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Research article

Psychological safety in simulation: Perspectives of nursing students and faculty

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ABSTRACT

Background: As simulation education continues to grow, more consideration has been given to creating and maintaining a psychologically safe simulation learning environment. It is known that failing to provide psychological safety can lead to feelings of incompetence and a lack of confidence with students. However, it is essential to understand what makes and maintains psychological safety in simulation from both student and facilitator's perspectives. In further understanding psychological safety, nursing educators can challenge students to think beyond that of task attainment and into the deeper realm of critical thinking and critical reflection.
Objectives: The aim of this study was to understand students' and facilitators perspectives of psychological safety in simulation.
Methods: Participants in this qualitative interpretive description study were seven students and four faculty that were chosen using convenience sampling. The data was collected over a 2-week period where semi-structured interviews were used to collect the participants perspectives. Data analysis was continuous and iterative and used inductive analysis.
Results: There were two student themes which focused on the student-facilitator interaction: 1) dynamic interaction, 2) student self-efficacy. The facilitators results showed two themes which focused on 1) simulation design and 2) trust.
Conclusion: Diverging thoughts are present between faculty and students in what constitutes psychological safety. In describing both the similarities and differences, we have a better understanding on how to create and maintain psychological safety thereby, providing students with the best learning experience possible.

1. Introduction

Creating and maintaining psychological safety in all phases of simulation-based education (SBE) is a core element for quality learning activities (Daniels et al., 2021). As simulation can be anxiety and stress producing, this can impact nursing students' performance in simulation (Kang and Min, 2019; Turner and Harder, 2018), and negatively influence learning behaviours and outcomes (Daniels et al., 2021). Psychological safety is defined as "a feeling (explicit or implicit) within a simulation-based activity that participants are comfortable participating, speaking up, sharing thoughts, and asking for help as needed without concern for retribution or embarrassment" (Lioce et al., 2020, p. 38). Failure to provide a psychologically safe learning environment can lead to repeated *micro-risks* which can develop into larger feelings of incompetence and underperformance (Bynum and Haque, 2016; Lepnurm et al., 2009; Newman et al., 2017).

Even when simulation facilitators believe that they have created a psychologically safe environment, it is the learners' perspective of psychological safety that ultimately determines whether this has been achieved or not. In this qualitative interpretive description study, the authors explore the concept of psychological safety from the perspective of both the facilitators and the learners in SBE. In doing so, we have found that there are diverging thoughts between what facilitators believe constitutes psychological safety, and what learners feel during simulation. Simulation outcomes extend beyond task attainment, however without a psychologically safe learning environment, learners often are unable to progress beyond this and achieve the learning outcomes of the simulation. Understanding the difference in perspectives between learner and facilitator regarding the psychological safe learning environment is foundational for all simulationists and is the purpose of this

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qualitative research study.

2. Literature review

Recently, simulationists have been exploring the purposeful integration of psychological safety in SBE. Evidence points to how simulation facilitators can influence the psychological safety of the simulation (Johnson et al., 2020; Kolbe et al., 2015) and identify factors that are intrinsic to the learner that affects their feelings of psychological safety (Kang and Min, 2019; Nielsen and Harder, 2013). Some authors have stated that much of the psychological safety literature focuses on the negative experiences that learners have in simulation, and assume that simply removing negative behavioural approaches (e.g. criticism and judgement) will create a psychologically safe environment (Tsuei et al., 2019). This approach does not explore the positive behaviours that promote psychological safety.

It is impossible for simulationists to be able to predict whether all simulation participants will feel safe in simulation; however, it is necessary that they attempt to create and maintain a psychologically safe environment that fosters confidence in learners to take personal risks during simulation without fear of reprisal (Turner and Harder, 2018). Learning in simulation is more than a cognitive task and includes psychological and emotional factors that affect the individuals participating in the SBE (Lateef and Lin, 2020). Various means to achieve psychological safety in simulation are highlighted in the literature, including the physical environment, the facilitators' demeanor and body language (Kolbe et al., 2019), room set up and location of the debrief (Abatzis and Littlewood, 2015; Cantrell, 2008), psychological safety in prebriefing (Roh et al., 2018), student perceptions of psychological safety (Stephen et al., 2020) and faculty perceptions of psychological safety (Kostovich et al., 2020).

