replacement for clinical hours and that number increased to 32 in 2022. INACSL has a website that shows which states allow clinical replacement and provides percentages varying from 15 to 50% of clinical replacement with simulation (https://www.inacsl.org/simulation-regulation-map, retrieved December 1, 2022). State laws vary greatly regarding percentages for substitution, yet there are nursing programs in most states that are substituting clinical time with SBE, even though it is not formally addressed by their BON (Hayden et al., 2014b). Although the variability of hours allowed was inconsistent, perhaps a more glaring omission from the Hayden et al. (2014b) article was that it did not address what, if any, quality regulations were imposed or suggested by current BON regulations. If psychological safety of SBE is highly dependent upon adherence to best practices and facilitator traits, then some recommendations or mandates for facilitator development should ideally be included in the replacement regulations.

**High Stakes Assessments Using Simulation**

Another emerging function of simulation in undergraduate nursing education programs is in summative assessments. These assessments are significant to the proposed research as they can be a source of distress to nursing students, and have the results impacted by psychological safety challenges. Unlike formative assessments, which provide opportunities for feedback and learning, the purpose of these simulation-based summative assessments is to determine student’s competence in designated areas of clinical assessment, skills, and reasoning (Bensfield et al., 2012; Oermann et al., 2016; Rizzolo et al., 2015). These summative assessments can be used to pass or fail students at the end of a course or program (Kardong-Edgren et al., 2011); due to the
potential impact to academic standing, these assessments are also referred to as high-stakes exams. Some of the reported affective impacts to students during such high-stake exams are: anxiety about being watched by instructors, unfamiliarity with the simulated environment, and fear of failing the course/semester/program (Bensfield et al., 2012; Cazzell & Rodriguez, 2011; Wolf et al., 2011). Some of the concerns from SBE experts about high-stakes exams are the variability in scenarios across programs, variability in rater training on the actual assessments, and the students’ lack of experience in SBE prior to high-stakes testing (Kardong-Edgren et al., 2011).

In 2010, the NLN convened a group of SBE experts to evaluate the process and feasibility of using high-fidelity simulation for assessment in prelicensure nursing programs (Rizzolo et al., 2015). During this process there were two teams of experts; one working on developing standardized scenarios to be implemented across all ten of the study sites, and the other working on the research plan, exploring tools and planning for evaluation training (Rizzolo et al., 2015). The team developed scenarios to measure four categories: assessment and intervention, clinical judgment, safety, and collaboration. The standardized scenarios were piloted at nursing schools that were invited to participate; this selected sample replicates one of the limitations of the NCBSN study, in that the schools all had established simulation programs and were known for following good standards of SBE practice. This study used the same validated competency evaluation that was used in the NCBSN study, and all raters were given training on the tool. Despite the training and a revision of the evaluation plan, the inter-rater reliability was determined as “fair” at the completion of the study. The authors concluded that there were still several questions regarding the usage of SBE for high-stakes examination, and
some of these may have implications for psychological safety: How much SBE experience does a student need prior to feeling comfortable enough in the environment for fair testing, what is the impact of SBE high-stakes testing on retention and graduation rates, and are there differences in scores when student performance is viewed live as opposed to viewed in a pre-recorded video (Rizzolo et al., 2015). Subsequent to the NLN report, key authors further reviewed the literature and published suggested guidelines for summative SBE assessments in nursing programs including: designing simulations appropriate for the objectives and level of learners; selecting or developing valid assessment tools; and ensuring the reliability of ratings by performing adequate rater training (Oermann et al., 2016). Like the recommendations for psychological safety during simulation or replacement of clinical hours, there are no regulations that ensure nursing programs follow these expert guidelines; this reinforces the need to scientifically explore the prelicensure students experience of such high-stakes exams, and any impact to psychological safety.

**SBE for New Graduate Nurses**

Since the impetus for this study came from several anecdotal sources of new graduate concerns with simulation, it would be remiss not to mention the impact of psychological safety of prelicensure SBE on newly graduated nurses. Much of the published literature on SBE in nursing education has focused on prelicensure students and not on newly graduated nurses (Jung et al., 2017; Olejniczak et al., 2010). During the time period of 2012 through 2015, only 45 research articles were published on hospital-based simulation (Rutherford-Hemming & Alfes, 2017). Like the findings from prelicensure SBE literature, the common outcome measures for hospital-based SBE are frequently improvements in knowledge, clinical skills, or self-confidence (Rhodes et al., 2016; Rutherford-Hemming & Alfes, 2017). For over a decade, clinical practice
sites have used SBE during new graduate programs as an orientation method for facilitating transition into nursing practice and evaluation of nursing competencies (Ackermann et al., 2007; Beyea et al., 2007; Olejniczak et al., 2010). Some identified benefits of SBE in nursing orientation include: socializing nurses to the professional role, enhancing confidence in skills, and increasing nurses’ knowledge in a safe environment (Beyea et al., 2010; Kaddoura, 2010; Olejniczak et al., 2010). It is important to differentiate that Olejniczak et al. (2010) describe a safe environment as one where no harm comes to patients, and not necessarily as psychologically safe for learners.

Transition Into Nursing Practice

SBE techniques have been used to bridge the gap between the clinical knowledge that is often the focus of prelicensure programs, and the complex clinical decision-making required of nurses practicing independently within the hospital (Everett-Thomas et al., 2015; Jung et al., 2017; Maneval et al., 2012). Nurse residency programs designed to facilitate transition into nursing practice and improve new graduate retention rates used simulation to provide practice with clinical decision-making; especially high-risk, low volume events (Everett-Thomas et al., 2015; Rhodes et al., 2016). Training for crisis events allows nurse residents practice in the recognition and management of patients whose condition is deteriorating; including escalation to higher level of care as needed and prioritizing competing tasks (Everett-Thomas et al., 2015; Rhodes et al., 2016). New nurses’ engagement in the crisis scenarios can be impacted positively or negatively by their prelicensure experience with SBE and provides another rationale for examining psychological safety. However, little is known about how nurse residents engage in these simulations. Considering the importance of psychological safety in SBE and the
significance of these trainings to patient outcomes, examining the nurse graduates’ experiences with psychological safety is warranted.

**Summary**

This chapter provided an overview of psychological safety in prelicensure nursing SBE. Newly graduated nurses report a spectrum of psychological safety, from positive to negative, during prelicensure education to their hospital-based nursing educators. Many of these hospital-based educators anecdotally reported that nurses who had negative experiences with psychological safety were reluctant to participate in simulations for orientation or life support training, yet this phenomenon is not adequately captured in scholarly literature. A review of the background of SBE in prelicensure nursing curricula yielded recommendations from the IOM and the Carnegie Foundation for using simulation to improve patient safety and nursing knowledge. Exploring the prevalence of SBE in prelicensure nursing education revealed a gap between the number of institutions using SBE and the percentage of faculty who obtained certification in simulation pedagogy. An introduction to psychological safety was provided, along with two concept analyses on psychological safety in nursing SBE. This concept of feeling comfortable taking risks and speaking up, without fear of embarrassment or retribution is essential for facilitating learning and promoting patient safety. Although there were several recommendations from professional organizations and experts on how to optimize the learning environment during SBE exercises, these recommendations are not mandated by regulatory agencies for academic institutions or state boards of nursing. Compelling rationale for ensuring psychological safety during SBE included: the replacement of clinical hours with SBE, the use of SBE for high-stakes evaluations, and the use of SBE for transition into clinical practice.
Existing concept analyses and literature provide basic information on how nurses experience psychological safety in their prelicensure program, however there is a lack of understanding and documentation on the scope of this phenomenon. The purpose of this study is to fill the gap in scientific literature about nurses’ experience of psychological safety during simulation in their prelicensure programs. The research question for this study is: What is the nursing students’ experience of psychological safety in the SBE learning environment?
CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter will provide a review of the literature regarding psychological safety during prelicensure nursing simulation to assess the status of the phenomenon. The initial literature search was conducted prior to the proposal defense in December 2019, and included the following databases: PubMed, CINAHL, ERIC and Scopus using the timeframe from 2008 through 2019. The initial search terms were “nursing”, “simulation”, and “psychological safety”. This search yielded a total of 63 articles, eight of which were relevant to the psychological safety of the SBE nursing simulation environment. Repeating the search with a substitution of “psychological harm” instead of “psychological safety” yielded no results. Another search of the same databases was performed using the terms “nursing”, “simulation”, and “anxiety”; the results of this search yielded 118 articles, 23 of which were relevant to the topic at hand. Since the new nurses reported feeling fear, another search was performed substituting “fear” for “anxiety”; this search yielded 46 articles, with only eight relevant articles that were duplicates from the anxiety search. The same databases were also searched for “nursing”, “simulation”, and “reluctance”; this search yielded only three articles; all three discussed faculty reluctance to use SBE, and not nursing reluctance for participation, therefore those were eliminated. Since prebriefing was identified as a crucial
component to creating psychological safety, the databases were also searched using the terms “prebriefing” or “pre-briefing”, and “simulation”. The search was divided into timeframes due to the emergent nature of study of this phenomenon. The search between 2008 to 2015 yielded 23 articles, five that were relevant for background information. Using the same terms from 2015 to 2019 yielded 78, with eight that were relevant for background information or impact on cognitive outcomes once duplicates were removed, and one study on the effects of prebriefing on psychological safety. Additional sources were found by performing hand searches of the references of the 47 relevant articles, which included dissertations from ProQuest. In addition, the websites and publications for the professional organizations of SSH, INACSL, and NCBSN were reviewed for pertinent content and links. Since Data collection was delayed due to the pandemic, the literature search process was replicated using the same criteria from 2020 to 2022; which yielded an additional 135 articles, of which 28 were specific to nursing and eleven were relevant to this study. Some findings from the subsequent literature will be highlighted in the Discussion section, Chapter Five.

**Review of Literature**

**Psychological Safety in Prelicensure SBE**

One way to assess the impact of an educational intervention from multiple studies is to use the information contained in a systematic review within the peer-reviewed literature (Hulley et al., 2013). As mentioned earlier, in 2019 there were only 11 articles found specifically related to psychological safety in nursing SBE, and one additional article on psychological safety was identified in the prebriefing search. Of the 12 articles, seven of those were background information, two were the concept analyses on psychological safety in SBE described in the Background section of Chapter One, and only three were research articles.
Evidence From Reviews

Since there was a scarcity of research on psychological safety in prelicensure SBE, no systematic reviews were found at the time of the review in 2019. In 2021, an author group conducted a review to identify current evidence regarding psychological safety in nursing education as compared to Edmondson’s four constructs: antecedent conditions, team beliefs, team behaviors, and outcomes. No systematic reviews were available on this topic in the literature, so their review of 13 included articles was described as a narrative review (Daniels et al., 2021). Daniels et al. concluded that the literature supported the elements as described by Edmondson and that psychological safety promoted engagement in learning, reflective thinking, and open discussion. Daniels et al. described limitations in that most of the reviewed articles came from a single site, with convenience samples, and focused on student satisfaction and confidence. The article also looked at psychological safety from a team perspective as per Edmondson’s model, so did not fully address individual psychological safety as is the focus of this study.

Evidence From Selected Studies

In 2019, there were three studies specifically dealing with psychological safety in prelicensure nursing education, and those are all examined in this section. A limitation to this section is that two of the three articles are from Korea, and not from a wider range of geographic locations.

Ganley and Linnard-Palmer (2012) contended that SBE has been declared a safe learning environment; but that traditionally meant safety for the patient, and not necessarily the learner. Ganley and Linnard-Palmer stipulated that the term academically safe encompassed both physical safety and psychological safety, so they used that term to describe their phenomenon of
interest. They conducted a descriptive online survey to gather data from students and faculty at five California schools of nursing on feelings of academic safety in the simulation environment. The sample consisted of 125 participants: 101 students and 24 faculty or simulation staff members; the authors list a limitation that there was a much higher response rate from their own institution than from other schools (Ganley & Linnard-Palmer, 2012). Ganley and Linnard-Palmer developed an instrument with both quantitative and qualitative questions based on findings from a review of literature, feedback, and anecdotal student comments. In the quantitative portion, students and faculty were given a list of characteristics and asked how they applied to an ideal academically safe learning environment and then also asked how they applied in their actual simulation experience (Ganley & Linnard-Palmer, 2012). The researchers performed a factor analysis of the quantitative data and found two factors: academic safety and comfort, and anxiety. Data analysis revealed significant differences between student and faculty responses to these factors: students felt less safe than faculty perceived, and students felt greater anxiety than faculty thought (Ganley & Linnard-Palmer, 2012). This discrepancy in student and faculty perceptions of student safety during prelicensure SBE provides a compelling rationale for further exploration of this phenomenon.

The qualitative data revealed that students and faculty described academic safety using similar terms of not being embarrassed to make a mistake or ask questions, and had an opportunity to learn by receiving constructive feedback (Ganley & Linnard-Palmer, 2012). Students reported feeling unsafe when they did not know what to expect from the environment or scenario, and when they felt their confidentiality was not respected. Some of the emotions the students expressed went beyond anxiety to feeling angry or depressed. One poignant example is when a student described feeling “humiliation for my classmates who went before and angry that
we would be thrown into such an experience without any explanation about how the dummy worked and how lifelike it was.” (Ganley & Linnard-Palmer, 2012, p. e54). Based on their findings, Ganley and Linnard-Palmer suggested further research is needed on best practices for making nursing students feel safe in SBE environments; and specifically recommended convening focus groups of nursing students to investigate their perceptions on the topic (Ganley & Linnard-Palmer, 2012).

Kang and Min (2018) used Kang and Bae’s (2017) concept analysis as a guide for their qualitative study examining nursing students’ perception of psychological safety in simulation experiences. Kang and Min did not describe the SBE experiences as High-stakes but did state that the simulations were evaluated based on pre-determined criteria. The sample consisted of 15 third and fourth year nursing students from a Korean university where Kang functions as a SBE instructor (Kang & Min, 2018). The researchers conducted three focus groups to gather data, and used inductive qualitative content analysis to identify four major themes: Feeling Unready, Anxiety About Having Mistakes Exposed, Worry About Damaging Teamwork, and Fear Related to Evaluation (Kang & Min, 2018). In the Feeling Unready theme, students describe feeling embarrassed during the simulation because they did not know how the simulator worked and did understand the purpose of the simulation. A poignant example is when a student described feeling like they were “prey thrown in a lion’s cage” (Kang & Min, 2018, p.2). This evocative statement described threats to psychological safety beyond just anxiety. The Anxiety About Having Mistakes Exposed theme echoed earlier research where students conveyed anxiety about being watched by faculty and peers. In Worry About Damaging Teamwork, students reported increased anxiety when either they or their team member does not perform well during the SBE exercise (Kang & Min, 2018). When they described the Fear Related to Evaluation
theme, students experienced anxiety and fear because they were unsure of the evaluation criteria; Kang and Min stated it had been given to students earlier in the semester but advocated repeating just prior to the simulation based on this finding. In their discussion on limitations, Kang and Min postulated that the results might not be generalizable since the study could reflect Korean cultural characteristics; however, their identified themes reflect findings from throughout the nursing SBE literature. Kang and Min identified that the next step in exploring this phenomenon is to develop an instrument that can measure psychological safety so that researchers can assess how students perceive the safety of SBE and develop recommendations to faculty for designing optimal environments. A limitation to Kang and Min’s profound findings was that Kang was the faculty and researcher, and this bias was not adequately discussed.

Roh et al. (2018) conducted a study to examine the effects of prebriefing on psychological safety, academic safety, satisfaction with debriefing, and team performance. The instruments used to assess each variable were: a Korean version of Edmondson’s (1999) Team Psychological Safety scale; an academic safety measurement scale from Ganley and Linnard-Palmer (2012); the Korean version of the student version of the DASH; and a Korean version of an Advanced Cardiovascular Life Support Skills Checklist (Roh et al., 2018). The sample consisted of fourth year nursing students at a Korean University. Roh et al. conducted a power analysis prior to their study and found that the optimal sample size should be 26 participants per group to yield an effect size of 0.5 with 80% power at a significance level of 0.05; from their convenience sample, they recruited 27 out of 163 participants for the experimental group and 23 out of 118 for the control group. Roh et al. used a nonequivalent control group posttest-only design to determine the impact of two different methods of prebriefing. Both groups received 100 minutes of prebriefing; the experimental group had 60 minutes of clinical practice, 30
minutes of simulation topic review with concept mapping of patient care topics, and 10 minutes of orientation to roles, room and equipment and discussion of the “fiction contract” to participate as though the scenario was an actual clinical case (Roh et al., 2018). The control group received 60 minutes of clinical practice, 30 minutes of scenario review without concept mapping, and 10 minutes of orientation to roles room and equipment without discussion of the fiction contract.

Roh et al. (2018) found statistically significant differences in the experimental group for higher team psychological safety and cardiopulmonary resuscitation performance, but not statistical significance between the two groups for academic safety or debriefing satisfaction. Roh et al. surmised that the additional prebriefing activities led to higher scores for team psychological safety; however, there is no current reliable scale for measuring the impact to individual psychological safety. Roh et al. postulated that the participants’ increased team psychological safety allowed them to better focus on the performance tasks. Roh et al. discussed limitations in that the study was underpowered and had homogeneity of the convenience sample and suggested that further research needed to be done to identify the types and amounts of prebriefing strategies needed to effect psychological and academic safety, and other learning outcomes.