Throughout the literature, what is noticeably absent are comparison studies of students' and faculty perspectives of psychological safety (Kostovich et al., 2020; Stephen et al., 2020). As we continue to explore and uncover the importance of psychologically safe learning environments, it is key that we understand how this is experienced from the perspective of all simulation participants. More recently, additional literature has emerged that focuses on psychological safety in the virtual learning environments (Dale-Tam et al., 2021; Goldsworthy and Verkuyl, 2021); however, this literature also misses the opportunity to thoroughly explore the experiences of learners and facilitators in SBE. With much of the literature focusing on the theory or beliefs of the facilitators to create a psychologically safe learning environment (Roh et al., 2018; Rudolph et al., 2014), we are missing the voices of the learners who benefit from creating these environments.

3. Theoretical framework

The framework guiding this study was the National League of Nursing (NLN) Jeffries Simulation Theory. This theory was chosen as it includes all areas of simulation design and implementation and implies that psychological safety is required to have the desired learning outcomes from the simulation. The theory examines the relationship between the learner, facilitator, and the simulation educational strategies used, all within the greater context of the simulation environment itself. Each component of the theory, from the background, design of the simulation, the simulation experience and the outcomes all rely on psychological safety as a key component. Psychological safety is not something that can be intermittently inserted into a simulation, but rather, it is imbedded in all components of the NLN Jeffries Simulation Theory (2016) and remains essential for successful outcomes. In simulation, as in the NLN Jeffries Simulation Theory, there is a cyclical interconnectedness that is essential for successful simulations. Should one area fail to create psychological safety for a nursing student, then the overall outcomes are at risk.

4. Research methods and procedures

4.1. Design

This qualitative study used interpretive description, and integrated inductive reasoning with constructivist thinking (Thorne, 2016). The philosophical underpinnings of interpretive description ensure a coherence that allows this study to be established separately as an interpretive description study as not all nursing inquiry can be categorized into the traditional qualitative approaches (Thorne, 2016) such as grounded theory, ethnography or narrative research. Rather the foundation of interpretive description provides an alternative way researchers could generate knowledge while still utilizing aspects of grounded theory. Given that the researcher had several years of experience and knowledge within the field of simulation, development, pedagogy and simulation facilitation, this methodology aligned well in that the researcher could apply prior knowledge and experience to the data collection, analysis and overall interpretation process. This design process also aligned with the study purpose as interpretive description is grounded in the belief that people's experiences are shaped by their perspectives as well as cultural and social forces.

4.2. Participants

Following ethics approval and institutional access, recruitment began at a large education institution in Western Canada by utilizing convenience sampling. For recruitment of the student participants, as part of their curriculum they recently participated in nursing simulations and therefore had a unique experience that would help better understand their perspectives on psychological safety. Faculty had also recently completed facilitating simulations and were also in a position of having fresh perspectives. All participants were emailed invitations to participate in the study by the administration support along with posters advertising the study in the faculty and student common areas. Inclusion criteria were students enrolled in the third year of the undergraduate nursing program, and the faculty who facilitated simulation in the third year of the undergraduate program.

4.3. Data collection

Data collection included one on one, face-to-face interviews that ranged from 27 to 53 min and were transcribed verbatim, short demographic questionnaires and researcher reflexive journaling. Reflexive journaling of the researcher was used as another source of data and was included in the data analysis process as it allows for a circular relationship between the investigator and the research data (Munhall, 2012). Following the eleventh interview, it was determined that there was repetition within the interviews and the researcher's reflexive journal, thereby concluding that sufficient information was obtained to answer the study question (Malterud et al., 2016). According to Malterud et al. (2016), information power assists with identifying the sample size when items such as the aim, specificity, application of theory, strength of the dialogue, and case analysis are considered, which was the process followed in this study.