**Synopsis on Psychological Safety in SBE**

Reviewing the literature specific to psychological safety in prelicensure nursing simulation revealed that it can promote engagement, skill performance, and learning. There were recurring themes of students experiencing anxiety due to lack of clear expectations and fear of being watched or making mistakes. Beyond the attributes of psychological safety from the concept analyses, these articles also further explored the consequences of the lack of psychological safety including anger, embarrassment, or feeling “thrown into” something. There
was also a disconnect between faculty and students’ perceptions of psychological safety. Another finding was that the terminology is not precisely understood and suggestion that there might be need to better distinguish academic safety, psychological safety, and psychological harm. Limitations include underpowered studies and potential bias of having the researcher also be academic faculty for the research participants. Because anxiety was a common finding in these studies on psychological safety, it was prudent to review the literature on anxiety in prelicensure nursing SBE.

**Anxiety in Prelicensure SBE**

The American Psychological Association (APA) (2018) defined anxiety as a state characterized by worried thoughts, feelings of tension, and physical changes. Several of the references in the literature on prelicensure nursing SBE anxiety are guided by definitions found in the State Trait Anxiety Inventory (STAI); originally published by Speilberger and colleagues in 1970 and revised in 1983 (APA, 2018; Speilberger, 1985). Speilberger (1970) initially developed the inventory for his research with learners on the link between anxiety and learning ability. State anxiety is described as transient subjective feelings of apprehension, tension, nervousness, that are a result of activation/arousal of the autonomic nervous system; and trait anxiety is defined as the relatively stable tendency towards anxiety or calmness within an individual (Julian, 2011; Speilberger, 1985). High levels of learner anxiety can lead to impaired performance and knowledge retention, and therefore pose a significant challenge to establishing psychological safety (Henricksen et al., 2017; Nielsen & Harder, 2013). Examining the literature on anxiety in prelicensure SBE provided some relevant themes for understanding this link to psychological safety.
Evidence From Systematic Reviews

No systematic reviews were found specific to anxiety in SBE; however, there were two literature reviews on anxiety and one on stress.

Nielsen and Harder (2013) described causes of student anxiety based on a review of the literature. However, Nielsen and Harder did not describe their search parameters, number of articles found, or selection criteria; most of the articles cited were published after 2005, with rare outliers. Nielsen and Harder stated that most research studies utilized the STAI; they provided specific examples where it was used but did not have a tally of how often it occurred in their reviewed articles. Nielsen and Harder described three patterns of student anxiety that emerged during their review: Learning Styles, where there was a correlation between anxiety and the learner having an auditory-verbal learning style; Concerns Specific to Simulation, where the learners were anxious if they felt faculty did not provide clear expectations, familiarization to the environment, or confidentiality considerations; and Being Observed, where the learners experienced anxiety from being observed or video recorded. Nielsen and Harder (2013) utilized the Cognitive Interference theory model to guide further discussion examining the causes of student anxiety during SBE. Cognitive interference theory provides a model for understanding the association between anxiety and reduced cognitive performance; an individual experiencing anxiety is distracted from accessing their existing resources and might result in decreased cognitive agility or task performance (Nielsen & Harder, 2013). Nielsen and Harder explored anxiety and learning; they indicated that there were both positive and negative effects from heightened anxiety and provided recommendations to facilitators to reduce anxiety to a level that provided optimal learning environments. Some of their recommendations echo earlier findings: establishing an environment where the students feels it is okay to make a mistake, providing
sufficient orientation to the simulation environment, reviewing expectations for learner interaction with the scenario, using smaller groups for novice learners, debriefing immediately after the scenario, and discussing video recording and its usage prior to the SBE experience (Nielsen & Harder, 2013). Nielsen and Harder’s conclusions echoed themes identified in other studies reviewed in this chapter, and these findings would have higher credibility with a robust description of their review process and criteria.

Shearer (2016) performed a review of the literature from 2005 to 2015 to determine the state of the science on anxiety in SBE nursing student simulation. Searching for peer-reviewed articles and dissertations on nursing student anxiety and simulation yielded 54 total articles; ten of these articles were included in the final review. The review is significant since anxiety can inhibit cognitive functioning, leading to lower performance and memory retention (Shearer, 2016; Yockey & Henry, 2019). Three major themes emerged from the search: the Unknown, Critique by Peers and Faculty, and the Experience of Making Mistakes (Shearer, 2016). Anxiety experienced in the Unknown theme resulted from students’ lack of clinical knowledge, lack of experience with simulation, and inadequate orientation to the SBE environment. This lack of a sufficient prebriefing to the SBE environment is echoed from other evidence in the literature and reinforces best practices for Promoters of Psychological Safety recommended by the experts that were discussed in Chapter One. Anxiety experienced as part of the Critique by Peers and Faculty theme reinforced that nursing students feel challenged being watched, especially if they hear/perceive negative comments in the simulation suite or control room (Shearer, 2016). Structuring the learning environment to avoid such untoward comments is essential for maintaining psychological safety. Shearer found in her review that the Experience of Making Mistakes could have both positive and negative consequences depending upon how the error was
handled in debriefing. Shearer discussed that the preparation of students for simulation was a significant gap, and that more research needs to be done on the best methods to decrease anxiety and what level of anxiety could potentiate learning and retention. In her conclusion section, Shearer addressed the NCBSN study results and advocated that if simulation will increasingly replace clinical time, faculty need to be well versed in sound SBE pedagogy and debriefing practices.

Cantrell et al. (2017) performed an integrative review of the SBE literature from 2010 to 2015 to evaluate the amount of stress that nursing students experience before, during, or after moderate to high-fidelity simulation. Their search yielded 364 articles, and 17 of those met criteria for inclusion in the review. Cantrell et al. (2017) discussed that samples from the majority of the 17 studies were convenience, homogenous samples from sites where the participants knew the researcher and that this could increase the potential for bias. Cantrell et al. asserted that stress is an emotional, physical, social, or other factor that requires a response or change; the perceived level of stressor correlates to the size of the effect on the individual; and that positive stress can motivate performance improvement and negative stress can cause emotional and somatic complaints. To achieve their review aim, the authors reviewed SBE literature from undergraduate and graduate nursing programs, included qualitative (n = 7), mixed method (n = 7), and quantitative studies (n = 3), and synthesized data from each method. One of the themes that emerged from the synthesis of the qualitative studies was Emotional Event, where the anxiety or stress of the learner was featured in the study; and Cantrell et al. provided descriptions of learners’ anxiety, panic, or embarrassment. In the Challenge Value theme, Cantrell et al. explicated how despite the stress or anxiety, the students found value in being challenged in a controlled environment. The final qualitative theme, Debriefing Connections,
recounted the importance the students placed on the debriefing process to both alleviate some of their anxiety and reinforce learning (Cantrell et al., 2017). For the mixed-methods synthesis, Cantrell et al. found two major themes: *Simulation Stress*, where researchers used qualitative methods to determine the source of learners’ stress and quantitative methods to measure that stress/anxiety; and *Simulation Satisfaction*, where researchers used qualitative methods to understand how simulation increased confidence in their abilities or satisfaction with the experience, and quantitative methods to measure those variables. In the quantitative synthesis, Cantrell et al. described three studies that used either physiological measures or a quantitative tool to assess simulation anxiety.

Cantrell et al. (2017) recounted that students reported moderate to high levels of stress associated with simulation, and the impact varied based on either individual or facilitator factors. Cantrell et al. reported “the majority of students regarded simulation as a valuable part of the learning experience and anxiety as part of the overall process” (p. 142). Cantrell et al. provided rich descriptions from learners that SBE was “terrifying” or “nerve-wracking”. This balance of achieving enough stress to enhance learning, but not overwhelm learners is a key target in providing a psychologically safe environment. Based on their synthesized review findings, one of the authors’ expressed implications for nursing education was to advocate for a change of faculty practice in order to ameliorate the fear and anxiety that nursing students expressed regarding preparation or participation in SBE (Cantrell et al., 2017).

**Evidence From Selected Studies**

Examining some of the individual studies cited in the reviews provides additional insights into the construct of anxiety in prelicensure SBE. The following studies were selected as
representative of some of the quantitative and mixed-method research that has been done regarding anxiety in pre-licensure nursing SBE.

Gore et al. (2011) used the NLN/Jeffries Simulation Framework for their study at a Southeastern university to determine if experiencing SBE prior to clinical would have any impact on prelicensure nursing students’ anxiety levels. The sample consisted of 70 junior level students who were enrolled in fundamental skills and health assessment courses; Gore et al. did not discuss power analysis in their article. The students were randomized into an experimental group who received a simulation experience prior to their clinical experience, and a control group who did not participate in SBE prior to clinical (Gore et al., 2011). Gore et al. did not discuss a baseline assessment of the students on the STAI either prior to or after randomization, so it is not known if there were any differences between the two groups on trait anxiety. Gore et al. assessed students’ anxiety levels prior to their first clinical experience using the STAI and reported that the experimental group had a statistically significant ($p = .01$) lower score than the control group. In addition to lowering the students’ self-reported anxiety scores, Gore et al. identified that another benefit of the pre-clinical SBE was that faculty had the ability to evaluate students’ clinical abilities and judgment prior to their clinical rotation. In discussing the limitations of their research, Gore et al. acknowledged that their convenience sample was fairly homogenous (88% female and 98% White) in demographic characteristics, so their findings could not be generalized to other nursing students in different geographic regions.

Beischel (2013) conducted a mixed-methods study to test a hypothesized model describing effects of learning variables on anxiety and cognitive learning outcomes during SBE experience. Beischel’s sample consisted of 124 baccalaureate-nursing students enrolled in their first Foundations of Nursing Practice course at a Midwestern university. Beischel noted that 124
met criteria for sample size in that path analysis requires five to ten participants per parameter, and her study examined 14 parameters. There is mention of student interaction with the Simulation Laboratory Director, but not explicitly stated that person is also the researcher (Beischel, 2013). Beischel’s aims for the study included determining whether lifestyle characteristics affected anxiety and cognitive learning outcomes, and whether anxiety mediates cognitive learning outcomes. The quantitative portion of the study consisted of several measures: self-reported learner and lifestyle characteristics survey, such as demographic data and prep for course; a Building Excellence learning style survey; a 30 question cognitive pre- and post-test; and the State Anxiety subscale from the STAI (Beischel, 2013). Beischel used a Factors Affecting Learning Questionnaire and structured questions during debriefing to gather qualitative data. Beischel’s quantitative data indicated that the lifestyle characteristic of “readiness to learn” had an inverse effect on anxiety, but no effect to learning outcomes. Beischel’s quantitative data also demonstrated a positive correlation between strong auditory-verbal learning styles and both anxiety and cognitive outcomes. Beischel’s qualitative data indicated students’ anxiety being ameliorated during the debriefing session when they had an opportunity to discuss and reflect with faculty and their peers. Beischel’s quantitative data showed that anxiety did not mediate cognitive learning outcomes as theorized; however, the qualitative data revealed that the students felt their anxiety negatively impacted their ability to think and perform. The strength of Beischel’s evidence is supported by her adherence to guidelines for sample size, statistical analysis of the quantitative measures, and rigor in describing analysis of the qualitative data. Beischel had a homogeneous sample in that it was predominantly White (88%) female (88%) participants from one institution. The lack of clarity
on whether Beischel was the Laboratory Director for the simulations, as well as the researcher, raises questions of internal bias on the study.

One of the frequent references throughout all the reviews and individual studies on anxiety was dissertation work done by Mary Cato (2013) examining the cause and impact of anxiety during SBE. This study deserves inclusion in the review of anxiety in prelicensure nursing SBE.

**Nursing Student Anxiety in Simulation Settings: A Mixed Methods Study (Cato, 2013)**

Cato conducted a mixed method study for her research examining the questions: what is causing anxiety in nursing simulation, how does anxiety affect this learning, and what can be done to decrease anxiety and maximize learning in SBE. The sample consisted of students from both a traditional baccalaureate program and an accelerated baccalaureate program in the Pacific Northwest where the researcher is faculty at the simulation center (Cato, 2013). For the quantitative portion of the study, Cato developed, psychometrically tested, and administered a survey to query students on what caused their anxiety during SBE experiences, and 73 students responded. Cato used information gleaned from the survey to develop the interview guide for the focus group(s) in the qualitative portion of the study; a total of nine students from both programs participated in one group session, which was facilitated by a nurse/social worker colleague of Cato’s.

Cato also included two open-ended questions on her survey. The first question asked students what about simulation helped them feel confident in their learning, and the frequent responses were: feedback and debriefing, safe environment, orientation and preparation for the simulation, challenges that prepare for real life, and support/working with peers (Cato, 2013). The second question asked what about SBE caused anxiety for them, and the frequent responses
were: new or challenging clinical situations, unfamiliarity with the equipment and simulation environment, being observed by faculty and recorded on camera, spending time preparing for simulation, and feelings of being criticized by peers who are observing (Cato, 2013).

Cato’s (2013) focus groups explored the themes: what does it feel like in simulation and what causes those feelings; how is the students’ anxiety manifested; what causes anxiety, or makes students feel comfortable; and what other recommendations do the students have for improving learning in simulation? The two main categories of feelings in simulation were anxiety, which was mentioned 36 times by students; and calm/relaxed/confident, which was mentioned 12 times (Cato, 2013). The causes for the students’ anxiety mirrored the open-ended quantitative survey themes, as did the causes for feeling confident (Cato, 2013). Students acknowledged that lower levels of anxiety could be useful in preparation for the SBE experience. When their anxiety levels were highest, students described physiological, cognitive, and emotional manifestations for their anxiety; and several related that the anxiety could interfere with their ability to think, focus, or make sense of what was going on with the simulated patient (Cato, 2013). The causes for students’ confidence also reinforced open-ended survey themes: support from peers, orientation to the simulation environment, feedback/debriefing from faculty and peers, and scenarios that prepare the student for real clinical care (Cato, 2013).

Cato (2013) triangulated data from the scaled survey questions, open-ended survey questions, and focus group discussions to develop suggestions for creating an optimal SBE learning environment. Since the students reported that mild anxiety could promote learning, Cato adapted a Comfort-Stretch-Panic model for learning (Palethorpe & Wilson, 2011) to incorporate the students’ data. In the comfort zone, students are presented with minimal challenge, and learning occurs mainly by chance; in the stretch zone, students encounter some
stress, and are motivated to optimal performance; and in the panic zone, learners experience high
levels of stress, and learning becomes impaired (Cato, 2013; Palethorpe & Wilson, 2011).
Cato’s suggestion for further research included studies: measuring students’ levels of anxiety to
determine optimal levels; evaluating interventions targeted to decrease or optimize anxiety
levels; comparing different types of nursing programs beyond traditional and accelerated
baccalaureate; and involving clinical faculty in SBE research and findings.

In her discussion of limitation of the study, Cato (2013) recognized that the sample was
from one university. Cato acknowledged the effects that the researcher being a faculty member
might have on the students’ willingness to participate, answers to survey questions, or discussion
during the focus groups even though the moderator was not the faculty member. Cato’s
mindfulness to the potential for bias and her triangulation of data sources enhanced the
credibility of her study.

**Synopsis on Anxiety in SBE**

In reviewing the literature on anxiety in prelicensure nursing SBE, several themes
emerged: anxiety from being observed, anxiety from being unfamiliar with the simulation
environment, and anxiety from interactions with peers (contagious/infectious). This portion of
the review elucidated that some level of anxiety was beneficial to learning, but that high levels of
learner anxiety can have detrimental effects on cognitive functioning and learner performance.
Another theme that emerged as relevant to psychological safety was the need to control the
environment so that feedback by faculty and observing peers is made constructively in the
debriefing phase as opposed to comments during the simulation scenario. The strength of
evidence in many of these studies was influenced by the fact that the researcher was also faculty
for the participants’ SBE. Another challenge in the strength of the evidence was that the
convenience samples of many of the studies yielded somewhat homogenous participant populations from single institutions. The researchers provided evidence-based recommendations for controlling student anxiety during SBE, and this is a necessary, but not sufficient condition for creating a psychologically safe learning environment.

**Psychological Harm**

While searching the literature for psychological safety, one article emerged that focused on psychological harm during SBE. Janzen et al. (2016) convened a group of educators at a university in Western Canada to discuss the potential challenges to psychological safety during SBE, and how to ameliorate them. One of the authors (SJ) held CHSE certification, and the others had between one and five years of SBE facilitation experience. The group provided recommendations based on their experience, and then reviewed the literature for further evidence/suggestions (Janzen et al., 2016). Janzen et al. provided background information on SBE psychological safety as reviewed in Chapter One of this document; including several recommendations for creating a safe learning environment from Gaba (2013), INACSL Best Practices (2016), and Rudolph et al. (2014). Janzen et al. proposed that nursing SBE educators utilize Cato’s (2013) *Comfort-Stretch-Panic Model in Simulation* as a guideline for designing SBE environments; including being transparent by sharing the model with students. Janzen et al. echoed Gaba’s (2013) recommendation that facilitators have a plan/policy for dealing with distressed students, yet only found one example in the literature (Wilhaus et al., 2014). Since the focus of their discussion was dealing with psychological harm, the authors also provided additional recommendations for modulating those experiences: normalize situations of stress, consult with risk management services to draft proactive policies, have an alternate facilitator available who can assist with either debriefing or counseling the distraught participant, and
ensure that emergency contact information is available for facilitators in case a student needs immediate attention (Janzen et al., 2016). Janzen et al. concluded their article by stating that further research is needed to explore the phenomenon, and investigate best practices for prebriefing, scenario delivery, and debriefing to preclude psychological harm.

**Synopsis on Psychological Harm in SBE**

Reviewing the scarce literature on psychological harm echoed evidence on students’ learning from, gaining confidence, and feeling anxious about SBE experiences. This review also revealed potential new attributes of psychological safety (or lack thereof): anger, embarrassment, or being “thrown” into something. Bringing the term of “psychological harm” into discussions of psychological safety in SBE raises the question of whether these terms describe different phenomena or are phases along a spectrum of one phenomenon, and merits gathering further data.

**Summary**

This chapter provided a comprehensive review of the literature regarding psychological safety, anxiety, and psychological harm within prelicensure nursing SBE. One overwhelmingly consistent theme was nursing students experiencing heightened anxiety due to being observed and unfamiliar with the SBE environment. Prebriefing from the instructor can ameliorate such anxiety; however, due to the lack of empirical evidence regarding psychological safety, prebriefing might be considered a necessary, but not sufficient condition. Several studies confirmed that mild levels of anxiety might facilitate the learning process, but that severe anxiety is an impediment to cognitive abilities and performance. The evolving literature on psychological safety in prelicensure SBE raises an awareness of anger, humiliation, and other harmful feelings that resulted from participating in an environment that lacked psychological
Another finding in this review was that many studies regarding anxiety or psychological safety occurred at schools of nursing where the researcher was also an SBE faculty for the population being studied. Although some researchers detailed efforts to control their own bias during the study, most did not address the social desirability bias that the students may exhibit by wanting to please a trusted mentor/faculty member. The samples largely focused on baccalaureate nursing school populations, which evokes the question of whether there are inherent differences in psychological safety within Associate Degree or Diploma Programs that utilize prelicensure SBE.

The review revealed lack of a thorough understanding of the phenomenon of psychological safety in prelicensure nursing SBE. This lack of understanding and data regarding the phenomenon directs future scholarly inquiry towards a post-positivism paradigm with qualitative research methods. Clarification of this phenomenon best comes from empirical evidence gained from those who have experienced it. As reviewed in Chapter One, a majority of the nursing student experiences in SBE occur as small group activities, and experts advocate that learning in simulation occurs as a social process (Dieckmann et al., 2007). Since both SBE learning and psychological safety have been described as social processes, it is best to use a form of grounded theory to understand the phenomenon. The following chapter details the qualitative methodology designed to obtain nursing students’ narratives of their experiences. The research question for this study was the following: What is the nurses’ experience of psychological safety in their prelicensure SBE curricula?
CHAPTER THREE

METHODS

Purpose

The literature review revealed evidence on sources of stress, anxiety, and comfort in prelicensure nursing SBE, with some substantive data on psychological safety. While there is some evidence on mediating the anxiety that students experience during SBE, there is not a complete understanding of how to manage the more complex phenomenon of psychological safety. Much of the existing research was conducted at institutions where the investigator was both highly skilled in SBE pedagogy and known to the participants as faculty. Further investigation is needed to determine the generalizability of the limited evidence on psychological safety and explore any undetected attributes and/or consequences of the phenomenon. The evolving nature of the knowledge of this phenomenon lends itself to further qualitative inquiry, where the researcher follows an iterative process of simultaneous data collection and analysis (Charmaz, 2014; Denzin & Lincoln, 2017). The purpose of this study was to develop an understanding of the phenomenon of psychological safety in prelicensure nursing SBE. The resultant model or theory could be used to inform educational practices, future research, and policy development regarding prelicensure nursing simulation programs. Since there are currently no instruments that measure psychological safety in SBE, a long-term goal is to use the emergent theory to inductively design an instrument guided by the evidence from prelicensure nurses. The research question for this study was the following: What is the nursing students’ experience of psychological safety in the SBE learning environment?
Research Design and Methods

The purpose of the Grounded Theory method, first explicated by Glaser and Strauss in 1967, is to generate theory that is inductively discovered and developed through research using systematic collection, constant comparison, coding categories, and analysis of the data relative to a specific area of interest (Glaser, 1978; Glaser & Strauss, 1967). Glaser and Strauss indicated that such research uncovers the behavioral patterns that shape social processes common to members of a given group. In Glaser and Strauss’ initial paradigm, Classical Grounded Theory, the researcher remained objective to discover an existing social process. In more recent years, other versions of Grounded Theory have emerged; including Constructivist Grounded Theory, which stipulates that the researcher is actively engaged in the co-creation of a model and emphasizes the importance of symbolic interactionism (Charmaz, 2014; Watling & Lingard, 2012). Symbolic interactionism is a theoretical perspective that postulates people interact with situations and environments based upon their interpretation of the meaning of such stimuli, and these interpretations are predominately shaped through social interactions with other individuals (Blumer, 1969 in Charmaz, 2014). Charmaz (2014) asserts that Classical Grounded Theory seeks to describe an objective model that exists, and Constructivist Grounded Theory focuses on an interpretative understanding of a phenomenon and models that are specific for situated circumstances. The Constructivist Grounded Theory model of inquiry ideally suited this study; where the nature of SBE learning often occurs in small groups, and the researcher brings a wealth of experience and knowledge of the topic at hand.

Reflexivity

Charmaz (2014) advises that researchers examine ways in which their philosophical stance, experiences, and other relationships might influence their interaction with the participants.
or the data; and this is also a reporting standard for qualitative research publication (O’Brien et al., 2014). For this study, the researcher’s worldview drove the choice among Grounded Theory approaches since she has a constructivist view of the nature of reality and how knowledge is formed. The topic was informed by various positive and negative anecdotal stories from nurses’ prelicensure simulation gained in 15 years in SBE. During those years, the researcher obtained her CHSE as detailed in Chapter One and has conducted numerous instructor training and debriefing workshops. The researcher’s baseline mental construct for psychological safety in SBE formed based on those experiences and from the opportunities she had to teach alongside several SBE and psychological safety experts. Her reflexivity for this research project entailed acknowledging the influence of the various experts on her perspective and balancing that with the sacred task of honoring the nurses’ stories while constructing the theory.

**Participants**

Grounded theory, which is based on extracting data from a unique social group, requires purposive sampling as opposed to a random or convenience sample (Charmaz, 2014; Glaser & Strauss, 1967). Inclusion criteria are described as those that define the main characteristics for the target population that pertain to the research question (Hulley et al., 2013). This information should include demographic, research specific, geographic, and temporal characteristics. For the purposes of this research study, the inclusion criteria were: nurses who graduated within twenty-four months from schools of nursing who experienced SBE in their prelicensure curricula, are currently working in an acute care setting, and speak English in order to facilitate the interview process. Recruiting newly graduated nurses with recent SBE experience yielded rich data on their experiences, and ameliorated the social desirability bias of wanting to please instructors or fearing program failure. Cato (2013) discusses the potential for power imbalance between the
researcher and the individual’s being studied, and in this study a researcher coming from outside
their hospital/institution should alleviate fears related to employment repercussions from any
disclosures during the interview/data collection process.

**Sampling Strategies**

Charmaz (2014) emphasizes that determining sample size for grounded theory research
design is not determined by any statistical power, but by reaching the point of theoretical
saturation where the researcher is not obtaining any new data that might indicate the need for
additional categories. Recruitment for this study was initially done by distribution of Information
Sheets for the study (see Appendix A) to nurses meeting the inclusion criteria by hospital-based
educators known to the researcher from various simulation professional organizations. Several
such educators volunteered during IMSH, INACSL, and Women in Leadership (SBE)
conferences; including educators from at least four different states, and both academic medical
centers and rural hospitals. Initial recruitment was also accomplished by the “snowball” (Crouse
& Lowe, 2018) technique of asking participants if they know others who might like to
participate; two additional participants were obtained from nurses asking colleagues from their
nurse residency cohort and two from nurses asking fellow alumni from their nursing school
programs. Additional recruitment was accomplished via network sampling. The co-investigator
contacted nursing education and professional development specialists through simulation and
nursing education organizations, provided a brief description of the study and requested
assistance in advertising and recruiting potential participants. The educators contacted their new
graduate nurses on their units and referred them to the study; four nurses were obtained through
this technique. Interested nurses contacted the researcher, who then screened them for eligibility.
Once these criteria had been determined, the researcher asked them for available times to
schedule Zoom interviews and sent them the consent to review prior to the interview time. Individuals who completed the interview were given a $10 Starbucks gift card in appreciation for their time.

**Data Collection and Management**

Data collection took place via Zoom audio-recorded interviews that lasted between 24 and 50 minutes to gather demographic information and in-depth interviews. Before starting the recording, the researcher explained the purpose of the study, reminded participants that they may stop the interview or withdraw at any time, and obtained consent from the participant. After consent was obtained, the interview proceeded using the interview guide (see Appendix B) that includes the purpose of the study, some demographic information, and semi-structured interview questions. The interview questions were drafted and vetted by the dissertation committee, and then piloted with nurse educators and new graduate nurses for feedback and comments prior to submission for IRB approval. The interview began with a few open-ended questions and continued with appropriate follow-up questions and probes to further clarify examples brought up by participants (Rubin & Rubin, 2012). After those initial questions, Rubin and Rubin (2012) indicate that the interview guide may be modified based on responses from the initial participants, reinforcing that generating open codes and theoretical memos should commence after the first interview to determine what modifications might be necessary (Charmaz, 2014; Glaser, 1978). Once the interviews were completed, the recordings were assigned a randomly generated code number and then sent securely to certified CITI trained transcriptionist. The transcriptionist had signed a confidentiality agreement to transcribe these recordings verbatim, remove any proper names, and provide secure electronic copies to the researchers. Once the transcript was received, the researcher reviewed to ensure any identifiers
had been removed and uploaded the transcript into NVivo 20 software (QSR International Melbourne, Australia) using the random code number. The researcher used transcripts of the recorded interviews and handwritten field notes to clarify data, guide further discussion with the participants, and capture suggestions for subsequent interviews (Charmaz, 2014; Glaser & Strauss, 1967).

Data Analysis

In Constructivist Grounded Theory, data collection and analysis are done concurrently. The analysis is done by the method of constant comparison, which allows the researcher to identify similarities and differences that help to reveal the emerging categories and their properties (Charmaz, 2014; Glaser & Strauss, 1967). The procedure for Constructivist Grounded Theory follows the steps of initial coding, focused coding, and theoretical sorting, diagramming, and integrating.

Initial Coding

For this study the analysis process began after obtaining the transcript from the first interview. As this is dissertation work, this process was conducted in conjunction with the committee chair. The first step in analysis as described above was listening to the tape while looking at a verbatim transcription of the data to assess for accuracy, including any extraneous artifacts such as crying or long pauses and then uploading into NVivo. The next step was systematic open coding of data line by line throughout the transcript (Charmaz, 2014; Glaser, 1978). The use of NVivo allowed both the committee chair and researcher to work on generating codes and comparing codes to each other. This process was repeated for each of the subsequent interviews. It is important that people instead of the software generate the codes—to connect to not only the words, but also the meaning and context they contain (Charmaz, 2014;
Glaser, 1978). As Yvonna Lincoln eloquently expressed: “Why would you want to engage in work that connects you to the deepest part of human existence and then turn it over to a machine to ‘mediate’?” (Quoted in Charmaz, 2014, p. 520). Constant comparison looks at comparing data to data, data to codes, codes to codes, codes to categories, and categories to categories both within and between transcripts (Charmaz, 2014; Glaser & Strauss, 1967). Once no new codes are appearing in the data, Charmaz (2014) emphasizes the use of theoretical sampling “…to define the properties of our categories; to identify the contexts in which they are relevant; to specify the conditions under which they arise, are maintained and vary; and to discover their consequences.” (p. 519).

**Theoretical Sampling.** Charmaz (2014) claims that the purpose of theoretical sampling is not to increase the size of the sample but rather to refine ideas and themes that have already emerged in the initial coding. Thus theoretical sampling depended upon the initial data, coding, and themes to determine what changes should be made to data collection in order to further develop categories in the emergent theory (Charmaz, 2014; Groen, 2017). For this study, the theoretical sampling involved refining the interview questions to explore the nurses’ relationships with faculty and peers to determine how that impacted their feelings of psychological safety (see Appendix C).

**Focused Coding**

The second phase in coding for Constructivist Grounded Theory is focused coding, which is the process of examining the emerging codes to determine ones that are appearing frequently or have more significance (Charmaz, 2014). Although described as the second phase, this is an ongoing process that begins after the second interview and iteratively occurs after each interview. During this process, the researcher examined the existing codes, compared them to
each other, and decided which one have the most conceptual strength for the phenomenon being explored (Charmaz, 2014). Charmaz discusses that sometimes focused coding will occur concurrently with initial coding if a concept has significant relevance to the topic at hand and this was the case for the code/category of “knowing expectations” which emerged from the first interview. Concurrently, the researcher also wrote memos on codes that were prevalent, novel, or challenging. Charmaz (2014) emphasizes that using such memos during the focused coding process guides the decision for which codes will become conceptual categories that compose part of the resultant theory.

*Theoretical Sorting, Diagramming, and Integrating*

Once the conceptual categories were identified, then the researcher clarified their meaning in memos, which translated to focused conceptual codes. Charmaz (2014) describes the next step in the process as sorting. During this process, the researcher made several rounds of comparing these conceptual codes to each other to evaluate relationships between them and how they made senses in terms of the empirical flow of nurses’ experiences during SBE. Once some of the key conceptual categories were defined, the next step was tabling and diagramming visual representations of the categories and their relationships to each other (Charmaz, 2014; Giles et al., 2016); this step was particularly helpful in clarifying the various factors of the theoretical model and the gradients that could exist within the factors. During this process, there were iterative tables, models, and diagrams constructed that were compared not just to the focused codes and memos, but to the entirety of each interview transcript. Examining the relationships between the conceptual categories, reviewing the memos and transcripts, and developing the visual model led to the construction of the core category *Simulation Psychological Safety Ecosystem* as this captured the variability of the nurses’ experience with psychological safety due
to the coded and constructed factors. Once the core category, key factors, and relationships were constructed, the researcher began drafting the theory that will be outlined in the next chapter. It is essential to track all the iterative decisions that were made regarding the codes, categories, and memos to provide an audit trail on how the theory was conceptualized (Charmaz, 2014; Lincoln & Guba, 1985). This audit trail serves a vital function in developing the trustworthiness of the resultant theoretical model.

**Trustworthiness of the Theory**

An established criteria for trustworthiness consists of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Grounded theory provides credibility in that the researcher uses the participants’ words as the data for analysis; maintaining records of the transcriptions allows the researcher to have verifiable access to those data, which will be used in quotes throughout the final report. Performing theoretical sampling via additional focus groups or individual interviews is another mechanism for establishing credibility. In Constructivist Grounded Theory, the researcher actively engages the participants in co-constructing the data and will discuss with interested participants the substantive theory to seek verification and corrections. Transferability to other contexts is achieved in grounded theory studies by the thick descriptions described in the participant data. While Constructivist Grounded Theory intends to provide models for specific circumstances, the choice of different geographic sites and educational preparation levels enhances the transferability for this study. Having the Dissertation Chair code along with the researcher, as consistent with Constructivist Grounded Theory, provided dependability and confirmability. Confirmability for the study was also enhanced using memos and audit trail throughout the open and focused coding process.
Protection of Participants

This research was approved by the researcher’s Dissertation Committee and the Loyola University Chicago Institutional Review Board (IRB). The consent process included informing the participant that they can choose not to answer any questions that they choose, that they could stop participation in the interview at any time they choose, and that there will be minimal risk for their participation in or withdrawal from the study. All interviews were digitally recorded and transcribed, and any identifying information was removed from the transcription and assigned a random study number. Pseudonyms were assigned for writing the manuscript, as such rich descriptions deserve names instead of numbers, and the pseudonyms were only linked to the random numbers and not the participants’ actual names. The documentation connecting the participants to the randomized number was kept in a locked filing cabinet in a secure office for use to contact any of the participants who wish to review their transcripts or any resulting substantive theory. During the data collection phase, the audio recordings, transcription reports, and memos were not kept on any computer hard drive but were on encrypted flash drives in a locked file cabinet or on NVIVO password protected software. All electronic and any paper copies of the transcription, including the signed consents, researchers coding, and memos were also stored in this secure cabinet in a locked office. When the study period is ended, the audio recordings will be deleted, but the electronic and paper copies will be retained in secure storage for possible further examination for the purposes of theory refinement.