4.4. Data analysis

Data analysis was a continuous and iterative process which used inductive analysis, open and axial coding (Thorne, 2016) conducted by the authors. Open coding was conducted by reading the transcripts line-by line and finding similarities and differences in the data. This was proceeded by labeling the code which enabled the researchers to sort through the data and uncover any underlying meanings within the text (Morse and Field, 1995). To improve the coding process, the text was read in its entirety and the researchers then reflected upon the whole of the text. The researchers then reengaged with the data to recognize

categories within the data set (Morse and Field, 1995). To enhance the recognition of categories, ongoing engagement with the data occurred, to test, confirm, explore and expand on the basic conceptualizations from the text (Thorne, 2016). Axial coding started when the data was categorized which involved identifying the relationships between the codes in the data. The connections between the categories began to emerge and patterns and linkages could be seen (Thomas, 2006). The initial categories were broad in nature so that large amounts of data could be sorted into groups and eventually combined to create a few main themes from the data set (Morse and Field, 1995) which generates the results and discussion.

After preliminary themes, categories, and sub-categories emerged from the student transcripts and the investigators reflexive journals, focus then switched to the faculty transcripts and corresponding investigator reflexive journal entries. Transcripts from the student group and faculty group were independently analyzed, and codes and themes were created for each group.

4.5. Trustworthiness

Trustworthiness was managed by using the Lincoln and Guba's framework (Polit and Beck, 2017). Peer debriefing was used to ensure credibility. Dependability was addressed by establishing an audit trail by reviewing de-identified transcripts and reviewing researcher reflexive journals. The reflexive journals also provided insight into interpretations and understandings of the analysis process. Confirmability was completed by reviewing the data with the research team regarding the initial analysis meaning, relevance and accuracy through preliminary axial coding, categorizing and through conversations to build initial themes or review themes and categories seen in the data.

4.6. Simulation study procedure

The study procedure followed the research guidelines for health care simulation research by Cheng et al. (2016). Students were orientated to the mannequins and simulation environment, and the scenarios were designed using the Healthcare Simulation Standards of Best Practice™ (International Nursing Association for Clinical Simulation and Learning (INACSL) Standards Committee, 2021). The students had participated in several previous simulations, and were interviewed at the end of the term. Learning objectives were provided to students via their clinical course syllabus. The scenarios were designed using the INACSL Standards of Best Practice. The students had participated in several simulations, which included maternity-based simulation, pediatric simulations and palliative simulations. The focus of the simulations that were used was based on clinical scenarios were important for students to experience prior to graduating but generally focused on teamwork, the occasional technical skill like medication administration and communication. Due to the nature of this study in that students likely brought prior experiences in simulation to the interview, no specific scenario was used prior to the interview. Pre-learning activities consisted of reviewing the patient chart and completing a client case summary. The students came to the simulation lab in groups of four and participated as an active participant in one simulation and observed another simulation. Each simulation totalled 1 h and 45 min, and included a prebrief (20 min), followed by the active simulation (20 min), and then the debriefing (40–45 min). None of the simulations were recorded. Debriefing for Meaningful Learning (Dreifuerst, 2015) was used as the debriefing framework, and was conducted in a location away from the simulation environment. At the end of the simulation day, the students were provided with a short questionnaire/evaluation that helped with quality control and faculty provided another announcement regarding confidentiality of simulation scenarios.

5. Findings

Seven students and four faculty volunteered to participate and were interviewed (n = 11). Table 1 is a description of the student sample and Table 2 is a description of the facilitator demographics. The mean interview duration for students was 31.14 min with a standard deviation of 10.16. The mean interview duration for the facilitators was 29.25 min with a standard deviation of 3.34.