Summary

This chapter explained the research methodology for conducting the study: Exploring Psychological Safety During Prelicensure Nursing Simulation. The qualitative method of Constructivist Grounded Theory was chosen due to the scarcity of literature available on the
subject at the time of review, and the researcher’s worldview and extensive background with SBE. Participants included nurse graduates who experienced simulation in their prelicensure program within 24 months. Recruitment was accomplished by distributing the information sheet to hospital-based educators for sharing with nurse residents and included network and snowball sampling techniques. Nurses who met eligibility requirements were interviewed using Zoom technology. The interviews were transcribed and then data analysis followed Constructivist Grounded Theory methodology of initial line by line coding; focused coding and determination of conceptual categories; and theoretical sorting, diagramming, and integrating. Memos were used to track categories of interest and to guide initial writing of the theory that will be outlined in the next chapter.
CHAPTER FOUR

RESULTS

This chapter presents the key findings obtained from 17 in-depth interviews, and the resultant theory describing nurses’ experience with psychological safety in prelicensure simulation. The theory was constructed by the researcher using constant comparison of the qualitative data obtained from the participants. The core category, *Simulation Psychological Safety Ecosystem*, expresses the variability of nurses’ experience with psychological safety based on interactions between the identified factors.

**Sample**

Seventeen interviews were conducted with participants who had graduated from nursing schools within the past 24 months. The interviews occurred in three different rounds, Fall 2020, Fall 2021, and Spring 2022; the timespan for these rounds was influenced by the pandemic as well be discussed in the limitations section in Chapter Five. The participants attended nursing schools in several states and a variety of types of nursing program attended. Table 1 outlines demographic information from the participants and their assigned pseudonyms that will be used in this and subsequent chapters. One inclusion criterion for nurses was that they had experienced at least some in-person simulations, and not just remote or computer-based. All 17 nurses experienced some in-person simulation, and nine of them had some version of remote or online simulations. Nurses interviewed in the first round of data collection more frequently just had live simulation, and those who were interviewed in subsequent rounds were more likely to have experienced remote simulation in addition. The remote simulations that seven of the nurses
experienced consisted most frequently of a person portraying a patient with vital signs being provided electronically. Nurses in the second and third rounds also experienced computer-based simulations using software that presented patients and had nurses select from multiple choice options. Since the focus of the study was psychological safety for in-person simulation, in-depth questions were not asked about these remote or computer-based experiences. All 17 of the nurses reported using mannequin-based simulation and task trainers during their prelicensure curriculum. An additional eight reported using standardized patient methodology, seven described also using role play, and one reported using virtual reality with headsets only once during their program as a pilot. Although it was not a design of the interview guide, all the nurses reported on either mannequin-based or standardized patient simulations when discussing psychological safety issues and not task trainers or the virtual reality. Another screening criterion was that nurses experience SBE for learning and not just testing, so all 17 reported learning and six reported some type of assessment. One of the potential areas of exploration was psychological safety for high-stakes assessments; however, none of the six experienced high-stakes exams, but rather had assignments where the nurses were given points for participation and accuracy of clinical reasoning and actions taken. Those who experienced such assignments most frequently reported challenges to psychological safety regarding expectations on grading as described in the factor descriptions below. Other demographic information collected was if the nurse had any previous academic degree, clinical experience, or simulation prior to nursing school.
Table 1. Pseudonyms and Demographic Characteristics of Participants

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Gender</th>
<th>Age Range</th>
<th>Ethnicity</th>
<th>Type of Nursing Program and Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Lei”</td>
<td>Female</td>
<td>25-34</td>
<td>Asian</td>
<td>ABSN, Washington DC</td>
</tr>
<tr>
<td>“Kai”</td>
<td>Male</td>
<td>18-24</td>
<td>Asian</td>
<td>BSN, San Francisco</td>
</tr>
<tr>
<td>“Ivy”</td>
<td>Female</td>
<td>25-24</td>
<td>Caucasian</td>
<td>MSN Entry, Sacramento</td>
</tr>
<tr>
<td>“Sophia”</td>
<td>Female</td>
<td>18-24</td>
<td>Hispanic</td>
<td>BSN, San Jose</td>
</tr>
<tr>
<td>“Maya”</td>
<td>Female</td>
<td>18-24</td>
<td>South Asian</td>
<td>BSN, Los Angeles</td>
</tr>
<tr>
<td>“Emma”</td>
<td>Female</td>
<td>18-24</td>
<td>Caucasian</td>
<td>BSN, San Francisco</td>
</tr>
<tr>
<td>“Julie”</td>
<td>Female</td>
<td>25-34</td>
<td>Caucasian</td>
<td>ABSN, Sacramento</td>
</tr>
<tr>
<td>“Javier”</td>
<td>Male</td>
<td>25-34</td>
<td>Hispanic</td>
<td>MSN Entry, Boston</td>
</tr>
<tr>
<td>“Valerie”</td>
<td>Female</td>
<td>18-24</td>
<td>Caucasian</td>
<td>ABSN, Springfield (MO)</td>
</tr>
<tr>
<td>“Bailey”</td>
<td>Female</td>
<td>18-24</td>
<td>Caucasian</td>
<td>BSN, Boston</td>
</tr>
<tr>
<td>“Amy”</td>
<td>Female</td>
<td>25-34</td>
<td>Caucasian</td>
<td>MSN Entry, Chicago</td>
</tr>
<tr>
<td>“Priya”</td>
<td>Female</td>
<td>18-24</td>
<td>South Asian</td>
<td>BSN, Chicago</td>
</tr>
<tr>
<td>“Tessa”</td>
<td>Female</td>
<td>25-34</td>
<td>Caucasian</td>
<td>MSN Entry, Chicago</td>
</tr>
<tr>
<td>“Rebecca”</td>
<td>Female</td>
<td>18-24</td>
<td>Caucasian</td>
<td>BSN, Normal (IL)</td>
</tr>
<tr>
<td>“Sabrina”</td>
<td>Female</td>
<td>18-24</td>
<td>Caucasian</td>
<td>BSN, Normal (IL)</td>
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<tr>
<td>“Jade”</td>
<td>Female</td>
<td>25-34</td>
<td>Asian</td>
<td>MSN Entry, Chicago</td>
</tr>
<tr>
<td>“Molly”</td>
<td>Female</td>
<td>25-34</td>
<td>Caucasian</td>
<td>ABSN, Miami</td>
</tr>
</tbody>
</table>
The Theory

The theory that was conceptualized and constructed from the nurses’ data is depicted in Figure 1. The core category Simulation Psychological Safety Ecosystem refers to the myriad of experiences the nurses have in prelicensure simulation based on the interplay of the coded and constructed factors. Within the theory, there are four major factors that influence nurses’ experience of psychological safety: Expectations, Instructor (during scenario), Observation, and Feedback. While these factors are not linear, the visual model depicts them in the order that the nurses encounter them empirically within their simulation experiences. Each of these factors exists along a spectrum of impact to the nurses, and labels were constructed to describe these dimensions: Promoters of Psychological Safety describes when the factors allows nurses to learn feeling that they can learn and make mistakes without being embarrassed; Barriers to Psychological Safety expounds upon when various factors can cause uncertainty or ambiguity in nurses’ sense of safety; and Causes of Psychological Harm expresses when individual or combined factors cause nurses to feel unsafe in the SBE environment. The four factors all have sub-factors along these dimensions that will be further described within this chapter using the nurses’ data as rich descriptors. The richness of the in-depth interviews led to many of the nurses sharing examples across multiple dimensions, and that reinforces that psychological safety is not fixed based on a participant or instructor but varies due to the factors. Nurses’ experience of psychological safety can be influenced by their existing relationships with faculty or peers and their perception of whether the simulation is meaningful to their current clinical rotations or future practice. These influences contribute to the complexity of the ecosystem model.
Core Category: Simulation Psychological Safety Ecosystem

As mentioned in Chapter Three, the core category was constructed by reviewing interview transcripts, codes, categories, memos, and the iterative visual diagrams of category relationships. Experiencing psychological safety required a supportive atmosphere that allowed nurses to feel comfortable making mistakes and speaking up. This sense of safety varied based on several factors: clarification of simulation expectations, guidance from the instructor during scenarios, experience with watching and being watched by peers and faculty, and quality and tone of feedback received. The overall sense of psychological safety was also influenced by nurses’ relationships with faculty and peers, and their desire to achieve meaningful clinical
learning during the simulation. The complexity and interactivity of factors drove the choice of terminology for the core category, shifting from the term and concept of psychologically safe environment as described in Chapter One to psychological safety ecosystem. The term ecosystem originated in the discipline of ecology to describe the intertwined nature of organisms and their environments (Bronfenbrenner, 1979), was subsequently been adopted to describe complex, interconnected systems (Merriam-Webster, 2023), and has been used in the education discipline to describe complex interdependent factors as learning ecosystems (Atkinson et al., 2022). Ecosystems can be altered by fluctuations to the environment or population, and such is the case with psychological safety in simulation where the experience is influenced by multiple elements. As mentioned above, the nurses’ relationship with peers or faculty can influence their perception of psychological safety. Exploring the conceptual codes between cases within NVivo did not reveal any other correlations between any of the demographic data and the dimensions. Each of the four factors will be described examining sub-factors that follow the dimensions along the spectrum, starting with the Promoters of Psychological Safety, progressing to the Barriers to Psychological Safety, and finishing with the Causes of Psychological Harm. It is important to note this progression is done for the ease of description and not because they are linear in nature.

**Expectations**

As discussed in Chapter One, prebriefing typically proceeds a simulation course or scenario. This phase is where the nurses learn what to expect in terms of objectives, environment and equipment, roles of the participants, logistics, confidentiality, and any evaluation. The variability of how, and how much of, this information is delivered was one of the most prevalent themes discussed by the nurses. All the nurses gave examples regarding expectations of SBE
experiences and how that impacted their feelings of psychological safety. The sub-factors for this category along the dimensions are: Knowing What to Expect, Being Unsure, and Going in Blind.

**Knowing What to Expect**

Nurses who knew expectations reported that this made them feel safe participating in SBE. They described the actions that their instructors took to promote psychological safety by orienting them to the environment, explaining roles, and establishing ground rules.

**Environment.** The nurses gave in-depth descriptions about how instructors provided orientation to the room, equipment, and mannequin functionality. The nurses conveyed feeling supported when they were adequately prepared by knowing where medications were located, how to call for assistance if needed, and what sounds they might encounter within the environment. Another factor that increased their comfort with the simulation was knowing what the mannequin sounded like in its “normal” state and having the opportunity to listen to breath sounds or feel for pulse location and quality.

Like they’d be like okay, all the medications are going to be in this drawer. So, you know you would be able to grab that there and then they showed us how like the vitals machines works in there and kind of how, like obviously with the mannequin’s mouth, it's a little weird and they'd be like, okay just put in the temperature probe in their mouth and it'll show up on the screen for you. So, I would say we were very well prepped for like what was going on in the room. We were familiar with it (Molly).

Before we would actually go in and do the simulation, we would all go in there as a group. We would check out the mannequin, because some, like certain parts of the mannequin weren't working like the heart rate or pulse or whatever. So, then we would go in there, check out the mannequin, listen to respirations and heart rate and just get a baseline so if we were to come back into the room and assess the patient, we would know if the patient was not at baseline or not. Just see what's in the room, like around the bed. Like is there a crash cart? Is there an airway cart? What meds are in the room? What supplies are in the room or what needs to be in the room? So yeah, we always became familiar with the room before the sim actually started (Amy).
**Roles and Objectives.** Nurses also expressed that it was helpful for them to review roles and objectives for the scenario. Since there were often multiple participants in any simulation, nurses appreciated clarification if they were to act as the nurse, a student nurse, or another role, and how they should engage with the patient and scenario. Several nurses also expressed that it was helpful to know general objectives for the scenario, especially if it was their first time doing simulation during a new rotation. Knowing this information allowed them to engage without undue fear or anxiety.

I think what was helpful from the faculty was explaining the situation, what general type of case that you were going into, and kind of showing like hey this is the patient’s room, and then you would see one student going in and then you'll be able to, or you'll be responsible for responding to this patient, acknowledging that there's no right or wrong answer (Jade).

During, they called it pre-conference, they would give you information and they would quickly go over certain medical conditions that let’s say they have an elevated blood pressure. So, a lot of times we would go over conditions that could cause elevated blood pressure. They wouldn't directly say what can cause it, but they would ask the people in class like okay, what can cause this? Or what are you thinking right now given the situation? And what is your plan of action before you even go in? So instead of just going in and feeling completely lost, you have a plan of what I want to get done (Maya).

**Ground Rules.** Some of the nurses described how instructors setting ground rules regarding making mistakes, confidentiality, and the instructor’s basic assumption prior to the scenario helped them feel more comfortable participating in the simulation scenario. Knowing that the instructors believed they were intelligent, willing to learn, and trying to do their best encouraged nurses’ participation.

At the start of every day, we’d come in, of every sim day, we'd come in and then they would read us the goals of sim and then, which was just saying we believe that you guys can do your best and deserve to have, be supported (Rebecca).

They tried to make us feel safe just by saying what happens in simulation stays in simulation. We don't talk about simulation outside of simulation. we signed these confidentiality forums just saying that we wouldn't talk about simulation outside (Julie).
...she was really trying to encourage us this is the time where you should try, and she wanted us to try. And so that's what I was like oh okay, someone, I felt validated in trying because obviously we all wanted to do well. But then also okay to make mistakes, because it was like okay that's the point of this (Emma).

**Being Unsure**

In contrast to knowing the expectations, nurses described how not having clear expectations can be a barrier to feeling psychologically safe due to feelings of confusion and uncertainty about how to proceed.

**Environment.** Being unfamiliar with the equipment and environment were a cause of concern for some of the nurses and impacted their feelings of safety.

I also think that it would be good allowing us to be in the area and knowing what it looks like and whatnot and knowing where everything is versus kind of just going in for the first time. Kind of us just letting us just go in there and just look around. This is what it is, letting us know what it looks like the day before. And because I remember just walking in and it was a new environment, and I had no idea where anything was. I didn't know what monitors were beeping and whatnot (Javier).

I remember one time there was something the patient kept asking, the mannequin was just repeating over and over again and so we ended up having to use one of the props in the room, which was the phone and you had to call down to the lab and figure out all of these things. But nobody knew to use the phone (Valerie).

**Roles and Objectives.** Some of the nurses expressed frustration at not knowing the goals for the case or the criteria for being successful. A few mentioned that the lack of clarity made it feel as they were wasting their time and not learning anything during those scenarios.

When we went in there, we just had no idea what was going on. And I worked with a partner who had never had any clinical experience. And so, it was just a hot mess. We didn't even really know what to do. I think we just, I just remember we were just waiting for prompts and kind of walking out of the room. And we're just bumbling around, it was very unproductive (Emma).

Because let's say for example the psychiatric one I had, we were interviewing a patient with a psychiatric disorder. And for them to stop the simulation, we would have to hit their goals. And in that sense, they did not tell us what the goals were. We would just
have to just keep interviewing and maybe 15, 20 minutes later if we actually said what
they wanted to hear, they would, the instructor would call the phone and that would stop
the sim (Kai).

**Grading.** For those nurses who experienced a grade for participation for simulation, the
most frequent challenge was having unclear expectations about grading.

There’s going to be certain key things you need to hit from your PowerPoints. And it was
like what PowerPoints? They would give us a case study to read, but they wouldn't give
us, they wouldn't necessarily say, oh we're going to test this assessment or something like
that. So, it was just very vague and so you weren't really clear what you had to perform
on, what it meant to do it well versus what it meant to not do well. So, it just felt kind of
like you're just going to do it and you don't know what the scale is that you're going to be
judged against (Emma).

Javier echoed Emma’s concerns, and shared that it was disconcerting to have faculty “checking
off boxes” regarding his performance in the simulation scenario when he was not sure about the
content of the checklist:

We had a graded assignment and were not really sure of the checklist the faculty was
using. During that scenario, the faculty would take notes, make sure checking off boxes,
which is also very anxiety provoking, knowing that they were checking boxes and
watching us and making sure that we were doing certain things I think also create a lot of
anxiety and nervousness that like I'll never forget.

Another issue with grading was a lack of clarity about how team assignments were scored, by
individual performance/participation or by whole group outcome. This led to confusion and
nurses feeling that they had to outdo each other.

So, you had these different leaders (students) bumping heads because they knew that
they're being watched and recorded and graded so they wanted to say like everything that
they had to know in the situation, even though it's not like, it's kind of hurting you. Like
yes, you do know all of this information but it's hurting you in the end because this is a
team, this is a team-graded assignment and/or simulation. And when those instances
would happen, I often would just kind of step back and try and, like I said earlier, try and
remember like okay what's the clinical data, what are we trying to actually execute here,
versus yeah, people getting caught up in what they know so they could get praised or
points for it (Bailey).
The perceived competition impeded the nurses’ senses of psychological safety as they felt that participation grades could be impacted and skewed towards the dominant voices.

**Going in Blind**

The third sub-factor of *Expectations* describes the psychological distress the nurses felt from feeling like they did not have enough information to proceed. The nurses describe more intense emotions than uncertainty. Many times, they described going in blind and how that inhibited their participation in the scenarios, caused negative emotions, and made them dislike SBE.

I remember a specific instance where the goal that the goal of the simulation was simply to identify what stage of labor the mannequin was in. And I went in blindly, not really knowing this, and just had a mental breakdown and just started crying because I had no idea what to do. I was just like what do you want me to do?... And she's like you'll figure it out. And I'm like okay. And so, I go in and there's this mannequin pushing out this little baby head and just screaming in pain – very nerve wracking. I know that they want you to go in blind and that's kind of the point because they want you to get this experience. But going in so blind with such little data and such little knowledge of what’s to come but knowing something's going to go wrong is just kind of paralyzing. It felt very high pressure, high intensity, and it felt like you were, it felt like I was going in blind to most of the situations, most of the clinical scenarios. And so, I didn't have enough information to act on (Julie).

It felt very high pressure, high intensity, and it felt like you were, it felt like I was going in blind to most of the situations, most of the clinical scenarios. And so, I didn't have enough information to act on. I completely understood the intention of it...But kind of going in blind, it felt almost like a spotlight was on me. And I was ready to be exposed at any second for not knowing or doing the wrong thing or, and someone seeing me mess up or making a bad impression on my peers. And it was something, too where we would have it almost weekly or every other week and it would be just the one thing that I would think about. And it was such a small portion of our overall curriculum, but it just took up so much mental energy in my mind and a lot of other peers that I worked with. (Jade).

Having clear expectations ahead of starting the scenario allowed nurses to participate and feel more comfortable making mistakes and asking for help from faculty or peers. When the expectations and knowledge of environment and goals were opaque, it created either confusion...
or fear within the nurses that impeded their ability to participate fully or retain meaningful learning.

**Instructor (During Scenario)**

Within the SBE literature, there are several names utilized for the course faculty who design, conduct the scenario, and perform the debriefing; and throughout this process they fill various roles: guide, facilitator, intermediator, and teacher (Roze des Ordons et al., 2022). However, for this model the term “instructor” was chosen as that was most frequently used by the nurses interviewed for the study. All the factors within the overall theory can be influenced by the knowledge, skill, and attitudes of the instructor and their interactions with the learners. This factor is specific to the nurses’ description of how the actions or presence of their instructor during the scenario impacted their sense of being able to make mistakes without fear of harm to self or classmates. The sub-factors for this category along the dimensions are: *Guiding me, Confusing me, and Stopping me.*

**Guiding Me**

Several of the nurses described how having the instructor in the simulation room promoted their sense of safety by having someone who could immediately assist if needed. Another benefit of having the instructor present was the ability to have real-time instruction, especially when the nurses were uncertain about how to proceed with communication or clinical skills.

I think labor and delivery was a really good one, when we had the mannequins, and our instructor was right there, and she was kind of playing the midwife. And I felt very supported because my classmates were actually in another room, so it really did feel more like the real situation where I had maybe one other classmate and then the midwife in the room. And so, we went through all of the positions and kind of the therapeutic measures that we could offer the patient… And kind of going over the fetal monitoring and
explaining it as we're learning and being in this simulation made it a lot better education for me (Lei).

Ivy expounded that not only was it helpful to have the instructor in the room, but her instructor explicitly gave them permission to pause and ask for help if needed during the scenario:

So, our instructor rather than just throwing us in there to fumble around, he was like okay, I'm going to be in the corner of the room, I'm going to be with you, it's going to be okay kind of thing. And it was very easy to kind of be like I don't quite know what I'm supposed to do. And if I pause for a second, he kind of pauses the simulation with us and goes, okay think about your steps. And he made it really easy to take what could have been a stressful, even more stressful situation where you don't get learning because you're just fumbling around and turned it into okay yes, the code is stressful, but look at the steps that you follow, and you can work through the pathway.

Nurses also expressed that it was helpful when the instructor would come into to the room during the scenario to intervene or be available by phone if assistance was needed.

When you're struggling, when you really don't know what you're going to do, the simulation instructor would just come in and start giving you helpful hints. They're like do you want to look at your lab values again? Or they would show up as a team member. They'd be like hi, I'm the nurse specialist, I was looking over some lab values, I noticed this happened. Do you feel any particular way about it? And they would help you like that and then they would immediately leave (Maya).

But then I had other instructors that were gently easing us into it. They would always say if you're in the room and there's a challenge or something, don't be afraid to call out for help or if there's a staff assist button on the wall, use that. And I feel like when I was in there and I needed help I would always do that or call out for help or make a phone call to the doctor or to another nurse, or other phone call. I really liked doing that (Amy).

**Confusing Me**

Nurses perceived a barrier to psychological safety when the lack of instructor presence or guidance during the scenario left them feeling lost or stuck. There is perhaps some overlap with the lack of clear expectations of *Being unsure*, but in this sub-factor nurses were discussing the lack of direction from the instructor during the scenario.

So, a lot of times you felt kind of abandoned because you're not being led down this path. You're kind of just, I mean you're learning by experience in that way I guess is what
they're trying to accomplish. But you wouldn't really get any extra help if you stumbled across that issue. You're really kind of on your own (Julie).

You sometimes don't really know what you're doing right and wrong until afterwards. And by that time, pretty much 20 minutes has gone by. So, a lot’s happening, you may forget what happened, but it would be nice if I think it wasn't a complete acting experience and there was a little bit more guidance, a little bit more nudging as it was happening. You don't have to walk us through it, but I think giving hints or something like that, hey what's interesting about their vital signs? Especially if it's going off course (Sabrina)

**Stopping Me**

Some of the most evocative stories from nurses were when they described being interrupted by the instructor during the midst of the simulation scenarios. These nurses described harmful feelings such as needing to cry or being frozen/unable to continue due to feelings of fear.

My bad experience came from when I was giving an IV medication. And with every step of the medication administration process, I was critiqued for and asked question, like in every stage it was either a question or a critique, like how are you drawing that up? How are you going to space out these intervals over the period of time? Once I did it, like actually went to go administer the medication on the mannequin, the professor actually grabbed my arm and told, like it was just very, that was a very negative experience…I think that what I should have done in that situation and what the professor should have done would be to have fully let me make my mistakes and then discuss it as a group. It was always pretty intimidating. So, within that moment, I well I actually I think I had to excuse myself because she made me so scared or so probably scared and angry at her at the same time, like I said for not letting me make that mistake, that I cried. I did, I excused myself to the bathroom (Bailey)

We just had one instructor who, like she would interrupt us in the middle of a sim, when you know just, I don't know, it just didn't feel very supportive...I just, all of us were very off put by this one instructor. It felt very judgmental. It felt like sometimes we would, she would interrupt us in the middle of the sim …and it's honestly intimidating. So, I, like the difference was that none of us felt like we were doing a good job. We were afraid to move forward because we were not sure when she would interrupt us again (Molly).

As a contrast, Rebecca described an instance where she made a mistake in a scenario and how she appreciated that her instructor did not stop the scenario but handled it during the debrief.
I don't know why this one stuck with me, but I drew up a medication and scanned it and then I went to do something else, hand it to the other nurse, and they gave the med to the mannequin. So afterwards they didn't say anything, we went on with the simulation. And then the instructor asked us what went well, what didn't go well, and we talked about it. And then that was a mistake. She's like it's not right to, if you scan the medication, you should be the one giving it and she talked me through it. It wasn't like she stopped the simulation and told me it was wrong or anything. It was just, I thought it was very, like an informative, helpful discussion. And like I said, that has stuck with me.

Overall, the nurses appreciated the presence of their instructors either being in the room or coming into the simulation suite when they saw the nurses needed help progressing. The nurses felt confused if the instructors provided no guidance at all. While the nurses appreciated the guidance and suggestions, they did not like being interrupted or stopped and it inhibited their safety and engagement in the scenario. Molly’s description of being frequently stopped and started sounded in some respects like the Rapid Cycle Deliberate Practice (RCDP) model initially developed to improve resuscitation skills by allowing learners to pause and reflect in action (Hunt et al., 2014); however, if that was the case, those expectations were not clearly conveyed to the learners.

**Observation**

An inherent part of simulation for the nurses was observation: being watched by faculty and peers and watching scenarios of their cohort. As mentioned above, sometimes the instructors are present in the simulation suite; other times they are watching from an attached control room, usually with a window or mirror. Due to the size of simulation groups within nursing school, there are usually some active participants in the scenario and some additional learners who are watching from a remote location, and all the nurses discussed being observed by their peers. Like the other factors within the model, being observed by faculty and peers plays a strong and
variable role in nurses’ perception of psychological safety. The sub-factors for this category along the dimensions are *Achieving learning, Feeling uncomfortable, and Being judged*.

**Achieving Learning**

Some of the nurses describe the benefits from watching their peers go through scenarios and their reactions in the room as observers. Nurses mentioned being able to learn from seeing their peer’s performance in the scenario, both when they did well and learning from others’ mistakes. Some also mentioned that it was good to see a scenario multiple times to review the clinical facts, and it was easier to focus on those issues when they did not have the stress of being the active participant.

I think that as a viewer it was very informative, because we're able to go through four scenarios while I was only an active participant of one or maybe an assistant of another one as well. So, I think it’s helpful in that way that you got to be engaged in that discussion of the debrief (Tessa).

So, when I was in that room, I mean sometimes we'd be, if we knew that they were on the right track, we'd be like okay come on, guys. Like we were very, they couldn't hear us, but we tried to be encouraging and they were like oh they're on the right track, like they're gonna get it soon. And then if they would like mess something, I would be like it's okay. I’m like keep going. So even though they couldn't hear us, I would say the attitude in the room was very positive (Molly).

Priya described one experience when she was grateful for instructions on how to observe and take notes prior to the actual experience:

As an observer, it was pretty, it was quiet. Everyone, honestly, it's like all eyes on the screen and then we're just kind of taking notes. I think we were told beforehand to write down a few things, like two or three, that you thought went really well and a few things that you thought they might have changed. There was a faculty member in the room with us.

**Feeling Uncomfortable**

For many of the nurses, being observed by both instructors and peers was a source of some anxiety. Nurses expressed that they were unsure of what to do as observers and worried
about how instructors or peers perceived them. Some nurses commented that it would have been helpful if they had prior knowledge and expectations of what that observation experience would be like.

I personally don't like that. I feel like I got very nervous and very uncomfortable just because my peers were watching. I feel like if they weren't watching, I'd be, like there would be a lot less anxiety. Yeah, I definitely did not like that. I also, how do I explain it. I just felt like yeah, they were, everyone was judging you. Because when I'm sitting there and I'm watching someone, I think students when they go into the room and they don't know what to do, they freeze in the moment. And then you're sitting there obviously with no stress and no anxiety saying, and you're thinking clearly, and you're like oh you need to do this, this, this, and this. So, when I'm in there and I'm nervous or just very anxious, I know they're, all of the other students are sitting in the other room maybe judging me, maybe not judging me and the clinical instructor is doing the same, so I was not a fan of that (Amy).

It was almost a little bit more nerve wracking because you're watching your classmates go in and you're watching them make mistakes and then you're, like if you see them make mistakes, it's a little bit harder to, like you want to, you can so easily point them out when you're watching. But then at the back of your mind, you're nervous because you're anticipating, well how am I going to look on the screen when they're all watching me? So, I think there's an advantage but a disadvantage to watching other classmates go before you. The advantage being that you kind of, if you can think of little things that they do and keep them back in your mind like oh right, I need to do this or I need to do that. The disadvantage being if you have someone who's stage shy and they know that they're being recorded and watched by their classmates, then I've had other classmates and myself just kind of freeze and not know what to do (Bailey).

**Being Judged**

One of the issues that caused psychological harm to the nurses is when they had instances of either instructors or peers either laughing at them or yelling at them from the observation room. This went beyond some mild anxiety about being judged to feelings of being disrespected or even ridiculed. Sometimes these behaviors were directly heard by the nurses while they were observers themselves, and sometimes they heard the derisive remarks while they were participating in the scenario.
I wish people can see the behind-the-scenes, because sometimes when there's, like let's say there is, we're in a couple teams, right? And there’s a, we're observing someone that was in this actual simulation. We would almost be yelling at the screen, like what are you doing? Look at the vitals, they're about to code What are you doing? We would, I think we in some cases, and I'd say from coming from a good place is like we just got so into it, that we felt like it was a, it's a real patient… But we were just so intense where we're just like oh my God, the patient's about to die right now, what are you doing? And we would just be yelling at the screen. And when they would come in afterwards all kind of shocked, like they didn’t expect that to happen to the mannequin, we got kind of quiet (Kai).

Well, I know when I would be in the breakout room watching someone else do the simulation, sometimes being like no, don’t do that. Or sort of yelling at the TV, like you need to do this and knowing that they can't hear us, and just us getting frustrated at that. Because everyone's sort of just like no, she has to do this or they have to do this, or I would do this. And so, I guess being on the other end just watching, you're really like that's so obvious, why aren't you doing this. ...But then being on the other end, where you're in the simulation, every, and knowing that someone's watching you, it's just like everything just passes by…But we were yelling, and sometimes you can actually hear the yelling. When you hear the yelling, it sort of makes you think okay, what am I doing wrong. And so, I think that's just another stress factor to the simulation itself. And since the clinical instructors would be in a separate room closer to the simulation, they couldn't really tell us, the people in the breakout room, to be quiet. And so, it would be more so like people in the breakout room reminding everyone like shh, they can probably hear us and all of that stuff. So yeah, there's, I feel like there was a lot of different factors that played a factor in our stress during the simulation (Sophia).

Your peers are in another room where you don't know what they're saying. And because I was in that room, too, because we would switch off, right? So, I was in that room and sometimes we'd snicker and sometimes we'd be like oh gosh or it's right there or just wishing you could say something but also knowing that you probably wouldn't be doing any better or any differently in that scenario because of the pressure. So, I think having peers watching was a really difficult thing. I don't know that I would change it, but— (Jade).

Probing Jade’s response yielded a description that served as a contrast to Priya’s earlier description of having a faculty member in the room:

Being in the observation group really had no rules. It was just you and the rest of that section that wasn't participating and there was no instructor in the room, so it was kind of like a free-for-all. So, we would just be like, if someone knew the answer, because it's easy to come up with an answer when it’s a low stakes scenario when you're not having all of this other input come at you. But yeah, we didn't receive any instruction and there was no instructor there, so it was kind of just like say whatever, do whatever ever, be
funny, say something snide, or shout out the answer if you knew it. Just so was a little bit messy.

While a few of the nurses described learning through watching their peers, many reported at least mild anxiety regarding being watched by instructors or peers. The unanticipated phenomenon of having peers yelling at the screen in the observation room caused distress for some of the nurses, and these negative emotions impacted the nurses’ participation and learning. The instances where nurses heard the yelling or derision from the observation or control room caused feelings of humiliation and led to psychological harm. The impact of this factor on psychological safety fluctuated based on the absence or presence of the instructor in the observation room. Another interactive variable was the interplay between Expectations and Observation, as the nurses’ level of safety varied based on what, if any, prebriefing was given to nurses about observation decorum and tasks.

Debriefing

As outlined in Chapter One, debriefing is one of the key functions of learning in the simulation process, especially when the participants feel safe discussing their behaviors, identifying gaps in performance, and discovering opportunities for future improvement. The nurses’ data reinforced the value of psychologically safe debriefing for their learning and described ways in which the structure of debriefing and nature of feedback influenced that variable. Nurses verbalized that learning during the debriefing increased their comfort and allowed them to perform better in subsequent simulation scenarios. Many of the challenges to psychological safety were concerns regarding the quality and nature of feedback provided. The sub-factors for this category along the dimensions are: Receiving structured and helpful feedback, Wanting constructive feedback, and Getting harsh feedback.
Receiving Structured and Helpful Feedback

The nurses brought up several issues about the structure and techniques of debriefing, and nature of feedback that helped them feel psychologically safe during the debriefing sessions. When these conditions occurred, the nurses were more comfortable discussing their experiences and providing feedback to their peers.

Starting with the Positive. Some of the nurses indicated that structuring the debriefing so that the discussion started with review of the positives helped them feel safe exploring issues. Nurses expressed that this practice established trust between them, their instructors, and eased them into discussing mistakes later in the debriefing process.

Usually when we’d come back, we'd always talk about what we did good first, which I thought was very helpful. Like okay we did, this was great. Even if it was like the nursing stuff that wasn't great but say like our empathy was good or whatever. I would say that was very helpful talking about like what we did good. And then we’d go into okay maybe next time you can do this. Maybe next time you could do this. But I think starting with the positives right after sim, when you're coming down here a little bit stressed was like helpful and just encouraging (Molly),

So, they would always give feedback after each scenario, starting with what's good first, and then not necessarily what's bad, but just the room for improvement. They would say something like I noticed you did this; tell me why you did that and not this. And we kind of would talk through and like okay now, and then they would kind of go from there, like now okay I understand why you did that. So, then they would kind of going a little bit more detail, like not the proper way, but just another way of going about doing so (Kai).

Addressing Team Instead of Individual. Javier said that when instructors would address behaviors of the team it relieved some of his anxiety, since then he did not feel singled out for a mistake:

What I found super helpful was when we would discuss as a group, things that were noticed amongst the group and not an individual. So instead of saying something that the person saw that the leader saw during the simulation, they would mention across all boards they saw this. And I think that phrasing it that way made us feel a lot more comfortable to learn because they wouldn’t mention one person's actions and that one person would know it was them because they realized it was them. So, I think that
phrasing in a specific way so that they mentioned it as a group versus an individual made it a lot better of a learning environment.