5.1. Student findings

Two major themes emerged from the student transcripts and corresponding reflective journals: 1) dynamic interaction and 2) self-efficacy. The first theme of the dynamic interactions was comprised of three elements including faculty relationships, support, and communication. The elements cannot stand alone but are closely interrelated and make up the theme.

5.1.1. Theme 1: dynamic interactions

The theme of dynamic interaction was a combination of the students' relationships and communication with a facilitator. Depending on the type of relationship, positive or negative, impacted a student's sense of psychological safety within the simulation. Relationships were also cultivated through communication between the faculty and the student. The way in which a faculty member or simulation facilitator approached the students in the simulation, provided verbal feedback, as well as their non-verbal reactions influenced the students' sense of psychological safety.

A previous relationship with faculty where the faculty were aware of the students' clinical abilities positively impacted the students' overall perception of psychological safety. When students believed that faculty were previously aware of their clinical abilities, should a mistake happen in simulation, this was not a complete representation of their abilities. The students did not feel judged based solely on their performance in simulation.

> "*[…] so even before getting into a sim, knowing that person and having some sort of relationship with them […] calms you down, gives you reassurance that okay, she wouldn't lie to me.*"
>
> Student 4

When the relationship between the students and the faculty was perceived as negative by the students (e.g. failure in a previous course), it was difficult for the students to receive feedback in a constructive manner. The students felt uncomfortable and judged from past performances thereby did not take any risks, did not engage and/or participate in the simulation which shaped their own and that of their group's ability to learn from the simulation.

Table 1
Student demographics.

Demographic characteristics of sample ($N = 7$)		
Characteristic	Frequency	%
Sex		
Female	6	85.70 %
Male	1	14.30 %
Age, years		
19–25	3	43.00 %
26–35	3	43.00 %
>35	1	14.00 %
Highest level of education		
High school or equivalent	4	57.14 %
Bachelor's degree	2	28.57 %
Other certification/diploma	1	14.29 %

Table 2
Facilitator demographics.

Demographic characteristics of the sample ($N = 4$)		
Characteristic	Frequency	%
Sex		
Female	4	100 %
Male	0	
Age, years		
35–45	2	50 %
>45	2	50 %
Highest level of education		
Bachelor's degree	1	25 %
Master's degree	3	75 %
Length as a nursing education		
0–5 years		
6–10 years	2	50 %
11–15 years	1	25 %
16–20 years	1	25 %
Length in teaching simulation		
0–4 years	2	50 %
4–8 years	1	25 %
>8 years	1	25 %

The type of relationship between the students and the faculty affected the way the students asked for support or the perception of support in the simulation. If students were not feeling supported during the active simulation or debrief, they were less likely to seek clarification or help during the simulation and waited for the faculty member to prompt them. When a student had a negative previous relationship (e.g. previously performed poorly in their course), or had perceived conflict with a facilitator, the student may not be open to the learning experience of the simulation itself.

"*…if I've had a conflict with an instructor who is now watching me perform in simulation…it kind of takes away from the experience, because you're too focused on doing what you've got to do just to get out of there …*"

Student 1

Further, the way a facilitator communicated in a simulation influenced students' perception of psychological safety. Participating students identified effective communication as positive communication where the language was not overly critical, judgemental or negative in nature. Regardless of the intent of the feedback, the way in which it is relayed to the students had implications on how the feedback was received.

5.1.2. Theme 2: student self-efficacy

The second theme identified was student self-efficacy or students' beliefs in themselves and their ability to perform within the simulation. Students identified their confidence, preparation and ability to manage their anxiety as contributing factors to their self-efficacy. However, the majority of the students expressed feelings of being unsure. Being unsure made it difficult for them to trust their instincts, assessments, knowledge and abilities. When a student felt unsure or less confident in their own knowledge or abilities, their perception of psychological safety decreased. Additionally, students would revert back to the feeling of being judged or have concern about making a mistake which prevented them from feeling safe in the environment.

"*…they tell you, 'we're not testing you, this is just for your learning experience,' but it's always in the back of your mind, 'Oh, I'm being judged, I'm doing this wrong.'*"

Student 4

As the students' confidence increased with being prepared, so too did their comfort to take risks within the simulation environment. Therefore, preparation was perceived to positively influence not only a student's confidence and anxiety, but also their ability to take risks, make mistakes and learn from the experiences.

5.2. Faculty findings

The faculty transcripts and corresponding journal entries yielded two major themes. The first theme was simulation design: "safe bubble" which contained two categories, modifiable factors, which included design characteristics that faculty had control over, and non-modifiable factors, which were the factors they did not have control over. The second theme that emerged was trust. In the following section, we present these two themes.

5.2.1. Theme 1: simulation design

Faculty perspectives were that psychological safety was something that was created, with simulation design as being key in creating and maintaining psychological safety in simulation. There were two main categories identified: (a) modifiable factors that were composed of the different simulation design characteristics and (b) non-modifiable factors which was represented factors that faculty were unable to control or modify.

5.2.1.1. Category 1: modifiable factors. The category of modifiable factors included design characteristics that faculty could alter or change in the simulation. The design characteristics were factored into the different phases of simulation.

Confidentiality had been integrated throughout the simulation program. Facilitator 3 used the phrase "safe bubble" to describe acknowledging that what happens during simulation was to remain confidential. The faculty felt that if the students had a space in which they could make mistakes and learn from, that constituted psychological safety.

The prebrief phase was described by the faculty as an important component that increased the students' psychological safety. The faculty felt that the process of the prebrief helped with decreasing anxiety, re-establishing the expectations and objectives for the simulations and gets the students prepared by re-establishing the focus of the simulation. Facilitator 4 states that they reiterate the important design characteristics, as it demonstrates to the students that as a facilitator, they prioritize the importance of psychological safety in the simulation experience.

"*Psychological safety is so huge, […], it goes through the whole process from prebriefing and prep […] to confidentiality and the fiction contract and saying, you know, I'm going to try my best but I'm human too and some of these things may not be as real as possible but I want you to play along with us*"

Facilitator 4

Finally, the debrief is another simulation design element that the faculty believed impacted psychological safety in simulation. In the debriefing, faculty can assess how the students are feeling and through their interactions, can identify whether the students appear comfortable and engaged. One facilitator felt the debrief was the facilitators way of thanking the students for taking risks, being vulnerable and engaged in the simulation. Facilitators can reiterate and bolster psychological safety in the debrief by focusing on the learning and meeting the simulation objectives.

"*The debrief contributes to psychological safety[…] it's the 'thank you' for putting the risk in, now let's look at what that risk brought you in terms of learning […].*"

Facilitator 4

5.2.1.2. Category 2: non-modifiable factors. The non-modifiable factors were what simulation faculty identified as elements that they were unable to predict and were outside of the faculty members' control. These non-modifiable factors included the individuality of the student and the students' background, and history in previous simulations.

> "*And I wonder if psychological safety is not the same for everybody, it really depends on their background, what they come with, whether or not they trust us to actually be, you know, true to our word that we're not going to tell anybody that it's not going to impact their future learning.*"
> Facilitator 3

5.2.2. Theme 2: trust

The second theme was trust and how an environment of trust was created. The faculty perceived that trust was created through how they communicated verbally and non-verbally. Additionally, using preparation materials, and prompts and cues during the simulation, the faculty shared that this could impact students' perception of trust and support in simulation.