**Normalizing.** Emma added that it was helpful to her that the instructor not only normalized making a mistake, but also created a learning opportunity from the situation. That instructor behavior resonated with Emma, and she remembers the learning point well:

But I just remember her talking with everyone and then just she just kept expressing like okay so xxx did this, everyone let’s learn from this. Or she just made it so everyone taught each other something so she normalized it. And then when she was talking about it, from what she was talking about what I had done, she talked about it in a way that was very understanding. It wasn't like that was wrong, this is what you're supposed to do in this situation, you always do this, right? It was just like oh well you worked in the ER so that makes sense (the fixation error). This is a different situation. So, you had just missed this difference. And next time you focus on looking at this and at this other factor so that you don't get tunnel vision, if that makes sense. So, I just felt very understood where I was coming from.

**Meaningful Feedback.** Several of the nurses indicated that they felt more comfortable making mistakes when their instructors or peers would give them feedback that allowed them to correct or improve their behavior, either in the next scenario or in their clinical rotation.

Receiving honest, constructive feedback exemplified the “basic assumption” that nurses were intelligent, willing to learn, and trying to do their best and contributed to the nurses’ sense of psychological safety.

I think the debrief was far more fruitful than the actual simulation itself. And that's where we kind of got support was like I see where you were trying to go with this, and they were doing the whole therapeutic communication thing. And I see where you're trying to go with this. I saw what your thought process was there, but here's how we can do it better next time. And so, I think the debrief was far more valuable than the actual experience (Julie).

I think that was always helpful for me because I knew that if I made a mistake, I wasn't going to get penalized for it and we would be able to talk through it in the debrief afterwards. And I just always felt really supported because I knew that I was going to get feedback, constructive feedback from my own peers, not just the instructor. And I don't know, I just think that kind of helped me better to hang onto certain mistakes or things that I may have done wrong or could have approached differently just because you're
getting it from another person's perspective and a whole 'nother set of eyes seeing it (Jade).

**Wanting Constructive Feedback**

A frequent challenge to psychological safety was non-specific feedback. Many nurses verbalized they had been told simulation was a safe place to make mistakes and learn how to improve, but indicated they were not given constructive feedback to do so. This lack frustrated nurses who were yearning to derive meaningful learning from their simulation experience.

I guess it’s just like our clinical instructors always encouraged us, at least say one thing so someone might be like I really like how you advocated for the patient, but it's, that's to me a fluffer. Because you could say that to anybody (Lei).

Lei elaborated how that varied from other times when she was given a specific suggestion and the change she made to her practice because of that guidance:

Or yeah, it was almost more helpful, the reason why I think I took away the simulation where I was doing kind of not the best job to support the depressed patient who just got a full mastectomy was because one of my classmates just said I never heard you guys say how sorry you are or acknowledge her defeat or like sadness. And so now whenever I see my patients and it's a really difficult scenario, I always acknowledge that.

Other nurses echoed this theme of wanting constructive feedback. They expressed some frustration for the missed opportunity to have such discussions during debriefings that would have allowed them to develop better skills.

Our other peers in the room who had been watching us would also give us feedback. But I would say it would be difficult every now and then because you want to give positive feedback to everyone. So, I would say you don't always get the negative feedback just because everyone's trying to be so supportive of you, which is good in the sense that you're like okay no one said bad, anything bad about me. But it's also like at the same time you wish you could get that other feedback (Sophia).

For me personally, it seemed like there was a lot more positive stuff said (by my peers) when in that situation for me I would have wanted something more constructive. Yeah, and I think that goes with the instructor as well. I think it's very easy to give positive, non-constructive feedback in the, especially if someone really tanks a situation, when I personally feel like that's the time to really dive deep and maybe not, obviously not tell
them they did wrong, but maybe have them go through the simulation again to say hey, try these approaches this time (Jade).

**Getting Harsh Feedback**

The nurses described feelings such as being afraid, feeling hostility, and wanting to defend their peers when the instructors or other learners provided harsh feedback during the debriefing. Nurses discussed instructors or peers who focused on the negative, used a negative tone, or conveyed to the nurses “you should know this by now”. When they experienced harsh feedback, it made nurse feel uncomfortable, less willing to engage in simulation, and uncertain of their ability to perform in the clinical setting.

He barely even said good things, just this was wrong, this was wrong, this was wrong, but didn't explain what was wrong about it or why it was ineffective. And so, I think that moral tone then you just feel really bad. You're like oh I just did a bunch of really bad things. Or oh you never look at that lab or something like this in situation, like you never, oh okay, got it. So, it wasn't helpful in that sense. I think just the binary sense of it, yeah. Because then it was like okay well what was the correct flow, the structure that we were supposed to do? And then, like just teach us that then and avoid this whole tell us to figure things out but then we're doing a million things wrong. It was just like you don't do this. And sometimes he’d bring in his experience like oh when this happens, I always do this. Okay that makes sense, but it just felt very ineffective (Emma).

But towards my last year of my program when things were a lot more intense, I did feel taken aback because I did get one of those remarks that I should know this by now. Whereas instead of helping me get to the correct response for something in the simulation, it was more so like I've told you this before, we've had a simulation on this before, you should know it. Just so, just like those negative connotation words, that could take me back and then make me feel as if I'm not ready to be in the hospital setting. I would say that really impacted I guess on how I viewed myself as a future nurse (Sophia).

Ivy shared that not only was it hard on the nurses who received harsh feedback, but also on the peers who were in the debriefing room when their peers received such feedback:

I think a big part of it was a couple of my peers struggled immensely in those scenarios in a lot of little things. And it felt like because my professor was so nit-picky on those tiny details, there was a lot more time focused on my peers and the little things that they did,
as opposed to kind of the bigger picture, again that clinical decision-making… And it’s always hard in that they are your instructors, you don't necessarily want to offend or interrupt or contradict. And it is hard to listen to your peers have this feedback that you can visibly see them upset about and not really have any means of comforting or helping them in that moment.

There were several techniques that instructors used during debriefing to enhance psychological safety; including beginning with positive feedback first, using inclusive language, normalizing making mistakes, and providing constructive feedback that allowed nurses to learn and improve. The nurses perceived non-constructive feedback as a barrier to psychological safety, and harsh feedback as causing psychological harm.

**Mediating Variables**

As noted in the descriptions above, there were times when one of the factors, such as not knowing expectations, could affect another factor like how the nurses perceived observation of the scenario. Such interactions reinforce the ecosystem model since psychological safety can be fluid and respond to changes in one or more variables. Another part of the model is that there were also a couple of underlying variables that could influence the nurses’ overall sense of safety and how the various factors interact to produce psychological safety or psychological harm. Those variables were the relationships that nurses had with faculty and peers, and their desire for meaningful clinical learning.

**Influenced by Relationships**

From almost the first interview, one of the topics that emerged was that instructor presence during simulation, observation by instructors and peers, and feedback were all influenced by nurses’ relationships. Having previous positive or negative relationships with faculty and peers influenced psychological safety, especially nurses’ willingness to actively engage in simulations where they might make a mistake. Hearing about this phenomenon led to
changing the interview questions and theoretically sampling to purposefully explore this relacional aspect of psychological safety in prelicensure nursing simulation.

**Instructor.** Nurses conveyed that previous relationships with instructors impacted their sense of psychological safety. Many of the nurses described how they had a variety of simulation instructors: some they only saw in simulation, some from the clinical rotations, some from theory courses, and some they had never met before. Positive existing relationships with instructors made the nurses less worried about making a mistake, because they were not being evaluated just based on one simulation. Having a negative relationship with instructors made them wary of making mistakes and receiving harsh feedback.

If it was your own clinical instructor, they kind of know you better and so that generally produced a better result because they know your temperaments and your personality and everything and how to cater specifically to you. If I had a more close relationship with someone that was leading the sim, then it usually went better. But if it was someone that I had never had as a teacher before or something like that, then I felt like they were a little bit more cold and hard to warm up to (Sabrina)

I didn't necessarily have the best relationship with that clinical instructor that term as well. So, for me, I guess I'm going into it already in kind of an upset situation. While she isn't normally my simulation instructor, she isn't a clinical instructor I care for that much. So, I was already going into kind of the learning experience thinking it wasn't going to be as beneficial, which I think yeah, I'm sure had an impact on how that day felt and went as well. She would start right away with oh you didn't put your stethoscope in the perfect spot, or just these little things that were, especially for us it was our last clinical term in the master's program like okay that's not really what I'm hoping to get out of simulation right now (Ivy)

**Peers.** The nurses’ relationship with their peers also influenced their sense of safety participating in the scenario, being an observer, and giving and receiving feedback. In the fall of 2020, a few of the nurses reflected that they had not realized the impact of knowing their peers on psychological safety until they were being interviewed and suggested that as a change to the
interview guide. Deliberately probing this issue revealed that nurses felt it was less nerve-wracking when they had closer relationships with their peers prior to the SBE experience.

...being in there with my classmates who were also my friends, I think I was a lot more, like I wasn't as stressed. ... I felt supported because I had my friends and classmates there who made it able for me to feel at ease. And then once we actually did get to what brought this patient in, then we were able to actually proceed and then get back into work and, yeah and actually carry out all of the medical needs that need to be done (Bailey).

For a semester so that kind of depended, too, like how supported you felt by the group that you were in. If you liked your clinical group that semester and you felt like you were good with those people, then that impacted how the simulation went as well. One semester I had one of my best friends from high school and I both went to the same nursing college so she was in a clinical group so I knew that I could not be afraid to be like I really don't know what's going on, what do you think we should do? As opposed to someone that's a complete stranger, who I'm going to feel like they might be judging me if I do something like that (Sabrina)

Tessa described how in her nursing school, they had 80 people in a class, and eight in each clinical cohort, and how the cohort influenced psychological safety in simulation based on how well the nurses got along with their peers:

But then also I think it really depends on how someone views that scenario based on how well they know their classmates, that cohort of eight people because I think for people who didn't have good relationships with them or good rapport with them, it was a very, very stressful scenario versus someone, a group of eight who maybe who had a really close knit, it was just like a normal day hanging out with some close friends of theirs. So, I think it really depended. For me, it was kind of an in-between—stressful but very useful....I have current friends that are still in this program and they just had the simulation so I was talking to them about that and either had to do with maybe they had to switch groups for the day because of maybe a conflict so they were with a whole new group of students or maybe it had to do with, at least for this last semester in nursing school, you have to do a lot of projects together. And with any group project they're butting heads. And so, I think I heard the most worry from a few people who were butting heads with their classmates and didn't feel supported in a normal classroom setting so they were worried about how to be quick on their feet in an emergency simulation setting.
Valerie expressed the challenges of starting class virtually during the pandemic and the variability of nerves based on having a chance to meet and interact with peers prior to being in a scenario together:

Our whole classroom was virtual and the first time we would see our classmates would be during that time, like once a month in that simulation room. So, I think that was pretty hard to kind of communicate with classmates that you don't really know that well. And sometimes the instructors gave us maybe just five or 10 minutes before helped kind of familiarize yourself, like a little introduction or something to know that's who we'll be working with throughout the simulation. And the days that we didn't get to do that was more nerve wracking because it was, communication was a little bit off and you just don't feel as comfortable maybe helping someone with an assessment or asking for help either…you don't really talk to your classmates but then all of a sudden going to simulation with them and working together for 20, 30 minutes seemed really difficult.

Priya discussed that she was more comfortable being observed once she got to know her peers better:

Having everyone watch was extremely nerve-wracking, extremely nerve-wracking. And I think one piece of it was the first few times doing it, the first few, first semester really was nerve-racking because you're like oh, are these people going to judge me? Is this going to be the impression I have on someone forever? And then in consequent simulations, we all, we got to know each other. And so, you’d come out and people will be supportive, and that was really nice.

Jade recounted differences that positive and negative peer relationships made to giving and receiving meaningful feedback:

I think I had a very amenable relationship with my classmates and it's easy to give more criticism, again when you're not in that stressful scenario. You just choose to be respectful of course. But I think that a friend who was recently in this scenario, she was telling me about another classmate who was verbally snickering and saying oh that’s so silly, like oh why did they do that, just very noticeably making it a comical scenario and she was kind of upset by that.

Nurses indicated their anxiety was lower being observed or receiving feedback when they had previously established positive relationships with their instructors or peers. They described that the mutual respect meant they felt less anxious and perceived more constructive than harsh feedback.
Desire for Meaningful Learning

Another influencing theme from many of the nurses was that for them to feel that SBE was a safe environment, they wanted it to have relevance to their future clinical work, either for school rotations or their current occupation. They described how the experiential SBE prepares them for practice.

I think that simulation offers people a lot of chances to work out the kinks in, from just transferring over what you've learned in school to actually putting it into work, like into practice. And for me, that was always the best way I learned when I learned something, physically performed it or executed it and then it would just stay with me much longer (Bailey).

I would say that simulation is meant to help put students in the perspective of being in the hospital setting and being able to make mistakes without being afraid of doing so and without being afraid of getting that backlash that you could potentially get when in the hospital setting (Sophia).

Some of the nurses expressed that simulation provided safety by allowing them to practice and receive feedback on situations that they might rarely encounter in the clinical setting.

I think simulation-based education was pretty important. I wish we did it a lot more in nursing school, just because in clinicals, you don't always have a certain type of patient or experience with, let's say you might never get to see somebody who has a certain cardiac disease. But in simulation, you can have anybody (Maya).

Lei echoed the benefits of practicing rare events in a SBE setting, and those situations included work environment events and not just clinical:

I remember having really good ones, just like practicing CPR with everybody and practicing lateral violence and bullying in the workplace. Those were great simulations that I found very helpful and supportive.

Priya reinforced the desire for wanting simulations that would teach not only clinical events, but also ways of dealing with workplace issues:

I thought to myself, it would have been great if we would have gone through a simulation of making a mistake or having to kind of talk with the doctor and de-escalating and using CUS or a safe word, which happens a lot in the hospital now that I’ve seen it.
In keeping with the theme of meaningful learning, a few of the nurses expressed frustration if they did not perceive the purpose of the simulation or how it enhanced their current or future clinical practice.

There were times that I didn't necessarily feel supported, and I think there were a lot of times where, based on either resources or the instructor, I didn't feel like I was really gaining any clinical experience from it. …it was not necessarily as beneficial for me (Ivy).

Sabrina further explicated how not receiving the feedback that would help her improve made her feel not only unsafe in the SBE environment, but unsure about how she would handle the clinical situation:

I'm not completely 100% sure that I understood what I was supposed to do for the patient in this situation. I wanted to get more of a clinical reflection of what was going on for the patient who has AFib, what do I do as a nurse when my patient has AFib? Not how do I feel after I have a patient that went into AFib RBR. Like what do I do? That type of thing… I think spending more time on actual actions rather than feelings of simulation would have been more helpful.

The nurses’ prelicensure experience with psychological safety in SBE also impacted how their engagement with SBE in their nursing onboarding and learning. Some described that the positive experiences they had in school and wanting to continue with sim.

So, I think simulations have been incorporated a ton in my learning as a new nurse. So continued on positive experiences from nursing school… I think it's been really beneficial to my learning as a nurse (Valerie).

Others reported negative experiences with SBE and needing to learn the positive aspects of simulation when they transitioned into their new graduate roles.

My overall impression of simulation was negative. In general, it wasn't an environment for me that was conducive to learning. It felt very high pressure, high intensity, and it felt like you were, it felt like I was going in blind to most of the situations, most of the clinical scenarios. And so, I didn't have enough information to act on. I completely understood the intention of it. I think theoretically it makes a lot of sense. And I think
now that I'm a little more comfortable in nursing and in my practice and in theory, I think simulations would almost be more useful now (Julie).

Since participation in simulation for onboarding and team training is becoming more prevalent in work settings, it is important to consider how the psychological safety that nurses experience in prelicensure curriculum influences their future engagement and learning.

**Evaluating the Theory**

Charmaz (2014) suggests several criteria for evaluating grounded theory: credibility, originality, resonance, and usefulness. Fulfilling these criteria indicates that a grounded theory accurately conceptualizes and conveys what is important about a given phenomenon. The theory of *Simulation Psychological Safety Ecosystem* meets these criteria.

**Credibility**

This criterion examines whether there is sufficient data to merit claims within the theory. Using the rich descriptions from the nurses’ transcribed interviews provided depth across the various factors within the model. There were examples of all the factors and sub-factors from multiple nurses. This depth and range of empirical experiences enhances the credibility of the theory. Using line by line coding for the initial categories led to construction of codes and categories that reflected the nurses’ experience with psychological safety in their prelicensure simulation.

**Originality**

The most unique aspect of the theory is conceptualizing psychological safety as an ecosystem with multiple moving and interconnected parts. The model expounds upon factors that affect psychological safety and which have been discussed in previous SBE literature, especially regarding knowing expectations and receiving feedback. The theory offers some new
insights into how the nurses experience the presence of their instructors in formative simulation scenarios and ways in which that can enhance or decrease psychological safety. Another insight explored during this study was the nurses’ in-depth report of lack of civility within the observation room, as they described yelling at the screen or snickering at simulation participants and the psychological harm that causes. This observation room behavior is an under-reported phenomenon that merits further investigation. The influence of the nurses’ previous relationships with both instructors and peers on their perception of psychological safety is also a newer aspect of psychological safety in SBE that deserves further exploration.