Faculty highlighted the importance of consistency among faculty in relation to their approach with students during all phases of the simulation. This consistent approach was believed to influence trust by students and subsequently, their feelings of psychological safety. The faculty felt if trust was not developed between the facilitator and student through communication both verbal and non-verbal, then the student may not feel psychologically safe; therefore, not comfortable taking risks or speaking up. If that trust is not present with the simulation experience students might guard their actions and thoughts as a form of self-preservation thereby missing out on a rich learning experience.

> "*…they're not going to feel comfortable in the situation at all and it's going to be very disjointed. They're going to be guarding what they're saying, what they're doing and as opposed to actually being in the role…*"
> Facilitator 2

6. Discussion

Looking through the lens of the NLN Jeffries Simulation Theory, the findings of this study are discussed according to background, design, and the simulation experience. The faculty perceptions of psychological safety primarily stemmed from the background and design of the simulation while the students' perceptions focused on the dynamic interaction between the student and facilitator as well as the simulation experience.

6.1. Design characteristics

In this study, faculty identified that the design characteristics were important in creating the psychologically safe environment for students. Preparation was addressed by both the students and the faculty. Providing preparatory material decreased students' anxiety but did not eliminate it completely (Sharoff, 2015; Tyerman et al., 2019). Further, faculty in this study felt that an effective prebrief that included reviewing the objectives and expectations, and the confidentiality clause prior to the simulation helped students feel more prepared and comfortable in the simulation itself. Roh et al., 2018 found that students who received a structured prebriefing prior to simulation showed higher team psychological safety (Roh et al., 2018). Whereas, Sharoff (2015) found that prebriefing engaged and empowered participants in their learning experience. Prebriefing is important to establish psychological safety.

A positive or trusting relationship was another design characteristic which both students and faculty felt was essential in the creation and maintenance of psychological safety. Faculty perceived that it was important to establish trust by telling students that "what happens in sim, stays in sim". Contrarily, the students felt that although statements of confidentiality were expressed, there was mistrust in the believability of those words. Rudolph et al. (2014) stated that transparency about *what and with whom* information regarding the simulation will be shared will help build trust. In this study, students felt that the *with whom* was important as there was a fear of their performance being disclosed with their clinical instructors. Therefore, explicitly outlining the confidentiality, discussing what and with whom information will be shared will begin the establishment of psychological safety.

While debriefing is an integral part of simulation learning (Kim and De Gagne, 2018), the students and faculty in this study attributed a greater importance to psychological safety than to the debriefing itself, as without psychological safety, the debriefing would not be as valuable and reflective of the simulation. Emphasis was put on how the facilitator created and maintained a psychologically safe environment before and during the debriefing, rather than the way in which the simulation was debriefed. This is paramount because with so much emphasis on debriefing and debriefing frameworks, this study shows that psychological safety relies more heavily on the humanistic interaction of the debrief than the debriefing itself.

6.2. Simulation experience

The simulation experience in the NLN Jeffries Simulation Theory includes the facilitator, the student, the interaction between the two and the education strategies used in the simulation (Jeffries, 2016). In our study, the magnitude in which the facilitator can impact a simulation and the students' perception of psychological safety was identified. Intrinsic to the relationship between the facilitator and the student is trust. As trust is an implicit antecedent for psychological safety (Turner and Harder, 2018), it is placed at the center of the dynamic interactions between student and facilitator. Without trust, there is no relationships, risk taking, collaboration, or learning, which is in essence psychological safety itself (Turner and Harder, 2018). Communication, both verbal and non-verbal, were identified by faculty and students as important in building trust and establishing psychological safety. It is not enough to state that the simulation is a safe place to learn, rather the facilitator needs to understand the significance of all their interactions with students, and how this affects learner engagement and the psychological safety of the simulation (Luctkar-Flude et al., 2017).

Self-efficacy was considered a significant factor in the students' perception of psychological safety. In a concept analysis on self-efficacy, Zulkosky (2009) summarized that a low sense of self-efficacy is associated with stress, depression, anxiety and helplessness (Zulkosky, 2009). Strong self-efficacy can increase a person's self-confidence and success by their ability to take on new challenges and tasks (Karabacak et al., 2019).