**Resonance**

In this criterion, Charmaz (2014) asks if the categories portray the fullness of the studied experience. The in-depth interviews led to many times when nurses were able to describe both positive and negative examples of the same factor. Describing the dimensional sub-factors that promote psychological safety, create barrier to psychological safety, and cause psychological harm acknowledges the range of the nurses’ experiences. One of the other descriptors for this criterion is if it makes sense to those who share their circumstance. This theory meets that criterion by having multiple nurses convey similar perceptions and by checking in with nurses about the fit of the model. Twelve of the 17 nurses who were interviewed indicated they would be amenable to recontact about fit and emails were sent to these nurses providing a summary and asking if they had feedback or concerns. One email came back as undeliverable, and no concerns were received.

**Usefulness**

This criterion looks at how the theory contributes to knowledge and suggests future research (Charmaz, 2014). The theory describes nurses’ experience with psychological safety in
their prelicensure simulation curricula and provides suggestions for improving nursing SBE. As discussed in the originality criterion, there are some new insights raised by this model that merit additional research, and those will be discussed in the next chapter. Further exploration into the observation room behaviors could look at how that intersects with trust, as this factor was impacted by past relationships; civility in nursing, in how the nurses behave towards vulnerable simulation participants; or other factors that influence the emotional aspect of learning.

**Summary**

This chapter presented key findings from the data analysis of nurses’ experiences with psychological safety during their prelicensure simulation, which led to the construction of the grounded theory: *Simulation Psychological Safety Learning Ecosystem*. This theory explicates the factors that contribute to nurses’ perception of psychological safety including, *Expectations*, *Instructor*, *Observation*, and *Debriefing and Feedback*. Each of these factors has sub-factors that vary along positive to negative dimensions of *Promoters of Psychological Safety*, *Barriers to Psychological Safety*, and *Causes of Psychological Harm*. Some variability of how nurses perceive each of these factors is influenced by relationships with their instructors or peers. Another consideration for nurses’ sense of psychological safety was the desire for simulation to be meaningful to their clinical rotations or future practice. Evaluating the theory using criteria suggested by Charmaz (2014) yields credibility due to the rich data from nurses, originality in discussion of instructor presence and observation room behaviors, resonance in the shared experience of nurses, and usefulness in suggesting areas for future research. The following chapter will discuss the theory in context of the extant literature, and implications of this theory for nursing education and future research.
CHAPTER FIVE
DISCUSSION

In review, the purpose of this qualitative study was to explore, with newly graduated nurses, their perceptions of psychological safety within their prelicensure nursing simulation. The overall finding of this study is that psychological safety is a complex spectrum, influenced by multiple factors, and impacted by nurses’ relationships with instructors and peers. In this chapter, the theory, *Simulation Psychological Safety Learning Ecosystem*, will be discussed in terms of its findings and context of extant literature. The limitations of the study will be discussed, along with implication of the theory for nursing education and directions for further research.

As mentioned in Chapter Two, new literature emerged during the data collection phase for this study. Four qualitative studies on psychological safety in prelicensure nursing merit comparison to *Simulation Psychological Safety Learning Ecosystem*. Since those were not reviewed until after the current theory was constructed, it is prudent to compare the findings from notable new studies to the ones reported here. One recent study in Korea used focus groups and thematic analysis to qualitatively explore nursing students’ experience with psychological safety in simulation (Park & Kim, 2021). Park and Kim found four themes: *Dealing with uncertainty*, *Feeling disrespected*, *Dangers of team dynamics*, and *Being exposed*. Another group of studies used the NLN framework to examine psychological safety in undergraduate nursing. The first study utilized a descriptive online survey and inductive content analysis to determine nursing students’ perceptions of psychological safety within the prebrief, hands-on
scenario, and debriefing phases of SBE (Stephen et al., 2020). Stephen et al. found five themes: *Faculty presence, Learning without fear, Working together, Setting expectations, and Positive conversations.* The same author group also analyzed faculty perspectives of Psychological Safety and found five themes: *Setting the stage, It's ok, it's simulation, Everyone is here to learn, Planned strategies, and Facilitator as Observer.* (Kostovich et al., 2020). A strength of these studies was that they recruited student and faculty participants from multiple sites; however, at all sites the faculty had received training in the NLN framework, so they may be skewed towards psychological safety experienced with positive instructor interactions. The fourth qualitative study also used the NLN framework to understand students' and facilitators perspectives of psychological safety in simulation (Turner et al., 2023). Turner et al. found differing themes for each group: the student themes of *Dynamic interaction and Student self-efficacy,* and the facilitator themes of *Simulation design and Trust.* Turner et al. describe one of their limitations as using a convenience sample from one academic setting. The intent in these studies was discovering themes as opposed to constructing a theory or model, and these themes provide rich discussion during this chapter when examining factors and sub-factors within the *Simulation Psychological Safety Ecosystem* theory.

### Simulation Psychological Safety Learning Ecosystem

The theory *Simulation Psychological Safety Learning Ecosystem,* describes the factors that can contribute to nurses feeling comfortable participating to their fullest, making mistakes without fear of embarrassment, and speaking up. During the literature review, the terms psychological safety, academic safety, and psychological harm were used to describe nurses’ experience with this phenomenon. The term academic safety was not utilized in this model, as it
was limited to two or three resources and did not reflect the nurses’ experiences of psychological safety or psychological harm during SBE. The dimensions of *Promoters of Psychological Safety*, *Barriers to Psychological Safety*, and *Causes of Psychological Harm* depicts the range of psychological safety nurses encountered. These dimensions can be altered by the nurses’ interaction with the four main factors and mediating variables. In alignment with the nature of an ecosystem, there is overlap and interplay between the factors, which can also be influenced by nurses’ previous relationships with instructors or peers and their desire for meaningful learning. This ecosystem model is consistent with Kolbe et al.’s (2020) assertion that “psychological safety is not stable, but rather a dynamic and fragile perception” (p.165) that depends on the interaction of various factors. The fluid nature of psychological safety suggests that other factors might influence this dynamic relationship. However, examining the results by querying the demographic variables within NVivo did not yield correlation to any demographic factors, including nurses previous clinical or simulation experiences.

**Expectations**

The theme of wanting clear expectations regarding objectives, environment/equipment, roles, confidentiality, and evaluation reverberates throughout SBE literature and has been an essential component in most of the recommendations and guidelines for ensuring psychological safety. The findings in the *Expectations* factor reinforce evidence from the literature discussed in Chapter Two: *Concerns Specific to Simulation* (Nielsen & Harder, 2013), *Feeling Unready* (Kang & Min, 2019), and *The Unknown* (Shearer, 2013), where learners were anxious if they felt faculty did not provide clear expectations, familiarization to the environment, or confidentiality considerations. Familiarization to the SBE environment can prevent the learners from feeling
like they have been tricked by misunderstanding physical cues from the mannequin, SP, or embedded faculty (Cato, 2013; Henricksen et al., 2017; Janzen et al., 2016). Since one of the reported causes for anxiety for nursing students during SBE is having their performance watched (Cato, 2013; Doolen et al., 2016), having an explicit conversation or signed agreement of confidentiality can ameliorate some of this fear (Henricksen et al., 2017; Rudolph et al., 2014; Sittner et al., 2015). To promote psychological safety, another critical component that needs to be addressed during prebriefing is explicitly informing the participants what, if any, evaluation is being done during the SBE exercise (Leigh & Steuben, 2018; McDermott et al., 2021; Rudolph et al., 2014)

As noted in Chapters One and Two, there has been an increased focus on prebriefing in SBE literature and that trend continued from 2020–2022; with an additional 39 articles published on prebriefing and simulation, 11 were relevant to nursing and this study. Several articles reinforced that prebriefing provides information for scenario participation, enhances learning outcomes, and establishes psychological safety (Dileone et al., 2020; Hughes & Hughes, 2022; Silva et al., 2022; Tong et al., 2022). Park and Kim’s (2021) theme of Dealing with uncertainty has some parallels to Expectations in that both discuss the importance of students feeling better when they knew what to expect from the environment, roles, progression of case, and grading criteria. Knowing these conditions was also reinforced in Kostovich et al.’s (2020) Setting the stage and It’s ok—it’s simulation. Stephen et al.’s (2020) theme Setting expectations further confirmed these criteria and included that nurses also wanted to know “who will exactly be watching” as part of their prebrief information. Nurses in Stephen et al.’s study also expressed appreciation for having explicit prebriefing discussions about making mistakes in SBE, which
reinforced the importance of the ground rules and regard for students that Emma, Rebecca, and Julie emphasized in their narratives. Park and Kim (2021) in Dealing with uncertainty theme also had students who felt they were “thrown into” situations unprepared and describe feeling like that caused distress and “mental breakdowns”. These echoes sentiments of going in blind that nurses expressed in the Expectations factor, which were also articulated elsewhere in the literature (Ganley & Linnard-Palmer, 2012; Kang & Min, 2019; Stephen et al., 2020). As noted in Chapter One, the INACSL Standards for best practice for prebriefing were updated in 2021 (McDermott et al., 2021) and reinforce the findings and recommendations of this study of nurses’ experiences.

**Grading**

Within Expectations, one theme was the nurses’ challenge if they were unsure of grading criteria, which echoed Kang and Min’s (2019) theme of Fear related to evaluation. Bailey also shared uncertainty about being graded based on team scenarios and how it was scored on either her or her team members behavior. This theme was echoed in in Park and Kim’s (2021) Dangers of team dynamics. In Park and Kim, students also expressed concern that their performance might negatively impact someone else’s grade. Some participants in Stephen et al. (2020) Working together echoed the same fear as about team assignments, stating that there were times that the other students would think that they “know more and just take over”. This taking over negatively impacted the students’ sense of psychological safety.

**Instructor**

The presence and action of instructors during scenarios was an important factor for nurses in this study and impacted their psychological safety by having them feel guided,
confused, or stopped. As reviewed in earlier chapters, instructor/facilitator actions influence psychological safety throughout all phases of SBE, yet instructor presence during scenario is less frequently addressed. Curran (2008) asserted that maintaining a learner-centric environment during scenario delivery requires that the facilitators do not overly insert themselves into the simulation unless necessary for safety reasons. This premise was echoed in research done on faculty presence during summative evaluations, which found an increase in learner anxiety when faculty were in the simulation suites as opposed to watching remotely (Horsley & Wambach, 2015). Stephen et al.’s (2020) theme of Faculty presence strengthened that having the instructor available to assist if needed during the scenario promoted learner’s psychological safety.

Criterion 4 of INACSL’s facilitation standards of best practice provided guidelines for providing cues to learners that promote consistency, ensure scenario fidelity, and enhance psychological safety by redirecting/providing “lifesavers” when things are not going well (Persico et al., 2021). These rescuing cues echoed Maya and Amy’s accounts of appreciating such guidance from their instructors during the scenario. Kostovich et al.’s (2020) Planned strategies described such mechanisms for having in-role support in the form of a charge nurse or helpful physician that comes by to help if needed during the scenario. Persico et al. described multiple suggestions for scenario flow but did not specifically address interruption, or stopping, during the scenario. The NLN/Jeffries Simulation Framework labeled this issue as “stepping in” when the student needs assistance, and “stepping out” to allow the learner to proceed alone and learn from their own actions and reflections (Jones et al., 2014).

**Observation**

This factor explicated the complex dimensions that nurses feel when being observed by
instructors and peer. It is notable that watching and being watched are inherently part of most undergraduate simulation programs, and a cause of anxiety as revealed in the literature review. However, there is no definition for this watching or observing noted in the Healthcare Simulation Dictionary (Loice et al., 2020), and this concept perhaps deserves further analysis/definition. In this factor, nurses expressed some value in being the observer when they received adequate explanations of the process and support from their instructor, but many more stories spoke of feeling anxiety and disrespect. Observer roles in simulation can be based on size of learner group and are supported by experiential learning and social cognitive learning theories (Johnson, 2020). Stephen et al.’s (2020) Learning without fear theme reported that some nurses liked the dual role of learner and observer and found meaningful learning in the shared conversations. However, this positive experience with the observer role is reported less frequently than other dimensions.

Cato’s (2013) findings indicated that one of the greatest sources of student’s anxiety were performing “in front of faculty” and “performing in front of peers”. As reviewed in Chapter Three, this phenomenon also appeared in Kang and Min’s (2019) Anxiety about having mistakes exposed, Nielson and Harder’s (2013) Being observed, and Shearer’s (2016) Critique by peers and faculty. Park and Kim’s (2021) theme of Being exposed corroborated students’ fear of their mistakes being observed by a professor or colleague. Of note, Park and Kim’s students expressed more explicit concerns about the recording or being filmed, and the nurses in Simulation Psychological Safety Ecosystem more frequently described being judged or disrespected without mentioning filming or recording. In both instances the learners were more distressed when they did not have clear understanding/expectations regarding observation, recording, or confidentiality. The psychological harm that nurses related during interviews of
being yelled or snickered at also permeate extent literature. The students in Cato’s focus groups expressed discomfort with comments that were made by student or faculty observers during the scenario that were not heard by the participants; experiencing these comments when they were observers heightened the students’ anxiety during subsequent simulations, as they felt they were being judged without being given adequate feedback. Stephen et al. (2020) found that the nurses feared “being yelled at or made fun of” throughout all phases of simulation, including the observation and students expressed that having observers watching them made them feel self-conscious and decreases their focus on the skill or task at hand.

**Debriefing**

This factor described the dimensions that the nurses experience from *Receiving structured and helpful feedback* to *Getting harsh feedback*. It is notable that in Cato’s (2013) study the least anxiety provoking elements were “receiving feedback from faculty” and “receiving feedback from my peers,” which reinforces the importance of good debriefing techniques and illustrates the value that nurses place on receiving constructive feedback. This notion of positive learning through debriefing was also prominent in Cantrell et al.’s (2017) *Debriefing connections*. Stephen at al.’s (2020) *Positive conversations* theme reinforced that nurses desire having positive and constructive feedback but prefer when debriefing sessions start with the positive feedback first from both instructors and peers. Normalization is another technique that acknowledges that healthcare is complex work that can evoke stressful feelings and yield systems that create potential for mistakes. Kolbe et al. (2020) assert that a further step of *vulnerability* is when the facilitator judiciously shares stories of their own failure to normalize making mistakes in simulation.
One of the issues that arose during this study is the nurses’ desire for constructive feedback. Lei used the term “fluffer” to describe when she had been given feedback that she did not think would help her improve her clinical skills. Obtaining meaningful feedback resonates throughout SBE as a mechanism for closing performance gaps (Rudolph et al., 2006) and achieving mastery over procedural and communication skills (Eppich et al., 2015). Turner and Harder (2018) discuss that formative evaluation is an essential element in creating psychological safety, and in educational settings such assessment requires substantive feedback and not fluff in order to promote meaningful learning (Wormeli, 2018).

This factor also discussed harsh feedback that mirrored Feeling disrespected in Park and Kim’s model, as the nurses described having difficulty speaking up if they perceived the professor was displeased through critical feedback or negative facial expressions. In Stephen et al.’s (2020) Positive conversations theme they noted that the nurses did not like it when they only heard the negative and not what they had done right. In their Learning without fear theme, Stephen et al. also discussed the impact of harsh feedback and mentioned a refrain from nurses feeling embarrassed when instructors told them “you should know this.” Another interesting finding in Stephen et al. is that during debriefing, nurses did not like being “singled out” for making mistakes when they were receiving feedback on team behaviors. This concept reinforces Javier’s narrative about preferring that instructors address the group when delivering feedback on team scenarios. Kolbe et al. (2020) describe this technique as using inclusive language. As noted earlier, there is extensive literature available on debriefing techniques and traits of effective facilitators that echo themes found in this study (Dufrene & Young, 2014; Kim & Yoo, 2020; Kolbe et al., 2020; Lee et al., 2020; Palaganas et al., 2016). The INACSL standard for debriefing
(Decker et al., 2021) provides guidelines for effective debriefing sessions that mirror effective techniques on using performance in the scenario to give the nurses the constructive feedback they desire as indicated by the nurse participants in this study.

**Influenced by Relationships**

**Peers**

A mediating variable found in this study was that nurses felt more comfortable engaging in the scenarios and taking risks of making mistakes when they had previously established relationships with their peers. This concept echoed in Stephen et al.’s (2020) *Working together* theme where nurses preferred to be in scenarios with those that they knew were equally committed to learning. Park and Kim’s (2021) study raised similar concerns in their theme *Dangers of team dynamics*—namely, that having trusting relationships with their peers promoted psychological safety, and not knowing them caused psychological risk and fear of participating and giving feedback. Park and Kim suggested having icebreakers to allow the students to get to know one another prior to starting simulation, and that echoed Valerie’s story of feeling more comfortable when her instructors provided such time to her cohorts. Nurses in *Simulation Psychological Safety Ecosystem* also explicated that negative behaviors such as yelling or snickering at the screen were less likely to occur when they had previous positive relationships with their peers.

**Instructor**

Another finding from the current study is that nurses’ psychological safety varied based on their previous relationships with simulation instructors. This premise echoed in Turner et al.’s (2023) *Dynamic interaction* where they found that students perceived greater psychological
safety with faculty who knew them and were aware of their clinical abilities. Turner et al. noted that this dynamic allowed to students to feel more comfortable with mistakes since the instructor knew their capabilities and did not judge them solely on their performance in the simulation. Turner et al. also found that students who had negative relationships with faculty were less likely to seek clarification or ask for help. This concept is also reinforced by Park and Kim’s (2021) study indicated that students modified their participation and behavior in simulation based on what they knew about the professor and had difficulty speaking up based on perceptions of power differentials. Stephen et al. (2020) also found that students felt unsafe when dealing with instructors that they had never met.

**Desire for Meaningful Learning**

Another mediating variable for psychological safety was nurses’ sense that they have learned something that is relevant to their clinical rotations in school or current practice sites. This premise is comparable to Turner and Harder’s (2018) psychological safety outcomes of learning from mistakes, problem solving, and skill acquisition. Acquiring knowledge, skills, and attitudes may be an overall goal of SBE in general; however, exploring all the various dimensions demonstrates that meaningful learning does not happen when psychological safety is not present or psychological harm occurs. This concept was echoed by Stephen et al. (2020) when their participants expressed that they felt more psychologically safe when their simulations closely replicated the clinical environment and prepared them for providing care in those settings. The importance of having meaningful learning that is transferrable to a clinical setting is reinforced in the literature on emotions in learning. Strong emotions are more easily recalled; however, when negative emotions occur, nurses may have better recall of these emotions or
feelings and not the clinical knowledge or skills that were the intended objectives of SBE (LeBlanc & Posner, 2022). Another consequence of psychological safety in prelicensure SBE is how it impacts nurses’ continued participation in simulation in their nursing orientation or onboarding. This phenomenon was recently echoed by recent literature that reports SBE is not an airtight container, and that events and feelings that occur in the simulation lab can and do influence future learning events and cultures in the clinical settings (Purdy et al., 2022).

**Limitations**

Limitations to this study include some that are inherent to qualitative research. In some grounded theory studies, there is an expectation of objectivity via bracketing, and this study differs due to the nature of Constructivist Grounded Theory. The reflexivity statement in Chapter Three acknowledges the researcher’s philosophical paradigm and discusses the influence of her SBE background. This potential bias is also mitigated by having the chair review the codes, categories, and model along with the other steps towards trustworthiness that were described in Chapter Three.

Another challenge for qualitative research is sample characteristics. In-depth interviews take time and recruitment, and there is a potential selection bias of nurses who wanted to share their stories due to having either very positive or very negative experiences with SBE. Recruiting nurses via nurse educators may have some social desirability bias in that the new nurses wanted to please their preceptor/educator. This might account for six or seven nurses who were referred to the study and did not reply past the first email encounter. One of the recruitment goals was to gather data from a variety of educational programs and the information sheet was sent to several organizations and institutions to achieve this goal. Due to the nature of
the researcher’s network, the respondents mostly came from institutions where a BSN is the entry level for hiring, so there were no Diploma or ADN graduates in the sample. Due to the snowball technique, there were also nurses from the same prelicensure program, which allowed for different perspectives but may have limited the breadth of data. Future studies should be designed with recruitment strategies that could better capture a breadth of nursing program types to explore the similarities and differences of psychological safety in a variety of settings.

A unique challenge for this study was that data collection was delayed several times. The first was due to the IRB prioritizing studies that dealt with COVID, so being unable to initiate data collection until eight months after the dissertation proposal. The first round of nurses was interviewed the fall of 2020 between September and November, and then were halted due to a pandemic surge that lasted through March of 2021. At that time, a decision was made to change the recruitment strategies to include networking techniques and then IRB approval was again obtained. The next round of interviews was from September through November 2021. The final round of interviews that included theoretical sampling was concluded in May 2022. Nurses in the later rounds, in general, had more time pass since they graduated from nursing school, so there is a potential for recollection bias.

**Implications for Nursing Education**

The factors of *Simulation Psychological Safety Ecosystem* significantly impact psychological safety, so it merits repeating that they need to be adequately addressed in SBE nursing education. However, despite numerous professional guidelines and standards about these topics, they continue to be a source of distress to nurses. The gap exists not in the availability of sound educational principles, but in how they are being followed. This resurrects the deficit
noted in Chapter One that although most nursing schools utilize SBE, there are not always explicit standards for faculty development or credentials, site accreditation from professional organizations, or state regulation on replacement of clinical hours. As discussed regarding prebriefing in *Expectations*, INACSL updated their standards of best practice multiple times between 2011 to 2021 (Watts et al., 2021). The standards provide concise guidelines for providing psychologically safe learning environments, but there is no mandate to use them within schools of nursing.

One bias that the researcher did not realize during the reflexivity statement was a conception that many of the psychological safety challenges could be rectified by good faculty development. During theory construction, the researcher recognized that faculty qualifications in SBE are necessary, but not sufficient, for creating, maintaining, and restoring psychological safety due to the reports from nurses of the impact of their previous relationships with faculty and peers. The interview guide for this study was modified based on nurses’ recognition that their peers had significant influence on their perceptions of psychological safety. As noted in the section discussing peer relationships, having set cohorts or icebreakers can positively influence nurses’ SBE experiences. A recommendation for nursing education would be to consider these ameliorating techniques so that nurses feel safer speaking up, making mistakes, or performing to their fullest extent.

Having clear expectations regarding the instructor’s presence within the scenario is beneficial to nurses’ sense of psychological safety during SBE. As noted in Chapter Four, one potential reason for instructors interrupting nurses could be the use of RCDP. This technique of pausing a scenario to reflect in action has been beneficial in learning procedural skills,
communication techniques, and resuscitation teamwork (Eppich et al., 2015; Hunt et al., 2014). However, if nurses are not aware of this planned intervention, they can perceive the pausing as a harmful event. As noted above, nurses having a sense when and how their instructor may step in to intervene is an important expectation to clarify prior to starting SBE scenarios.

One significant impact to psychological safety noted throughout the simulation literature, and in this study, was participant anxiety from being observed by faculty and peers. Learners experience more safety when they knew who would be watching, from where, and had a clear understanding of the expectations for behavior. This is echoed by a systematic review on observation in SBE, where the authors concluded that learning outcomes and role satisfaction for observers benefitted from the use of observer tools and clear expectations about observer and participant roles (O'Regan et al., 2016). Best educational practice would follow the latest INACSL guidelines, which stipulate that part of the prebriefing should include providing information regarding the use of recording and observations by peers, faculty, staff, and other health professionals (McDermott et al., 2021). Priya’s example of having the faculty in the observation room as a mechanism for guiding nurses through the observation process requires extra faculty resources that may not be available at many nursing schools, so having clear expectations, roles, and guidelines is imperative to psychological safety.

Another interesting implication from this study was the nurses desire for more constructive feedback from their peers and instruction on how to provide that feedback. Cato (2013) discussed the learners’ desire for more specific individual feedback during debriefing or afterwards but did not specify from whom. In Simulation Psychological Safety Learning Ecosystem, there were a couple of poignant examples from the nurses where they expressed the
desire to improve at giving feedback.

Compared to the instructor’s feedback where it's good before bad, I found that students did a lot more what you did wrong before what you did right... We never actually had clear instructions on how to start or how to go about it. They never told us oh you should lead with the good first or lead with the bad first. It's just more like okay, who wants to give feedback first? no one ever taught us how to give feedback. Which is also I think a flaw there, too in the education (Kai).

It was I guess difficult, giving constructive feedback to your peers, I think that can, was kind of difficult. And that's a skill I guess that we don't really practice except in those debriefings. But I don't know that, I don't recall really getting a lot of instruction on how to give the feedback, except for maybe like you don't, don't be mean about it. But it is kind of an uncomfortable situation to be in to give feedback to your peers because you don't want to offend them. But I think it's an important skill to have. It is a skill that would be useful to have forever, so I wish they had given us instruction on it (Rebecca).

Considering non-constructive feedback from peers in the debriefing phase was an area of concern for many of the nurses, it would be good to provide some guidance or training on this skill. One technique for peer coaching that nurses could easily be taught is how to give directive feedback. This technique entails giving an observation of a behavior, a suggestion for change, and a rationale for the change (Cheng et al., 2017). Including the rationale, or the why, can be powerful in altering the feedback perception from harsh “do this because I said so” to constructive “doing this will help the patient condition”. Teaching this structure to nurses and allowing them an opportunity to practice using it in a mentored situation during SBE would give nurses a useful skill that they could also use in their clinical practice.

**Future Research**

A stated long-term goal for this research was to use the emergent theory to inductively design an instrument on psychological safety. However, explicating psychological safety as an ecosystem is a novel conceptual model and would require future exploration of how the various factors interact and how personal characteristics of simulation participants might influence their
perceptions before such an instrument could be developed. Future research should also include examining if there are any diversity, equity, or inclusivity elements that influence nurses’ experience of psychological safety. Refining the theory would include future qualitative work to explore some of these nuances.

As mentioned above, the mediating variable of peer relations can be significant, and it deserves further study on the impact on psychological safety in SBE. Since organizing activities and structuring cohorts requires resources and planning, it would be beneficial to nursing schools to have a clearer understanding of such impacts via qualitative exploration. Negative peer behaviors, such as yelling or snickering at the screen found in this study, were also echoed in Cato’s (2013) and Stephen et al.’s (2020) research. Cato indicated there needed to be research done on having nurses hear critical feedback during simulations from peers, and Stephen et al. describe this behavior as bullying and gossip. These behaviors need further study to ameliorate and prevent psychological harm during prelicensure nursing SBE.

This study purposefully focused on nurses’ perceptions of psychological safety and the resulting theory describes that phenomenon. Recent literature demonstrates that there are differences in student and faculty perceptions (Kostovich et al., 2020; Stephen et al., 2020; Turner et al., 2023). Since psychological safety is intended to be a property of the learner in SBE, and not the faculty (Kolbe et al., 2020; Turner et al., 2023), future research should be done on the gaps between the perceptions and how to close them.

**Summary**

This chapter discussed the theory *Simulation Psychological Safety Learning Ecosystem* and the four factors considering extant literature. Existing and emerging literature provided
support for the four factors: *Expectations, Instructor, Observation, and Debriefing and Feedback*. Insights gained during the construction of the theory included the ecosystem model for psychological safety, the impact of instructor’s presence during SBE scenarios, and the impact of previous instructor and peer relationships on nurses’ experience. One of the implications for nursing education focuses on clarifying expectation: equipment and roles, instructor presence, and observation. Another implication was purposefully establishing peer and faculty relationships prior to SBE implementation. Providing a peer feedback framework to guide nurses may also enhance psychological safety. Potential areas for future research included clarifying the ecosystem model, exploring the impact of peer relationships, and further examination of faculty and learner gaps in perceptions of psychological safety.
Psychological Safety in Nursing Simulation

You are being invited to participate in a research study conducted by Susan Eller, Nursing Doctoral Candidate at Loyola University Chicago. The researcher hopes to learn more about nursing students experience during prelicensure simulation, with a special focus on their perceptions of psychological safety. You were selected as a possible participant because you have experienced simulation in your prelicensure nursing program within the past 24 months.

If you decide to participate, you will be asked to discuss your experiences with simulation-based education. The interview will last approximately 45 minutes and will take place either in person or via Zoom.

The interview will be audio-recorded and then transcribed word for word from the audio recording. Any information that could identify you will be removed from the transcribed document. All of the transcribed data will be kept in a secured database for a minimum of three years. The audio recordings will be stored in a locked cabinet for the duration of the study and will be destroyed upon completion of the study. At the end of the interview, you have the option to set a follow up appointment to review your transcript or to discuss the researcher’s findings.

Your name will not appear on the paper or electronic transcripts, reports, or any published papers. However, quotations about your experience may be used anonymously in the reports or publications of the study.

Your descriptions of your experience may increase our understanding of participants experience of psychological safety during simulation. This can help fill a gap in the nursing literature and suggest ways to enhance prelicensure nursing simulation curricula.

If you would like to be a part of this research project or have any questions, you may call me, Susan Eller, MSN, RN, CHSE at (650) 683-5369 or email me at seller@luc.edu.

For any additional questions or concerns, you may contact Dr. Jorgia Connor, Dissertation Advisor, (773-508-2897).
Interview Guide

Introduction and purpose of the study:

I am interested in the experiences of nurses with psychological safety in their prelicensure simulation. I hope to get a better understanding from the participant’s perspective as to what helps promote and deter psychological safety in these settings. This can help fill a gap in the nursing literature and suggest ways to enhance prelicensure nursing simulation curricula.

Explanation of interview and obtain signed consent:

You have the right to withdraw from the study at any time. Please let me know if no longer wish to continue this interview today. Please let me know if there are any questions that you do not wish to answer, and we will skip them. I will be recording our conversation and taking notes to help me understand your experience and identify areas that we should explore further.

Demographic Data:

Gender: Female, Male, Non-binary, Prefer not to answer

Age: 18-24, 25-34, 35 and over

Ethnicity: ________________

Type of Nursing School Program: Diploma, ADN, BSN, ABSN, MSN entry, Prefer not to say

Modalities of Simulation: Mannequin, Task Trainers, Standardized Patients, Role Play, AR/VR, Other

Was simulation used at your nursing school for learning/testing/both:

State/City of your Nursing program: ________________
Interview Questions (Round 1):

1. Tell me about your current impressions of (experience with) simulation-based education.
2. What types of simulation did you experience in your prelicensure(undergraduate) school?
3. Tell me about a time when you felt supported during a challenging situation.
   a. Potential prompts – What were the things that made you feel safe/supported? Tell me more about the actions of your faculty. How did your peers affect your feelings of support? How do you think that experience impacted you?
4. Describe for me any time that you felt unsafe or unsupported during simulation exercises
   a. Potential prompts – What helped you in that situation? What were things/actions that made you feel worse? Tell me more about the actions of your faculty during this experience. How did your peers affect your feelings? How do you think that experience impacted you?

What other questions should I be asking of nurses who have participated in simulation during nursing school?

Thank You:

Ask the participant if they would like to review their transcript or review the substantive theory when the study is finished to verify accuracy.
APPENDIX C

INTERVIEW QUESTIONS (ROUNDS 2 AND 3)
Interview Questions (Rounds 2 and 3):

1. Tell me about your experience with simulation-based education in nursing school.
2. Tell me about a time when you felt supported during a challenging situation.
   a. Potential prompts – What were the things that made you feel safe/supported? Describe how the preparation you had prior to the simulation session? Tell me more about the actions of your faculty. How did your peers affect your feelings of support? How do you think that experience impacted you?
3. Describe for me any time that you felt unsafe or unsupported during simulation exercises
   a. Potential prompts – What helped you in that situation? What were things/actions that made you feel worse? Describe how the preparation you had prior to the simulation session? Tell me more about the actions of your faculty during this experience. How did your peers affect your feelings? How do you think that experience impacted you?
4. One of the things that has come up in conversations with other nurses is preparation for the simulation, or knowing what to expect, can you tell me about your experiences with that?
5. Some nurses have discussed being observed by either faculty or peers, can you describe what that was like for you
6. Can you describe how feedback from either faculty or peers impacted you?
7. Tell me about your instructors for simulation sessions – prompt dedicated to sim or clinical instructors?
8. What, if anything, can you tell me about your peers/cohort in simulation – prompt – was it the same group all the time or differing?
9. Is there anything else that I should be discussing with nurses about simulation in nursing school?

Thank You:

Ask the participant if they would like to review their transcript or review the substantive theory when the study is finished to verify accuracy.


Gaba, D. M. (2013). Simulations that are challenging to the psyche of participants: How much should we worry and about what? *Simulation in Healthcare, 8*(1), 4-7. https://doi.org/10.1097/SIH.0b013e3182845a6f


Julian, L. J. (2011). Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care & Research (Hoboken), 63*(Suppl. 11), S467-472. https://doi.org/10.1002/acr.20561


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VITA

Susan Eller first earned her Associate Degree in nursing at the College of Lake County in Grayslake, Il in 1987. She went back to complete her Bachelor of Science in Nursing at Loyola University Chicago in 2006. She earned her Master of Science in Nursing at the same institution in 2010, and her thesis was on Simulation to Promote Interprofessional Communication and Teamwork.

Through her roles as a leader in emergency medical services and emergency nursing education, Dr. Eller developed a passion for simulation-based education. She then became the Director of Interprofessional Education at Feinberg School of Medicine, where she utilized simulation to train multiple healthcare professions and teams. Dr. Eller transferred these skills to her current role as Associate Dean for Immersive Learning and Learning Spaces at Stanford School of Medicine. She attained her specialty certification as a Certified Healthcare Simulation Educator through the Society of Simulation in Healthcare. She is a member of the research committee at two healthcare simulation organizations and functions as a reviewer for three simulation journals.

Dr. Eller’s focus during her doctoral studies at Loyola University has been the experience that nurses have with psychological safety in their prelicensure curriculum. She developed this passion while listening to varying anecdotal stories from nurses when they were asked to participate in onboarding simulation programs. She explored this phenomenon to provide guidance for nursing schools due to increasing simulation prevalence in: replacement of
clinical hours, high-stakes exams, and onboarding to nurse residencies. Dr. Eller believes that her work will have an influence on nursing education and simulation research.