The non-modifiable factors that the faculty identified makes an important distinction regarding what each student brings to the simulation experience. Students identified factors such as their own confidence, ability to manage their anxiety, relationships with their peers and/or the facilitator. Conversely, faculty identified factors for students as the students' individual learning style and previous experience and exposure to simulation. This study's findings supported Wickers (2010) assertion that a person's individual traits could impact their own perception of psychological safety.

There is limited literature that describes the psychological safety of the individual in simulation. Turner and Harder (2018) asserted that personal confidence may be needed for a learner to feel psychologically safe, whereas Newman et al. (2017) discussed the individual in the context of team differences with psychological safety. Kolbe et al. (2019) included three characteristics needed for psychological safety in the individual; a proactive personality which is the ability to not allow external forces to alter behaviour; emotional stability which means the ability and self-assurance to feel calm, relaxed and stable; and finally, a learning orientation which is described as the internal motivation to

develop new skills and constantly learn and grow (Kolbe et al., 2019). What has emerged from this study is that psychological safety is something to be created through all phases of simulation, and that despite educators' attempting to imbed psychological safety within the design characteristics, the student as an individual may still not feel entirely psychologically safe. This area needs to be better understood.

6.3. Limitations

There were several limitations to this study. This study used convenience sampling which could result in commonalities about a phenomenon and could produce participants who had extreme feelings which could also bias the results. Due to the sensitive nature of the topic, less-confident students or those who do not feel psychologically safe within the institution may not have participated in the study. Therefore, there is need for large scale research on this topic to further analyze these findings. This study was conducted at a single site, with a traditional undergraduate nursing program which limits the generalizability. The students and the facilitators in this study were not paired together, so the students may or may not have had a simulation facilitated by one of the facilitators interviewed. The students were at the end of their school term, therefore, this delay in timing by 2–3 weeks from when they participated in the simulation and data collection may have skewed the interviews responses. Finally, the demographic identified predominantly female, additional studies with a more even gender distribution would enhance the overall study results.

7. Future research

This study was an initial study that compared the perceptions of psychological safety from both the students' and instructors' perspectives. As such, it raised additional questions which can provide opportunities for further research in this area. We would be interested in further exploring the positive/negative relationships between students and faculty to see how there could be potential growth that comes from learning from mistakes made in all learning environments. We would also like to explore how the inclusion criteria could be modified to include dyads that experienced the same simulation activities, not from an entire nursing program. Additional questions also include: Does the level of training/faculty development of the instructor in simulation/debriefing affect the psychological safety of the learner? Does the clinical context of the simulation affect psychological safety of the learner? Is there a correlation between the student confidence level and their perception of psychological safety? This is evidently an area that requires much more exploration.

8. Conclusion

Psychological safety is a concept that is used to create an atmosphere that is safe for learners in simulation to take risks and/or feel comfortable making mistakes. In nursing simulation education, research has found that psychological safety is beneficial to student learning and their overall ability to make and learn from their mistakes. Frequently, simulation faculty believes that they have created a psychologically safe learning environment, however this belief may not be shared by the simulation participants. This study has provided insight into both the perceptions of students and faculty in relation to psychological safety in simulation and has highlighted the gaps in perceptions between students and faculty.

CRediT authorship contribution statement

Sufia Turner: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Funding acquisition. **Nicole Harder:** Conceptualization, Methodology, Validation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Supervision, Project administration, Funding acquisition. **Donna Martin:** Conceptualization, Methodology, Validation, Formal Analysis, Data Curation, Writing – Review & Editing, Supervision. **Lawrence Gillman:** Conceptualization, Methodology, Validation, Formal analysis, Data curation, Writing – review & editing, Supervision.

Declaration of competing interest

There are no conflicts of interest to declare.

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Appendix A. Supplementary data

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